

Final: The Political Determinants of International Trade

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Traditional Introduction

Follow the assignment step-by-step. Name your *.rmd* file *your_surname_final.rmd*. For example,

```
sichinava_final.Rmd
```

Background to the Assignment

Do political factors influence international trade between major powers? James Morrow, Randolph Silverson, and Tressa Tabares try to evaluate several hypotheses regarding this issue. Specifically, in their widely cited paper "The Political Determinants of International Trade: The Major Powers" they assess how similar interests, democracy and being in the same [political block shape trade flows.

Before you go through the assignment, you are strongly encourage to read the paper which can be accessed through this [link](#). The dataset used in this assignment can be downloaded from this [link](#). Please also note that in this assignment we often use wording given in Morrow and co-authors' paper.

Morrow and co-authors bring several arguments to their analysis. They argue that conflict and the anticipation of conflict reduce trade flows between states, because of how economic actors respond to the threat of conflict. Secondly, because of constraints put on the governments which limits their interference in bilateral trade, democracies should trade more than non-democracies. And finally, countries would feel constrained to trade with their military adversaries as the latter would use the added value to increase own military capabilities.

We are going to evaluate several hypotheses based on Morrow et al arguments. Firstly, when political conflict arises between two states, if one of them enjoys a position of economic strength over the other, then it may consider restricting trade to advance its side of the conflict. All else equal, pairs of states with good political relations should have more trade than states with poor political relations. They are less likely to be in conflict in the future, and so the political risk to trade is relatively small. Therefore, here's our first hypothesis:

HYPOTHESIS 1: *States in conflict with each other will have lower levels of trade than states not in conflict. Additionally, the greater the degree of common interests between a pair of states, the greater will be their trade flow*

Table 1: Variable Description

Variable Name	Variable Definition
XIJL	Exports from country i to country j , in constant U.S. dollars
MID	Whether the countries are engaged into a militarized dispute (1-conflict, 0-no conflict)
TAUL	Common interests between the countries (0-no interest, 1-common interests)
DEMDL	How democratic is the pair (0 not democratic, 1-democratic)
BIAL	Bilateral alliance after 1947 (0 no alliance, 1-alliance)
MULTIAL	Multilateral alliance before WWII (0 no alliance, 1-alliance)
GNPIL	Logged gross national product of exporting country
POPIL	Population of exporting country
CGNPJL	Logged gross national product of importing country
POPJL	Population of importing country
DISTANCL	Distance between countries
ALLIAL	Membership of an alliance

It is argued in the literature that nations with similar political systems are more likely to trade more than those with dissimilar systems. Specifically, democracies typically have limited government and provide greater protection for all firms than do other systems. Their visible political-legal systems increase the confidence of firms that their interests will be protected by law, thus reducing the risk and raising trade flows into democracies. Here the authors arrive to their second hypothesis:

HYPOTHESIS 2: *Democratic pairs of countries have greater trade flows than nondemocratic pairs of countries*

In this assignment we are going to check these two assumptions and try to replicate the analysis.

Exploratory Analysis and Data Manipulation

Read the dataset to *R*. Note that each observation in the dataset is one pair of countries participating in the trade dyad. You can see the description of all variables given in Morrow et al in table 1. At the first stage, give a descriptive statistics of these variables. For your information, one would not normally use linear models to predict this type of variable, however, for the sake of simplicity we will be analyzing linear regressions in this assignment.

First, let's explore the nature of trade in the dataset. Make a new data frame which will store the sum of *XIJL* variable by year. You may use *aggregate* function in the following manner:

```
NAME OF YOUR NEW DATA FRAME<- aggregate(VARIABLE TO SUMMARIZE,
by=list(Year=VARIABLE BY WHICH YOU WANT TO SUMMARIZE),
FUN=sum, na.rm=TRUE)
```

Using this new data frame, make a plot which will visualize the amount of international trade by year. Use library *ggplot* and the following code:

```
ggplot(YOUR NEW DATA FRAME, aes(x=VARIABLE MEASURING YEAR,
y=VARIABLE MEASURING SUM OF INTERNATIONAL TRADE, group=1))+
```

```
geom_line()+
labs(title="Volume of exports, 1907-1990",
      x="Year",
      y="Volume of trade")
```

Extra points will be awarded if you further enhance your graph and make it prettier!

When looking at the diagram, you may notice a period of relative decline in trade in the world. What decades are they?

If you have already checked how variables *MID*, *ALLIAL*, *DEMDL*, *BIAL*, and *MULTIAL* look, you may notice that they need to be transformed. For each variable, recode zeros to zero and other values to ones. In short, make them binary. Ones here mean the prevalence of characteristic (e.g. 1 means the prevalence of militarized dispute, or membership of alliances, etc.).

Now let's explore our dependent variable *XIJL* which measures the amount of exports. What is the mean value of export throughout the time period? How would you calculate that?

Let's conduct a simplistic analysis of the first hypothesis, according to which countries engaged in military disputes (*MID*=1) should have lower trade flows than those which are not engaged in the dispute. Using t-test check whether the export values in these two groups differ. Give a short substantial explanation to this pattern.

Our second hypothesis argues that trade flows should be greater in the pairs of democratic countries. Let's conduct a very simplistic analysis of this proposition. Calculate the mean score of export flows for democratic and non-democratic dyads (*DEMDL*=0 and *DEMDL*=1 respectively). How does our proposition hold? Using t-test check whether the difference is statistically significant. Give a short substantial explanation to the pattern.

Confirmatory Analysis and the Hypothesis Testing

Note that we are running only *one* regression model to evaluate our both hypotheses:

$$XIJJL = MIDL + TAUL + DEMDL + MULTIALL + GNPIL + POPIL + CGNPJL + POPJL + DISTANCL$$

Run the model and proceed to checking the hypotheses. In the first hypothesis, we predict whether the volume of exports in the trade dyad is affected by the fact whether the countries have militarized dispute. Additionally, we also argue that the greater the degree of common interests between a pair of states, the greater will be their trade flow. Look at the effect of variables *MIDL* and *TAUL* on the dependent variable. Can we argue that the first hypothesis is correct? Why?

The second hypothesis referred to the effect of democracy on the trade flows. Examine the effect of *DEMDL* on the dependent variable. What kind of effect can be detected in this case? Does it support or reject our hypothesis? Give a substantial explanation.

Submission

Zip the *whole folder* for the final. Name the file according to the following format: *surname_final.zip*. Upload the file to Dropbox which could be accessed through [this link](#) or by typing the following link to your browser: <https://goo.gl/1Dvysh>

Please submit your assignment by **23:59 Sunday, February 4th, 2018** only via the link indicated above.

We wish you good luck!
Dato & Rati