

Natural Experiments

Regression discontinuity and
Instrumental Variables



Final Exam

- Friday, December 12, 9:00AM-11:00AM
- Format
 - 20 multiple choice
 - Mini-Essay: Research Proposal
- Resources
 - Practice Exam
 - Office Hours (Prof, TAs,
 - Review session (with me): Dec 11, 3pm

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Bertoli, 2017

Read the following portion of this article:

- Abstract (p.835)
- The following portion of the section titled “Design” (pp.840-841)
 - The first paragraph starting with “I estimate the impact of Word Cup participation on state aggression....”
 - The subsection titled “Constructing the Treatment and Control Groups.”
 - There are seven paragraphs in this subsection.
- The subsection titled “Measuring Aggression.”
 - There is only one paragraph in this subsection.
- **Get pdf with highlights:**
jacobawinter.github.io/files/bertoli2017.pdf



Regression discontinuity: Running Variable

- What is the theory?
 - What is the dependent variable?
 - What is the independent variable?
 - What is the unit of analysis/scope?
-
- How do we find an “as-if random” change in it?
 - What is the treatment? What is the control group?



Regression Discontinuity

- The basic premise of RDD is that the treatment — the surge of nationalism in this example — is as-if randomly assigned around the threshold of the running variable, or alternatively, those who fall right below the threshold and those who are right above the threshold are similar in all relevant ways. Do you think this assumption holds for the author's running variable identified above?

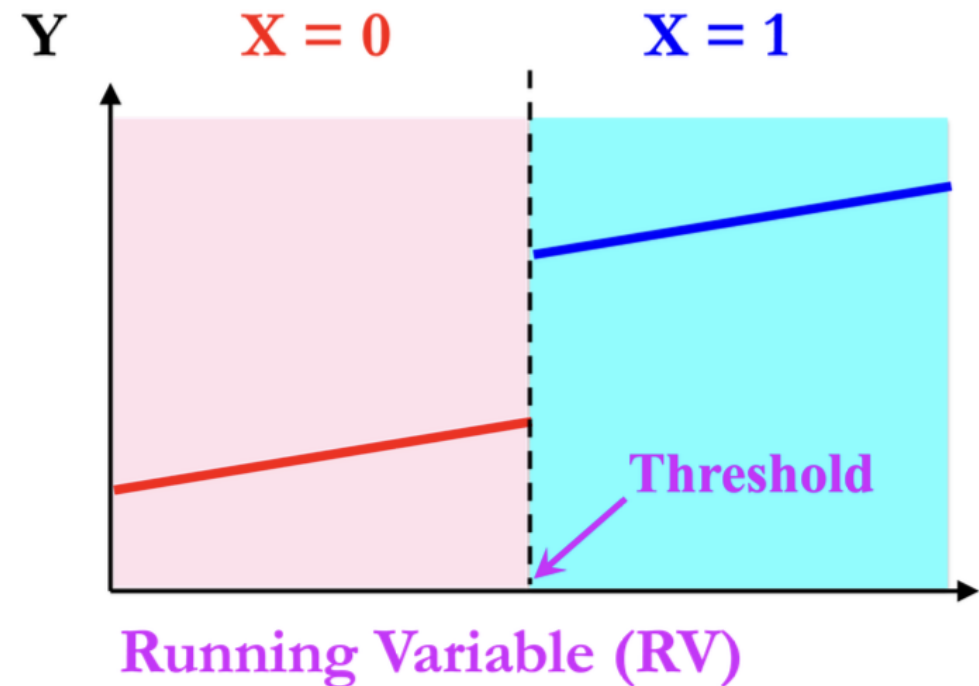
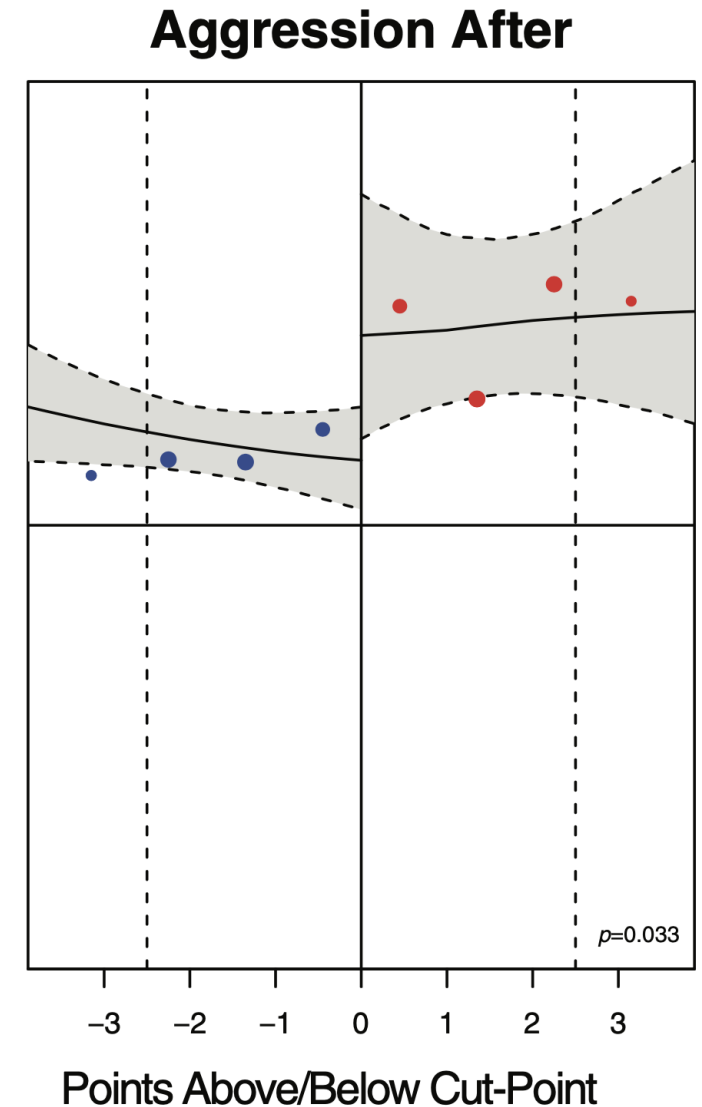


Table 3. Countries That Barely Made and Barely Missed the World Cup

<i>Qualifier</i>	<i>Non-Qualifier</i>	<i>Year</i>	<i>Qualifier</i>	<i>Non-Qualifier</i>	<i>Year</i>	<i>Qualifier</i>	<i>Non-Qualifier</i>	<i>Year</i>
Yugoslavia	Romania	1958	Yugoslavia	Spain	1974	Czechoslovakia	Portugal	1990
France	Belgium	1958	East Germany	Romania	1974	United States	Trinidad	1990
Austria	Netherlands	1958	Poland	Britain	1974	UAE	Qatar	1990
Soviet Union	Poland	1958	Uruguay	Colombia	1974	Ireland	Denmark	1994
Hungary	Bulgaria	1958	Argentina	Paraguay	1974	Switzerland	Portugal	1994
Britain	Ireland	1958	Haiti	Trinidad	1974	Bulgaria	France	1994
Paraguay	Uruguay	1958	Italy	Britain	1978	Netherlands	Britain	1994
Argentina	Bolivia	1958	Austria	East Germany	1978	Bolivia	Uruguay	1994
Bulgaria	France	1962	France	Bulgaria	1978	Cameroon	Zimbabwe	1994
Switzerland	Sweden	1962	Poland	Portugal	1978	Nigeria	Ivory Coast	1994
Portugal	Czechoslovakia	1966	Sweden	Norway	1978	Morocco	Zambia	1994
Bulgaria	Belgium	1966	Spain	Romania	1978	South Korea	Japan	1994
West Germany	Sweden	1966	Tunisia	Egypt	1978	Nigeria	Guinea	1998
Chile	Ecuador	1966	France	Ireland	1982	Jamaica	Costa Rica	1998
Czechoslovakia	Hungary	1970	Austria	Bulgaria	1982	Chile	Peru	1998
Romania	Greece	1970	Britain	Romania	1982	Senegal	Morocco	2002
Bulgaria	Poland	1970	Peru	Uruguay	1982	Nigeria	Liberia	2002
Italy	East Germany	1970	El Salvador	Mexico	1982	Ivory Coast	Cameroon	2006
Sweden	France	1970	New Zealand	China	1982	Tunisia	Morocco	2006
Belgium	Yugoslavia	1970	Portugal	Sweden	1986	Togo	Senegal	2006
Peru	Bolivia	1970	Soviet Union	Switzerland	1986	Angola	Nigeria	2006
Morocco	Nigeria	1970	Bulgaria	East Germany	1986	Algeria	Egypt	2010
Sweden	Austria	1974	Romania	Denmark	1990	Nigeria	Tunisia	2010
Netherlands	Belgium	1974	Austria	Turkey	1990			

- **Substantively interpret the result from this figure. Focus on the solid lines in your interpretation.**
- As the author's discussion on the result is too technical, focus the middle panel from Figure 3 (p.845). In this figure, the outcome variable (Y) — the number of MIDs initiated by a country — is on the vertical axis, and the running variable — the margin of (dis)qualification — is on the horizontal axis. The solid lines are the estimates of the conditional mean of Y, or the number of MIDs initiated, for each value of the running variable for both the treatment and control groups.



Instrumental Variable (Blair et al, 2023)

“We complement our fixed effects estimators with two instrumental variables strategies designed to address the potential endogeneity of UN mandates and activities to conditions in the field. Both strategies exploit well documented patterns of mimicry and path dependence within the UN system. The UN Security Council has long adopted a “copy-and-paste,” “off-the-shelf” approach to drafting mandates (Bellamy and Hunt 2019). This approach is apparent in the language of mandates themselves, many of which prescribe virtually identical tasks for wildly disparate settings (Howard 2019, 9). Empirically, once the Security Council decides to include democracy promotion in the mandate of one mission, it becomes more likely to include democracy promotion in the mandates of other missions as well, regardless of conditions on the ground —indeed, even when those conditions militate against success (Autesserre 2009, 252). In a similar way, once one UN mission decides to undertake democracy promotion activities in the field, other missions become more likely to do so as well.

Our two instrumental variables strategies exploit these dynamics. Mimicry and path dependence ensure that the probability that any given UN mission is mandated to pursue democracy promotion in a given year depends in part on the number of other missions that are mandated to do the same. For a given mission i in year t , we can therefore use the proportion of missions other than i with democracy promotion mandates as an instrument for mission i ’s democracy promotion mandate in that same year.” (pp.1317-18)

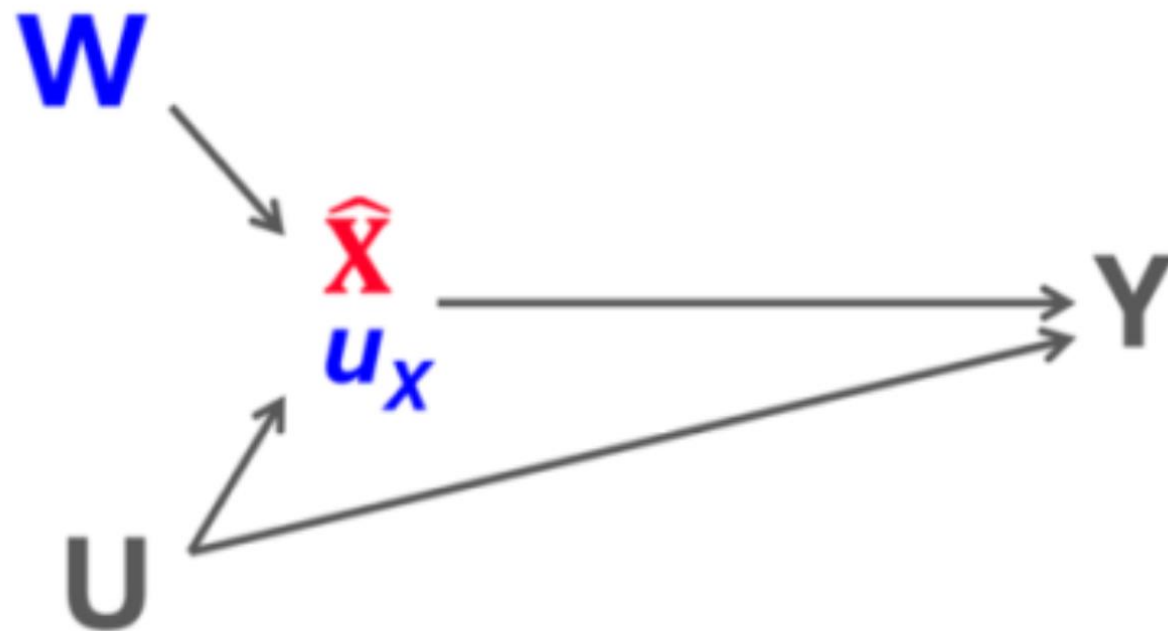
How Does 2SLS Work?: 1st Stage regression

- Instrumental variable decomposes X into two parts:

\hat{X} = The part of X influenced by W

u_x = The part of X NOT influenced by W

Instrumental Variable



Unobservable Confounding Variable

Instrumental Variable (Blair et al, p 1317-18)

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Instrumental Variable

- What is the proposed instrumental variable for the dichotomous Democracy Mandate variable?
- Why can this variable be considered as an instrumental variable? What is a characteristic of an instrumental variable. Why does this variable satisfy that characteristic?

Results

- What was the effect of mandate on democracy last week?
- What about here?
- How should we interpret this coefficient? Is there any concern?

TABLE 3. Electoral Democracy and UN Democracy Mandates Using Instrumental Variables

	Electoral democracy (V-Dem)
	(1)
Democracy mandate	1.317*** [0.413]
Observations	834
Controls	Yes
Country FE	Yes
Years of peace	N/A
IV	% democracy mandates
First stage F	15.738

Note: Coefficients from two-stage least squares regressions with country fixed effects. We report results for the full sample only. Instrument is the proportion of other UN missions with democracy mandates. We control for population, GDP per capita, foreign aid, literacy, fuel exports, and the number of refugees and IDPs living in the host country. Standard errors are in brackets; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.