

Gov 40: International Conflict and Cooperation

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Spring 2022

Abstract

These are notes¹ for Harvard's *Gov 40*, an undergraduate class on international relations, as taught by Professor Stephen Chaudoin in Spring 2022.

Course description: This course is an introduction to the analysis of the causes and character of international conflict and cooperation. The course covers core theoretical models for why and how countries bargain, fight, and cooperate. The first half of the course focuses on conflict and international security. The second half focuses on international political economy and international organizations.

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¹With thanks to Eric K. Zhang for the template.

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1 January 25th, 2022

1.1 Logistics

We reviewed the [syllabus](#).

Note that there are sections, in-class assignments, and close-booked exams. Assignments and homeworks will be due at the beginning of the class date.

Sections *and attendance* are **mandatory**!

1.2 Variation

In international relations, we are concerned with ***real-world** variation* in some natural human phenomenon or process. This can be variation across time, region, or events.

We will sometimes call these *puzzles*. For example, why do some countries fight while others remain peaceful? Why do some countries have high trade barriers while others have none?

Note. We will be evaluating data quantitatively and qualitatively. We want to understand presentations of data, traffic in data, and abstraction.

In Class Activity 1.1 (Real world variation). Why does democracy succeed in some countries and die in others?

Definition 1.2 (Theory). For FLS, a *theory* is a logically consistent set of statements that explains a phenomenon of interest. For Chaudoin, a theory is a set of assumptions from which we derive testable predictions. Assumptions are neither true nor false.

2 January 27th, 2022

Announcements

- There will be international music at the beginning of each class
- We will begin with some section trivia
- Readings are uploaded to Canvas
- Sections are finalized, and will begin next week. Locations will be announced later today
- AEO accommodations to record class

2.1 Review: dimensions of variation

Recall the Chinese Finance article. We can enumerate the variations:

1. Across *countries/projects* in the delivery mechanism/how they met their obligations
2. Across *time* when some countries get back in line
3. Across *actors*, NGO \neq states
4. Across *issue areas*, between climate and development aid

2.2 Theories

Recall that our notion of a *theory* is a set of assumptions from which we derive testable predictions. Assumptions are neither true nor false. We seek to derive predictions between an independent and dependent variable.

Example 2.1 (Civil war). Consider a plot that shows the exponential decrease in battle deaths for conflict years.

We can consider the following assumptions:

1. People choose between fighting and working
2. Economy worsens \rightarrow working is less attractive
3. More fighting \rightarrow more people dying

We can then formalize these theories and produce steps to assess predictions. These will be discussed in future lectures.

Note (Abstractions). We often emphasize abstraction, numbers. This allows us to look at the situation in generality and there is precision. This is a harmful idea, however, because it loses richness of information and makes communication of ideas more difficult.

There are also a few ethical considerations when abstractions ignore the details — and often overlook certain issues. This can dehumanize central actors.

For FLS, the principles for guiding assumptions are *interests*, *interactions*, and *institutions*.

1. Interests: who are the actors and what they want
2. Interactions: what choices they can choose from
3. Institutions: what structures govern their choices

For Chaudoin, however, assumptions for theories require

1. Actors: who we are talking about
2. Preferences: what they want, how they think of outcomes

3. Actions: set of decisions they can make
4. The game: how combinations of actions determine outcomes

In Class Activity 2.2 (Outlining a loose theory). As countries develop more expansive and diverse trade networks, they will more likely start trade disputes with other competitive nations.

We see this as some countries have no trade disputes because they rely heavily on one import from a certain country. Thinking about a country like Saudi Arabia. And other countries are willing to and get into trade disputes, namely the USA and China.

Example 2.3 (Trade disputes). We have assumptions

1. Country A can sue/not sue Country B
2. The WTO has no police
3. If A sues B , then A has to enforce the ruling with threatened tariffs (if they can)
4. Disputes/suits are costly for A
5. If B exports more to country A , then A has more enforcement power

We can deduce that if B exports more to A , A is more likely to sue B .

Note. This relied on a lot of facts, about the WTO, about courts, and power.

2.2.1 Key points

The central question is if our theories are consistent or not consistent with predictions. We do **not** prove or disprove theories.

All models are wrong but some models are useful. Good theories are general, simple, and yield predictions consistent with data. Good critiques of theories including changing assumptions or predictions.

2.2.2 Critique practice

Good critiques change, add, or subtract assumptions *to get to different predictions*.

We can recall our simple theory of war intensity. To challenge assumptions 1 and 2, a worse economy may not make working less attractive. To challenge assumption 3, more fighting might mean *less* dying, not a monotone increasing relationship.

3 February 1st, 2022

3.1 Game theory review

Recall that a theory is a set of assumptions about the actors preferences and actions from which we derive predictions.

Moreover, recall game theory payoffs in Normal form. Normal form is the colloquial *table* format for payoffs in a two-player simultaneous game.

Example 3.1 (Prisoner's dilemma). The example most commonly used in class is the prisoner's dilemma.

Definition 3.2 (Strategy). A *strategy* is a best response to the other player.

Definition 3.3 (Nash equilibrium). A *Nash equilibrium* is a set of strategies that the agents play "best responses" to all other agents.

In political science, many situations are like the prisoner's dilemma. Players can do better by cooperating but each has a unilateral incentive to defect. This is related to collective action problems.

Example 3.4 (Stag hunt). This is another classic example.

We note that the prisoner's dilemma is a problem of how to cooperate with incentives to defelect. Stag hunt is a problem about coordination given different options. In international relations, cooperation requires enforcement and coordination requires information and communication.

4 February 3rd, 2022

Announcements

1. Assignment 1 is up
2. HUCE SURF can give funding for summer activities for senior theses
3. HUFPI women's conference
4. Sections start today!

4.1 Designing a study

We consider the following steps

1. Identify variation
2. Build a theory — specify assumptions about actors, preferences, actions, and the game to derive a prediction
3. Design a study to assess that prediction — choose sample and units, choose concepts and measurements, assess relationships, and identify threats to inference

Example 4.1 (Women terrorists). Women flock to ISIL. 10% of western recruits are female and just under 20% of French recruits are female. Women have also been involved in Nazism and the Chechen *black widow* suicide bombers.

The variation is the *dependent variable*, the thing that changes. The prediction is the *independent variable*, the thing that does the explaining.

For example, Women are more likely to join ISIL due to social norms, policing, etc. There are *many possible answers*.

The question is what data do we need to test the prediction?

4.1.1 Basic structure

Consider the following procedure:

1. Define the unit of observation — define one instance of what you are studying. This could be a country, year, country-year, something else.
2. Identify the population or sample of observations — the set of units in the study.
3. Define the *concept* and *measure* of the dependent, independent variables. The concept is the idea behind the measurement.

Example 4.2 (Women terrorists). Consider the following basic structure for our previous women terrorists example:

- Unit of observation: Country-Year, e.g. France-2005, France-2006, etc.
- Sample: 5 largest European countries, 2005-2020.
- IV: Strictness of policing measured by the average number of days to get a travel visa to the Middle East
- DV: Supply of women terrorists measured by the percentage of ISIL recruits from that country

4.1.2 Measurement

A good measurement is *clear, replicable, precise*, and *tightly tied to the prediction*.

Example 4.3 (Global incomes). We then go through an example of global incomes.

5 February 4th, 2021

5.1 Logistics

Sections will be held on Fridays 10:30-11:45 AM in CGIS S040. The section teaching fellow is **Kevin Troy**, a graduate student studying international relations in the Government department.

In-person office hours with Kevin will be on Thursdays 2:15-3:15 PM and Fridays 2-3 PM in CGIS Knafel Café and on Zoom by appointment.

OH attendance is *strongly encouraged*.

5.2 Military coups

There were two military coups this week: a successful one in Burkina Faso and an unsuccessful one in Guinea-Bissau.

There is variation in success across coups. This may come from the strength of the militaries and institutions in the different countries.

We can abstract this question and look at data to ask research questions, i.e. the number of coup attempts over time and the success rate of coups over time, conditional on the attempts.

5.2.1 Theory building I

We will now build a theory of coup plotting, considering actors and assumptions. We can say the actors are commander A and commander B . The actions they can take are {coup, not coup}. The outcomes are $(C, C) \rightarrow (\text{success, success})$, $(C, N) \rightarrow (\text{jailed, in command})$, and $(N, N) \rightarrow (\text{status quo, status quo})$. We have a preference order in charge \succ success \succ status quo \succ jailed.

We can consider a payoff matrix

		Commander B		
		C	N	
Commander A	C	(1, 1)	(-5, 5)	
	N	(5, -5)	(0, 0)	(1)

where we assign the utilities based off preferences.

Note. This is analogous to a prisoner's dilemma game.

5.2.2 Theory building II

We will now modify the above theory and consider the coup contagion idea. We can change the actions in the game as $A = \{\text{coup, extort}\}$. Then we have a new outcome mapping $(C, C) \rightarrow (\text{success, success})$, $(C, E) \rightarrow (\text{jailed, \$})$, and $(E, E) \rightarrow (\$, \$)$. The preference order is success \succ $\$$ \succ jail.

We have a new payoff matrix

		Commander B		
		C	E	
Commander A	C	(5, 5)	(-5, 1)	
	E	(1, -5)	(3, 3)	(2)

similarly defined.

Note. This is analogous to a stag hunt game. This predicts situations where we sometimes see a coup and sometimes do not see a coup.

We can now use our abstract model and apply it to the specific details of the situations.

6 February 8th, 2022

Today, we will discuss war.

6.1 The war puzzle

Countries fight over resources, money, wealth, morals, values, territory or religion. Countries fight because one country is stronger or richer than another. Lastly, domestic instability.

We will shift our central question to: why do countries fail to agree?

War is costly, and there are always better alternatives to war. We will build a model where this statement is true and think about how to *break* it.

6.1.1 Model

Consider agents A, B with the following preferences: they like territory and they do **not** like the costs of war. The actions they can take are {fight, agree to bargain}. If they agree to a bargain, it sticks, and war is a costly lottery.

Let p be the probability of A winning the war and c_A, c_B be the costs of war to A, B , respectively. Let $\mathcal{O} = \{o_i\}_{i=1}^N$ be a set of all outcomes and $\mathcal{P} = \{p_i\}_{i=1}^N$ be the probabilities of their corresponding outcome o_i . We require that

$$p_i \in [0, 1], \quad \sum_{i=1}^N p_i = 1. \quad (3)$$

The expected utility is

$$E(u_i) = \sum_{i=1}^N p_i o_i. \quad (4)$$

Note that the expected utility of A, B is

$$E(u_B) = p - c_A, \quad E(u_A) = (1 - p) - c_B \quad (5)$$

We note then that A, B prefer $x \geq p - c_A, x \leq p + c_B$, respectively and there is overlap region.

Theorem 6.1. *If war is costly to both sides, and the territory is divisible, then there always exists a range of bargains that both sides prefer to war.*

The key assumptions were that both players agreed on the probability of victory and each side's costs.

Note. There is a degree of uncertainty in players' beliefs. Note that players have an incentive to misreport their beliefs. This game is **not strategy-proof**.

7 February 10th, 2022

Recall last time that even if war is costly, there is always a better option than war.

Our model assumed *enforceable contracts*, which is false in the real world.

7.1 Commitment problems

We can call these types of problems commitment problems.

This is because countries cannot credibly commit to stick with their bargains.

Example 7.1 (Modified war). We can think about the same problem as last time, but with a mountain. Whoever controls the peak of the mountain gets $+q$ in probability of winning.

In this case, if A controls the peak, she cannot credibly say that she will not exploit the advantage because there will always be an incentive to deviate.

7.1.1 Resolving commitment problems

We can raise the costs of breaking commitments, provide external enforcement and internal enforcement.

In these models, we assumed divisible territory. Some things are *indivisible*. There can be side payments and other concessions that are equivalent to the territory in question, divisibility is (sometimes) socially constructed, and indivisibility is a lame explanation.

Leventoglu and Tarar model a *negotiation*.

7.2 Incomplete information data

Kris Ramsay sought to understand war victories and terminations. His sample was a set of wars from the 20th century usually involving a Western power. The units of observation was a war-day. The DV is war determination and IVs are shocking victories and time. Shocking victories are measured by the size of the mismatch between the two sides' capabilities/past losses and current losses. Time is measured by the number of days the war has gone on.

In this study, we predict that a shocking victory increases the likelihood of termination. We also predict that as a war lengthens, the likelihood of war termination increases over time.

The data shows that there is no statistically significant increase or decrease when we change shocking victories and some increase over time.

8 February 11th, 2022

Announcements

- Assignment 2 is out due February 28th

We recalled the bargaining model for war.

8.1 Ukraine crisis

8.2 The bargaining paradigm

We can think about the Russia-Ukraine crisis in our bargaining paradigm. For the purpose of this exercise, we can think of the agents as Russia and NATO. This is because the conflict has extended beyond the scope of Ukraine.

We can adopt the following parameters to reflect the current case:

- The *territory* they are bargaining over is a combination of all things they are able to bargain for, for example, the draft agreement, physical territory, and geopolitical power and influence.
- The *probability* p is a bit ill-defined. This changes upon the situation (and can lie on many points on the territory). There are also incentives to misreport for the sake of bargaining.
- The *costs* are both implicit and explicit — opportunity cost of committing to a war, financing the war, etc.

All to say that applying this model is a bit weak and not well-defined. We need to rely on many assumptions to create a direct mapping.

Note. We can perhaps model this using some probability distribution (likely modeled due to personal belief) and find some overlap in the tails of the distribution.

8.3 The incomplete information paradigm

We can consider this from an incomplete information paradigm. The belief of probability of winning the war can be misaligned from the ground truth.

This can create *divergent* ranges on the bargaining range. If both parties do not have a compatible view of the range, they are less likely to compromise and end the conflict.

8.4 The indivisibility paradigm

We can see Putin make clear that he romanticizes an idea of a united Russia-Ukraine. For Putin, Russians and Ukrainians are “one people” who occupy the “**same historical and spiritual space.**”

9 February 15th, 2022

Announcements

- Pick a War homework is posted
- Don't put more answers than we're asked for
- Professor Chaudoin will take questions in the lobby after class

Today, we will discuss war and domestic political institutions. We are interested in how domestic political institutions affect the probability of war.

9.1 Democratic peace

Note. It is very rare that two mature democracies fight in a war. This *democratic peace* idea is very strong and bipartisan.

We can colloquially define a democracy as a constellation of institutional features: free elections, non-concentrated authority, universal suffrage, an independent judiciary, etc.

In general, these characteristics make democracies *accountable* and *transparent*. This accountability may affect the outcomes in our bargaining model because we can model cost with some scale factor. Consider two leaders A, B

$$EU_A = p - c_A, \quad EU_B = p - \alpha c_B, \quad \alpha \in (0, 1). \quad (6)$$

where A suffers the cost of an average citizen and B does not suffer the cost of war as much.

Note. We note that A is less likely to fight.

Transparency, however, decreases the probability of war, where the media, opposition parties, and other campaigns make it easy to tell preferences and dissuade leaders from taking dramatic action.

Note. Accountability says that democracies bargain with less *distorted* costs and benefits and transparency says that democracies bargain with more complete information.

9.1.1 Dyadic predictions

Democracies are less likely to fight each other. The evidence is strong.

Democracies tend to fight shorter wars, with lower casualties and cost. They tend to win wars they start and tend to terminate wars more quickly as casualties mount.

Note. We can look at plots Professor Chaudoin has posted on the lecture slides.

10 February 17th, 2022

Announcements

- Next week, attend Tuesday 9 AM section and Thursday 10:30 AM section instead of class

Recall that we modeled the war “puzzle” and altered the model in three ways. Today, we will alter the model with domestic politics.

10.1 War and domestic politics

We treated model preferences as national, but there are subnational actors that affect the overall decision, for example leaders, firms, interest groups, parties, politicians.

10.1.1 Informal theory and study

we can think of actors as politicians making decisions in a bargaining model. The added preferences are politicians prefer to retain office. The actions are to start a war or not to start a war.

Added game assumptions: a bad economy means less likely to retain office. Starting a war boosts popularity. This implies that bad economic decisions make leaders more likely to start a war.

Note (Types of problems for exam). Deriving predictions from theoretical arguments, seeing if data is consistent with predictions, and using mini case studies.

10.1.2 Diversionary wars

Sometimes strong, popular leaders initiate war. It is a great way to lose popular support.

10.1.3 Citizens and war

Citizens may also have distinct interests. Citizens may dislike leaders who break promises. This might affect the probability of war by affecting the demands made during bargaining.

we can define *audience costs* as more demanding demands.

If we suppose audience costs exist, leader A demands some percentage of the territory or she will attack. Leader B knows A will suffer serious audience costs if A backs down.

Audience costs make B more likely to back down. We note that it is very hard to see audience costs in observational data.

11 February 18th, 2022

11.0.1 Game theory recall

We discuss how to build a game theory model. We start with actors. We need to define actions, the possible empirical outcomes. We then need to specify preferences of the agents and map preferences over outcomes. We finally ascribe utilities and write our Normal-form game.

Note. We should let our analysis drive our numbers and **not** vice versa.

11.1 Democratic peace

We will look at different *regimes*.

Definition 11.1 (Regime). A *regime* is the form of government or the set of rules, cultural or social norms, etc. that regulate the operation of a government or institution and its interactions with society.

In our war models, we do not assume any regime type.

Recall our two models: the monadic and dyadic. Monadic says that democracies are less likely to go to war in general. Dyadic says that democracies are less likely to fight *one another*. The dyadic theory has more empirical support.

Note. In studies, we can define units of observation to find correlations. We observe that the units of observation tend to be constrained by the data, but we can make arbitrary conclusions by ascribing arbitrary units.

Example 11.2. We then watch a video of Secretary of State Antony Blinken discuss a US and European response to a Russian invasion of Ukraine. We then note that Blinken was extremely transparent in answering questions about consequences. When asked about putting boots on the ground, Blinken was a bit more ambiguous. This shows that government preferences are more aligned with the median voter.

We then discuss *audience costs*.

Definition 11.3 (Audience costs). An *audience cost* is the domestic political cost that a leader incurs from his or her constituency if they escalate a foreign policy crisis and are then seen as backing down.

Audience costs make threats from the government more credible.

Moreover, recall our definition of a diversionary war.

Definition 11.4 (Diversionary war). A *diversionary war* is a war instigated by a country's leader in order to distract its population from their own domestic strife.

12 February 24th, 2022

Today, we run an in-class experiment about elections and risk taking. The game is essentially multiple rounds of betting to win some prize money.

We explore the Nash equilibria experimentally on Google sheets.

13 March 1st, 2022

Announcements

- ICAs will be reposted on Canvas soon
- Please give mid-semester feedback!
- Case study is coming soon!

13.1 Alliances

Definition 13.1 (Alliances). An *alliance* is an agreement about what a country will do in conflict situations.

There are a few different types of alliances:

- **Defensive.** Defend if attacked. For example, NATO.
- **Nonaggression.** I won't attack you. For example the 1939 Molotov-Ribbentrop Pact, USSR - Germany.
- **Neutrality.** Won't support anyone attacking you. These are *rare*. For example the 1941 USSR - Japan Neutrality Pact
- **Offensive.** Attack if you attack them. These are *very rare*. For example, this was part of the 1939 Molotov-Ribbentrop Pact.

We will now consider the bargaining model with countries A, B . The key idea is that if we have a third party country C that has an alliance with A , this pushes the bargaining range in a favorable direction by *decreasing* c_A , *increasing* c_B , and *increasing* p .

Note. An alliance has no clear effect on changing incomplete information problems, but they potentially serve as *moral hazards*, emboldening aggression.

13.2 Broken alliances

Evidence usually suggests that defensive alliances *decrease* war. They deter potential challengers.

We note that 75% of alliances are upheld and the remaining 25% are not.

13.2.1 Theory

Recall that alliances are written agreements. It is important that they are written down to codify obligations and raise the domestic and reputation costs to breaking an alliance.

Democracies are most likely to care about these costs because they are responsible to large segments of the population. (larger audience costs). This implies that democracies are least likely to break their alliances.

13.2.2 Data

We consider a study with the following. The units of observation are 143 instances of war from 1816-1944 where there was an alliance. We seek to determine the effect of polity score (democracy) on alliance status (broken or kept).

We will now consider a new tool, *linear regression*. We have the following empirical model.

Consider a data set $\mathcal{D} = \{(\mathbf{x}_i, y_i)\}_{i=1}^N$.

We consider modeling the probability of a broken alliance given by

$$p(B) = f(D, C) \tag{7}$$

where B is the event of a broken alliance, D is polity score and C are some other fixed parameters. We assume a linear relationship:

$$y_i = \alpha + \beta_1 \mathbf{x}_i + \beta_2 \mathbf{c}_i + \epsilon_i \tag{8}$$

where ϵ_i is some noise associated with the i th data point.

We want to estimate β_1, β_2, α , that is, the effect of democracy on probability, the effect of the controls, and the bias.

14 March 3rd, 2022

Announcements

- There will be Monday office hours in CGIS Knafel 252
- Tuesday class is review
- Sections are review for the midterm

Today, we will discuss civil war.

14.1 General framework

Civil wars are motivated by greed and grievances, with opportunities to increase state capacity and terrain. We then go over many examples in class.

14.2 Civil war: Bargaining model

Civil wars are likely the result of commitment problems because we are bargaining about the ability to wage war.

Note that incomplete information and indivisibility aren't really problems because you know your neighbors and you can always partition land.

15 March 8th, 2022

Announcements

- The midterm will be Wednesday 1:30-4:30 PM in BioLabs 1080
- Bring the case study
- Homework 2 grades have been released

Today, we review material for the midterm.

16 March 22nd, 2022

Announcements

- Masks will be required this week and possibly the next
- Test 1 scores are released
- LAPOP homework due date is pushed back

Today, we discuss terrorism.

16.1 Terrorism

We note that terrorism isn't new and there are relatively low levels of violence involved.

We seek to understand the following:

- Where and why does terrorism occur?
- What makes counterinsurgency effective?
- What things stop terror? We want to describe US drone strikes.

Definition 16.1 (Terrorism (US Department of Defense)). The calculated use of unlawful violence or threat of unlawful violence to inculcate fear; intended to coerce or to intimidate governments or societies in the pursuit of goals that are generally political, religious, or ideological.

Though irrational, we seek to study terrorism using the process.

16.1.1 Counterinsurgency

Since the Bush era, Operation Enduring Freedom begins with targeted strikes. There have been strikes in Pakistan, Somalia, Afghanistan, Yemen.

We then begin to study the Nielsen paper. In this paper, Nielsen seeks to understand the following variation: Sometimes, killing the authors of an idea makes their ideas more popular, and other times, less popular.

This is important because U.S. policy strongly considers decapitation. We have some work on the effect of decapitation on the terrorist organization, but not on its broader impacts.

16.1.2 Ideas

Definition 16.2 (Ideas (Chaudoin)). Ideas are “causal beliefs.” They are held in the mind, and for the humans who hold them, they posit connections between entities in the world. These connections may be precise, as in the case of the idea of a causal mechanism, or they may posit more tentative connections. Ideas also often suggest what an individual ought to do in the world.

Note. Ideas need *exposure* and *valence*. Exposure is how often we see it (intensive margin) and how often many people see it (extensive margin). Valence is the set of qualities that make an idea attractive, think democracy and freedom.

We then look at different studies. Empirically, we find that killing authors does **not** kill ideas, but it does slightly increase page views.

17 March 24th, 2022

Announcements

- For the first exam, the median was 93.5, the mean was 92.2 and the max was 100.5

Today, we discuss leadership.

17.1 Leadership

In the context of interstate bargaining, military experience, age, and gender may affect the type and quality and result of bargaining.

17.2 Military experience theory

The central question is if leaders with military experience make war more or less likely.

We consider the following prediction: Combat experience lowers the likelihood of war; non-combat experience does not.

Upon examining some data, it seems like there is no statistically significant difference in leadership between those with military experience and those without it.

17.3 Age theory

We seek to understand if age makes war more or less likely.

We see that increasing age increases the relative risk of militarized interstate dispute initiation, according to Horowitz et al 2005.

Example 17.1 (India Pakistan 1971 war). We use this as a case to motivate our understanding of gender of monarchs and conflict behavior. In this case, an internal conflict in East Pakistan creates a refugee crisis in India. Pakistan preemptively attacks India and India wins the war in 13 days.

17.4 Gender

17.4.1 Queens

We will design a study for queens. We consider our units as polity-years with sample of every polity in 1480-1913. The IV is whether or not there is a queen with DV the historical data on conflicts involving 50000 troops.

We predict that if there is a queen, there is more likely to be war.

Our results indicate that for a given year, polities with a queen was 39% more likely to be at war.

17.4.2 Modern female heads of state

Opposing male leaders *react* different to actions by female heads of state. In particular, they take demands and threats less seriously and are more likely to think that the woman is bluffing.

Abigail Post and Paromita Sen did a study in 2020. They looked at disputes from 1980-2010 where one country targets another. The IV is whether the targeting country had a woman head of state and the DV is the level of hostility of the target's response from 1 (no military response) to 5 (use of force).

They found that targets were 30% more likely to respond with a use of force when the opposing head of state was a woman.

18 March 29th, 2022

Announcements

- Final three homeworks and files are up
- Masks are optional
- Check out Politico's Weekly Trade

Today we discuss trade.

18.1 Trade

We note that there is variation in trade over time and between countries in imports and exports.

There is variation within countries across products and within products across firms.

Today, we look at models of why countries trade and look at winners and losers of free trade, according to each model.

Definition 18.1 (Comparative advantage). Country A has a *comparative advantage* in producing a good g relative to country B if the *opportunity cost* of producing g is lower than B 's opportunity cost of producing g .

18.1.1 Heckscher-Olin model: Factor endowments

One source of comparative advantage: differing factor endowments across countries.

Factors are inputs for producing things and an endowment is how much we have. For example, we focus on land, labor and capital.

Example 18.2 (Bangladesh and China). Consider Bangladesh and China. Bangladesh has a comparative advantage in labor intensive goods and exports textiles whereas China has a comparative advantage in land intensive goods and exports maize and silk.

This tells us that political cleavages over trade are factor-based.

Note. In this model, the owners of the relatively abundant factor wins; they export. The owners of the relatively scarce factor loses; now they compete with imports.

18.1.2 Ricardo-Viner model: Technology

Another source of comparative advantage is differing technology.

Example 18.3. The United States has efficient car production technology and thus exports cars. Korea has efficient semiconductor production technology and exports computer chips and semiconductors.

Political cleavages here are industry or sector-based.

18.1.3 Recent models

We can take a consumerist approach – consumers love variety and thus there is more trade.

Krugman's economies of scale: more production means cheaper per-unit production.

18.2 Trade and identity

There is a growing body of work on trade and race, gender. Women tend to be more protectionist, non-whites tend to be less tied to the manufacturing identity, research tends to be U.S. focused.

19 March 31st, 2022

Announcements

- There is a Harvard Law School panel Friday April 1st at 2-3:00 PM EST in Harvard Hall 101

Recall last class, we had two main models that identified winners and losers from free trade. Today, we discuss how the two models do battle politically.

19.1 Trade models and politics

19.1.1 Bush steel tariffs

In March 2002, President George W. Bush imposed 8-30% tariffs on steel imports. Note that the winners were import competitors or US steel producers. The losers were US *intermediate* steel users and US consumers.

We can crunch some numbers and ask why pro-protection groups win political battles.

It turns out that protectionists can more easily overcome a *collective action problem* to mobilize politically.

Note. This seems like a Prisoner's dilemma.

19.2 Public goods game

In this game, we consider N players, where there are binary actions. Either we take an action or not $A = \{a, \neg a\}$ where the action costs c . We note that if $K \leq N$ players take the action, the group receives the public good. The benefit to everyone is $b > c$.

The NE looks like a situation where players 1 to K choose a and all others choose $\neg a$. Everyone contributes with probability p .

We can check this is a Nash by thinking through the example and doing casework on the partitions.

Note. If we are thinking about trade warfare, in order to retaliate to sanctions or tariffs, we should minimize our economic pain and maximize our opponent's economic and political pain.

Example 19.1 (Trump's China tariffs). President Trump's China tariffs are still in place. The Biden administration has not removed them.

We note however that this is largely because the chief negotiator is of Taiwanese descent, so there may be some bias.

20 April 5th, 2022

Announcements

- Lecture/section combination is working well
- Repeat student comments
- Intro/outro signposting
- There is required reading for next class

Recall in our last two lectures, we discussed trade. Today, we discuss the movement of money across borders, or *international finance*.

20.1 International finance

There are different forms of money flow across borders, including investments, sovereign lending/debt, and foreign aid.

There are many dimensions of variation like in trade including: investor intensity, dyadic, firm level, type of investment.

20.1.1 2007-2009 financial crisis

We can use our standard approach to understand the financial crisis. Today, we will use an alternative *network* approach, which emphasizes the interconnectedness of countries' actions and outcomes.

Some background: in the US, lax lending laws created a housing bubble. Financial institutions repackaged and sold the debt. The bubble burst and international banks underwent a freeze. The result was massive bailouts and new regulations.

20.2 Network model

In the network model, we have nodes and edges where edges indicate relationships between nodes.

Example 20.1. Consider nodes representing countries and weighted directed edges between nodes $v_1 \rightarrow v_2$ indicating the value of foreign assets held in v_2 by v_1 .

We may care about the *centrality* of nodes, the *density* and the *structure*.

We can think about whether shocks in central nodes in dense networks cause global crises.

20.3 Power in financial systems

The financial network is dominated by the United States dollar – the dollar is the federal reserve currency.

We note that US dominance *increased* after the financial crisis and COVID.

Thus we note that there is power based on your position in the network. In a US-centralized network, the US has the most power.

Definition 20.2 (Power). *Power* is the ability to resist or survive shocks. It is the ability to get someone to do something they would not have otherwise done.

20.3.1 Sanctions and SWIFT

Sanctions block countries from international financial institutions.

United States banks are so central that non-US entities can comply with sanctions and SWIFT can comply with sanctions.

Note. Anonymous cryptocurrencies like Bitcoin, Ethereum may subvert United States economic power.

21 April 7th, 2022

Announcements

- Reminder that podcast and going further homework is due next Friday

Today, we discuss immigration, or the movement of people across borders.

21.1 Migration network

We look at the following picture:

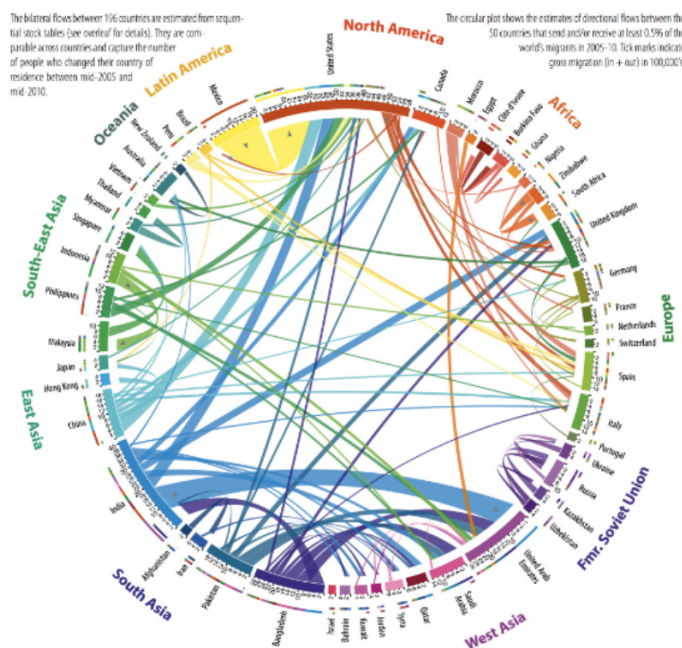


Figure 1: Migration network movement 2005-2010

We note that there is no intra-regional migration in the former Soviet Union, there is massive migration from India and Latin America to the United States and larger North America.

21.1.1 Theory

We think about theories that explain how people think about immigrants and policy.

Economic: immigration tends to *increase* competition for jobs. Public economics: immigration tends to *decrease* the amount of public resources. Xenophobia and race: people generally support immigrants who are of the same race, as opposed to support immigration from *foreign* countries. Moreover, there may be heightened animosity towards certain groups of foreigners.

Example 21.1 (Norway). In Norway, there is evidence of a public economic issue. Norway is running out of oil reserves, so public resources are decreasing. FrP is a neoliberal party so job competition/a limited welfare state is at the center of their campaign.

There are also xenophobic aspects to the story, in *the new language* and head-covering restrictions. There is also a large Judeo-Christian population which supports a religious aspect to their policy.

There are also some economic aspects, with fears of losing high wages.

21.1.2 Election effects

We want to think about how elections affect opinions on elections. We consider two potential dependent variables: perception of immigration policy and polarization.

We note that elections are identity re-affirming/otherizing. Elites emphasize certain topics that increase polarization and reinforce a bimodal distribution in belief.

21.1.3 Autocrat calculus

There is a lot of variation in *emigration* policy.

Autocrats may want to send people abroad because of trade and investment relationships. Remittances are also good for domestic economy. They can also send opposition members out of the country.

There are also political costs. Namely, contact with democracy.

The empirical analysis is that autocracies allow emigration if people go to non-democracies and restrict if they are pulled towards democracies.

22 April 8th, 2022

Announcements

- There are two homeworks due next Friday
- Kevin will have office hours today at 2-3 PM EST

22.1 Public good game

There are 20 people in the room. Consider the following public good: If 14 people agree to donate 10 points, Kevin will provide *everyone* 20 points.

We note that acquiring the correct number of votes is not a Nash equilibrium.

Note. We can consider the effect of increasing or decreasing the vote threshold, increasing the cost or benefits, and collusion.

22.1.1 Real-world application and trade

This is similar to unions! Workers must pay union dues in order to secure union jobs and benefits.

Lobbying is another collective action problem that provides goods to an industry.

Note. If we think about *who* is better at overcoming collective action problems, this may inform policy in different ways that just optimizing the social good outcome overall.

22.2 Networks

Networks summarize structure between and among different people or entities.

Recall that *nodes* are the actors (or atoms of the model) and *ties* are edges between nodes. Edges denote connections or relationships. Edges can be undirected or directed.

Example 22.1 (Diplomatic relations). We create a network using diplomatic relations data. Specifically, we created a directed weighted graph over countries.

Note (Renshon). We can also build a network about diplomatic representations and power. This graph in particular is directed and weighted. The node *size* is a reflection of *status*. Status is determined as a function of PageRank status.

This network is *dense* and *flat*.

23 April 12th, 2022

Announcements

- There is a small typo in the Going Further homework
- We are finished with IPE
- Our final three classes will be international organizations and IPDs, and reputation and treaties

23.1 International organizations

23.1.1 Tariffs

We can consider a tariffs game

	Free trade	Tariffs
Free trade	C, C	S, T
Tariffs	T, S	$0, 0$

(9)

where there is some cooperation prize, the defection prize is 0, and there are temptation and sucker prizes. In this case, we have $T > C > 0 > S$ and the Nash equilibrium is $\{T, T\}$.

We want countries to cooperate, but they have incentives to defect. Today, we will discuss how international organizations facilitate repetition and punishment for defectors.

23.1.2 Infinitely repeated Prisoner's dilemma

We can play a game infinitely many times. In this model, players will discount future payoffs with discount factor $\delta \in (0, 1)$.

Example 23.1. Suppose both players play $\{F, F\}$ forever. The payoff is given by

$$\sum_{i=1}^{\infty} \delta^{i-1} C = C + \delta C + \delta^2 C + \dots \quad (10)$$

If we consider a deviation on day one, we have

$$T + \sum_{i=1}^{\infty} \delta C \quad (11)$$

and we note that $\{F, F\}$ is not a Nash equilibrium.

We now consider conditional strategies.

Example 23.2 (Grim trigger). Consider the following. We cooperate on day 1. While we continue to both cooperate, we cooperate. Else, we defect forever.

We note that the payoff from following grim trigger and the payoff from defecting is given by

$$\sum_{i=1}^{\infty} \delta^{i-1} C, \quad T + 0 + 0 + \dots \quad (12)$$

respectively. Thus grim trigger is a Nash equilibrium if

$$C + \delta C + \dots \geq T \implies \boxed{\delta \geq \frac{T - C}{T}}. \quad (13)$$

Note. We note that increasing δ , decreasing T , or increasing C increases cooperation.

We can do some comparison in the infinite sum and note the following.

Note. As $|T - C|$ decreases, cooperation increases. As δ increases, cooperation increases.

23.2 Repetition and punishment

International organizations *lengthen the game* and raises δ . It institutionalizes repeated interactions.

Example 23.3 (G20). The group of 20 major countries governs financial issues and meets annually.

International organizations also facilitate *efficient breach* — enforces punishment that fits the crime.

24 April 14th, 2022

Announcements

- There is a makeup ICA due next Thursday
- LAPOP is graded
- Going further, you can zoom in

Recall that IOs lengthen the game, they monitor and provide information, and help *efficient breach*.

Today, we discuss on their role in facilitating reputation building and group punishment.

24.1 Champagne and artichokes

Trade was hugely important in history. It took advantage of regional specialization and facilitate the exchange of ideas.

Trade is really hard. We can model it like an iterated Prisoner's dilemma because both are better off by exchanged but each has incentives to defect.

Note. Repeated exchanges are rare.

24.1.1 Model creation

We note that we can reverse engineer the model. We want actions to include pay/not pay as actions, and strategies are contingent on law merchant decisions. The costs are not too high and the merchant is honest.

Predictions we can test are if the law merchant should increase trade. If we break the rules, you should get punished.

Note. Today, modern institutions transmit information to voters, interest groups, and other countries.

25 April 19th, 2022

Announcements

- There will be no case study for exam 2
- Thursday will be review

Today, we discuss human rights.

25.1 Human rights

There is variation across countries, rights, and time in imprisonment and torture.

Note. We cannot repeat the game and add punishment because there is no incentive to listen to other players.

We also note that there have been legal commitments to respect human rights.

25.1.1 Theory

Consider what happens when a leader considers whether to torture citizens. Benefits include eliminating opposition and coercing others and it costs foreign punishment and domestic dissent.

By adding a treaty, this *increases* the costs, namely foreign punishment and domestic dissent.

Note (Predictions). Human rights treaties change peoples' preferences via socialization and norms. They generate domestic costs to breaking treaties via audience costs and other legal avenues. They provide focal points for foreign punishment. We predict that

1. Countries that have ratified human rights treaties should have better human rights practices
2. Countries suffer foreign punishment for bad human rights practices

25.1.2 Prediction 1: Conrad and Ritter

Does ratifying the CAT decrease torture?

In the study, the sample was 148 countries from 1984-2004. The unit of observation was a country-year. IV is an indicator random variable for CAT ratification and DV is *do you systematically torture* from the Amnesty International and US State Department reports.

They found that CAT works for secure leaders and fails for insecure ones.

Note. This model only includes leaders and not citizens. For insecure leaders, ratifying the CAT mobilizes dissent and forces the leader to crackdown to remain in power.

Note (Human rights trends). We see that human rights have essentially remained the same over time.

We also see that there is a changing standard of accountability because judgements change over time.

25.1.3 Prediction 2: Lebovic and Voeten

We consider a study by Lebovic and Voeten where they considered all countries from 1979-2002. The unit of observation is a country-year. The IV is a binary indicator indicating if there has been a UNCHR resolution against the country and DV is how much foreign aid the country receives.

Bad human rights practices *decrease multilateral aid*. Strategic interests blunt any effect on *bilateral aid*.

25.2 Drug studies

Consider an experiment where we give drugs to students who are awake at 11:30, sleeping students get a placebo.

The results at 11:45 indicate that 80% of students who got the drug are still awake and 40% of students who got the placebo are awake.

The IV is drug v. placebo. The DV is whether you are awake.

In real life, stress, region, race affect how much you smoke and overall health.

25.3 Human rights studies

Let X denote whether a country has ratified a human rights treaty and Y denote whether human rights practices improve. The latent variable Z is whether you already have good human rights, intentions, presence of domestic opposition, etc.

Thus it is very hard to tell the effect of human rights treaties. Some solutions to the problem include measuring Z and modeling it, instruments, sensitivity analysis, looking for *naturally* occurring randomness.

26 April 21st, 2022

Today is midterm 2 review.

The format will be short answers, closed notes, and only cover the second half of the class. There will **not** be questions about immigration or terrorism.

26.1 Topic 0: Leaders

We studied informal models about how leader gender affects conflict. When women are leaders, target countries do not believe threats, opponents are more likely to initiate, division of labor.

We looked at data from monarchs, data from India/Pakistan, and data from study of reciprocated threats.

26.2 Topic 1: Trade

We looked at two informal models of what countries trade. These were based on differences in sources of comparative advantage, including factor endowments and technology.

For factor endowments, people who own the means to produce the factor (land, labor, etc.) will benefit and those who do not will oppose. The technological explanation says that support or opposition is determined by industry.

We also developed a formal model of collective action. We have an informal theory relating group size to overcoming collective action problems. Namely, that small groups with concentrated gains or losses make it *easier* to overcome collective action problems.

There was some discussion of supply chains, and linked trade policy with politics.

Note (Practice). Consider pairing different countries and make predictions about winners and losers.

26.3 Topic 2: Finance

We discussed networks, defined by nodes and edges.

These are essentially graphs — edges can be directed and weighted.

We had informal definitions of centrality — the number of incident edges, and if the node connects disparate parts of the graph.

Graphs/networks can be dense or sparse; hierarchical or flat.

We also thought about how shocks affect nodes or networks. We note that power is defined by network position. Looking at data, the 2008 financial crisis and COVID did not affect the US in the financial network (the US is very powerful).

26.4 Topic 3: The iterated Prisoner's dilemma

We considered the iterated Prisoner's dilemma, an infinite sequential game.

Here, we added a discount factor δ to the expectation, where we discount future payoffs.

Recall that $(C, C), (C, C), \dots$ forever is **not** a NE. Now recall Grim trigger, where one player cooperates until the other player defects, and then we defect forever. There is some condition on δ for this to be a NE.

26.5 Topic 4: International organizations

Using the IPD, we looked at the role of international organizations.

1. IOs can lengthen the game and change δ
2. Provide information
3. Allow efficient breach

International institutions also facilitate group punishment or reputation.

This is *not a very empirics-heavy topic*.

Note (Practice). Pick a Prisoner's dilemma and make it an IPD. Think about real world things that affect the moving parts of the Nash condition. Determine challenges and how an international organization helps overcome them.

26.6 Topic 5: Human rights treaties

We note that human rights is not an IPD. We discussed an informal theory of how HRTs affect a leader's calculation — it changes the internal and external punishment.

Internal punishment: Domestic backlash and protest

External punishment: Violation of a human rights treaty affects foreign relations.

There is empirical evidence for predictions:

- HRTs increase respect for human rights (Conrad and Ritter)
- Violations decrease foreign aid (Lebovic and Voeten)

Note (Practice). Pick an HRT and a country; characterize internal and external punishment.

26.7 Topic 6: Threats to inference

There are latent variables that may affect the IV and DV. The data may be consistent with a prediction but not actually evidence in favor of the prediction.

27 April 22nd, 2022

Announcements

- Final section! Thanks Kevin!

The exam will cover the second half of the class, not including immigration and terrorism. To study, focus on concepts, theories, and skills.

The exam is short answer, like the first exam.

Note. There will *not be* practice problems.

27.1 Example: Iterated Prisoner's dilemma

Foreign direct investment is when one person sets up a factory and has controlling interest in another country. they want to take advantage of skills and lower cost of labor. The threat is expropriation, where a country can steal this capital and investment towards another domestic good.

We can consider two players A, B that can either cooperate C or expropriate E .

		Country B	
		C	E
Country A	C	C, C	S, T
	E	T, S	$0, 0$

(14)

where C is the cooperation payoff, T is the temptation payoff, and S is the sucker payoff with order $T > C > 0 > S$.

In a one-move simultaneous game, the Nash equilibrium is (E, E) . If we consider an iterated game, we can characterize some strategies. Some of them include:

- Cooperate forever
- Defect forever
- Tit-for-tat (or tit-for- x -tats)
- Grim trigger

Note (Cooperation). Let σ denote the strategy of cooperating forever. If A, B agree to always cooperate, the payoff is

$$u_A(\sigma) = u_B(\sigma) = C + \delta C + \delta^2 C + \dots \quad (15)$$

Let σ' be the strategy when B cooperates forever and A deviates on the first move, we have payoff

$$u_A(\sigma') = T + \delta C + \delta^2 C + \dots > C + \delta C + \delta^2 C + \dots = u_A(\sigma). \quad (16)$$

Thus (C, C) forever is *not* a Nash equilibrium.

Note (Grim trigger). We consider if both A, B doing grim trigger is a Nash equilibrium. Let σ_{GT} be this strategy. Then

$$u_A(\sigma_{GT}) = C + \delta C + \delta^2 C + \dots \quad (17)$$

and upon deviating on the first move, we have payoff

$$u_A(\sigma'_{GT}) = T + \delta 0 + \delta^2 0 + \dots \quad (18)$$

We can derive the condition for grim trigger to be a Nash given by

$$u_A(\sigma_{GT}) \geq u_A(\sigma'_{GT}) \iff \frac{C}{1-\delta} \geq T \iff \boxed{\delta \geq \frac{T-C}{T}} \quad (19)$$

as desired.

Note (Tweaking parameters). Grim trigger requires observability. *Bilateral investment treaties* stipulate protection for FDI, and includes provisions that if there are complaints about a host government, they bring the case to an international settlement body to resolve the case.

The existence of an international body and regulation increases C and decreases T because there is more accountability and reputation on the line for countries that are hosting foreign direct investments. This also increases observability because an outside third party can more easily see what is going on.

27.2 Example: Israeli trade

We can consider Israeli-Turkish trade.

Heksher-Olin model. The determinants of comparative advantage can be *factor endowments* like land, capital, and labor. Here, we are considering relative factors of endowments.

We note that Turkey has an absolute advantage in both labor and capital. Israel has a comparative advantage in capital and Turkey in labor. The abundant factor will be used in exports and the winners from trade are the exporters and the losers are from the importers in competing sectors.

Note. In the Heksher-Olin model, the factors of production are flexible and can be used *across* industries and sectors where they can benefit from trade.

Ricardo-Viner model. The determinants of comparative advantage can also be technologies and industries. The more technologically advanced you are in a certain industry, the more you benefit from trade.

Note. In the Ricardo-Viner model, the factors of production are stickier — they *cannot* be easily transferred from industry to industry.

This means that if you are in an industry that is technologically disadvantaged, you will be disadvantaged in trade.

27.3 Example: Networks

We can consider a graph where vertices are individual extremists and are somehow colored by ideology.

Recall that there are two intuitive senses of centrality — *degree centrality* and *between-ness centrality* where the former is the degree of a node and the latter is about connecting far-away clusters.

We can also ask about flatness and density.