




2016

# Before And After The Great Contentions: Explaining The Diffusion Of Crises With Machine Learning And Archives

Doga Kerestecioglu

*University of Pennsylvania*, [doga@sas.upenn.edu](mailto:doga@sas.upenn.edu)

Follow this and additional works at: <https://repository.upenn.edu/edissertations>

 Part of the [Business Administration, Management, and Operations Commons](#), [Management Sciences and Quantitative Methods Commons](#), [Political Science Commons](#), and the [Sociology Commons](#)

---

## Recommended Citation

Kerestecioglu, Doga, "Before And After The Great Contentions: Explaining The Diffusion Of Crises With Machine Learning And Archives" (2016). *Publicly Accessible Penn Dissertations*. 2384.

<https://repository.upenn.edu/edissertations/2384>

This paper is posted at ScholarlyCommons. <https://repository.upenn.edu/edissertations/2384>

For more information, please contact [repository@pobox.upenn.edu](mailto:repository@pobox.upenn.edu).

---

# Before And After The Great Contentions: Explaining The Diffusion Of Crises With Machine Learning And Archives

## **Abstract**

This dissertation presents three articles that study crises from a sociological perspective. The first two articles studies the effects of global trade networks on financial and political crises with the implantation of big data and supervised machine learning methods on a dataset for a sample of 70 countries for the years between 1962 and 2009. Using the institutional and network theories, the first article finds support that normative pressures lead countries to commit sovereign defaults. Countries are more likely to commit sovereign default if other structurally equivalent or role equivalent countries did so in the previous year. The second article finds that role equivalent and structurally equivalent countries occupying a similar position in the global trade networks are affected similarly by revolutionary waves and experience revolutionary situations simultaneously. The third article argues that state secularization is a process involving mobilization, political tactics, and resources as opposing forces struggle over three major institutional dimensions. Examining the history of state secularization in Turkey, Mexico, and France in the aftermath of revolutions, this article demonstrates that the degree of secularization is determined by political contention. (1) The revolutionary state attempts to seize church property, which opens the way for further struggles. (2) If the church administers law through its own courts, or has an autonomous code of law, revolutionary states struggle to substitute secular courts and state-enacted law. (3) Churches often control education; a revolutionary state eventually attempts to take control of education when it mobilizes sufficient resources for the required state capacity. Taking all these dimensions together, the struggle over secularization has many partial outcomes and stopping places, and thus mixed patterns are much more typical than an ideal type transition to pure secularist modernity.

## **Degree Type**

Dissertation

## **Degree Name**

Doctor of Philosophy (PhD)

## **Graduate Group**

Sociology

## **First Advisor**

Mauro F. Guillen

## **Second Advisor**

Randall Collins

## **Keywords**

Crises, Globalization, Religion, Revolutions, Secularism, Trade Networks

---

**Subject Categories**

Business Administration, Management, and Operations | Management Sciences and Quantitative Methods |  
Political Science | Sociology

BEFORE AND AFTER THE GREAT CONTENTIONS: EXPLAINING THE  
DIFFUSION OF CRISES WITH MACHINE LEARNING AND ARCHIVES

Doğa Kerestecioğlu

A DISSERTATION

in

Sociology

Presented to the Faculties of the University of Pennsylvania

in

Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

2016

Supervisor of Dissertation

Co-Supervisor of Dissertation

---

Mauro F. Guillén

---

Randall Collins

Dr. Felix Zandman Professor  
of International Management

Dorothy Swaine Thomas  
Professor of Sociology

Graduate Group Chairperson

---

David Grazian, Associate Professor of Sociology

Dissertation Committee

Mauro F. Guillén

Dr. Felix Zandman Professor of International Management

Randall Collins

Dorothy Swaine Thomas Professor of Sociology

Guobin Yang

Associate Professor of Sociology and Communication

BEFORE AND AFTER THE GREAT CONTENTIONS: EXPLAINING THE DIFFUSION OF  
CRISES WITH MACHINE LEARNING AND ARCHIVES

COPYRIGHT

2016

Doğa Kerestecioğlu

This work is licensed under the

Creative Commons Attribution-

NonCommercial-ShareAlike 3.0

License

To view a copy of this license, visit

<https://creativecommons.org/licenses/by-nc-sa/3.0/us/>

## DEDICATION

To Sabiha, Dürdane, Zeki, and Adem Vasfi,

Whose memories and stories started this research years before I was aware;

and to Esen,

who's been there from the beginning to the end (even though partners of  
graduate students never get a user's manual).

## ACKNOWLEDGMENTS

First and foremost I would like to thank Randall Collins and Mauro F. Guillén for advising me and guiding me throughout my graduate school years. When I decided to join Penn Sociology, the primary factor driving my decision was the opportunity to learn from these two great scholars and I am grateful that they accepted me as a student and mentored me through my intellectual and professional development. Mauro and Randy have been a great team of advisors for the last seven years for me.

Over the years, Randy constantly challenged me about my theories and gave me serious questions regarding the big picture. Most of the times, his elegantly-stated and simple-looking questions took me months to come up with satisfactory answers. I hope that they are convincing for him as well. He also gave me highly detailed comments not only on my ideas, but also on my writing style and even grammar. I was also lucky enough to learn about his working routine and how he produces his research. I tried to adopt it as best as I could.

Mauro helped me stay on the ball. Over the years, I feel like I ran many sprints with him. As any PhD candidate would know, the road to PhD is a very long journey and most times progress is hard to measure and this leads to motivational problems from time to time. At those times when I wasn't sure what to do next, I was lucky to have Mauro and his numerous short but precise emails

to put me back on track. Few people I know in life responds to their emails as fast as Mauro and I can't stress enough how much I appreciated that—especially as an international student, who needed some rapid bureaucratic action more than once over the years— but I'm sure most others who have been through a PhD program can understand. He also pushed me into the direction, where I started learning what it means to program for real, which turned out to be one of the greatest skills I attained in graduate school.

I came to Penn with some econometrics background, but any real expertise I have in Statistics, I owe to Paul Allison. I made sure to at least audit every class he taught at Penn and was lucky enough to work as a TA for him, which was just as important as a learning exercise. He gave me valuable advice for the earlier drafts of the first article, but it would not be stretching the truth to say that the quantitative analyses in this dissertation would not be possible without what I learned from Paul.

Guobin Yang was happy to join my second comprehensive exam committee on a relatively short notice soon after he joined Penn Sociology. He's been very encouraging in furthering my research ever since. I especially appreciate his candid comments and advice for me after my first adventure<sup>1</sup> into academic publishing.

Maya Charrad provided valuable advice for the research that resulted in the third article. She has also been very helpful in my professionalization, guiding



me for both improving ways to market my articles to academic journals and navigating my way around the academic job market.

Our managers, coordinators and administrators at Penn Sociology, Aline Rowens, Audra Rodgers, Marcus T. Wright, and Kathleen Paone have been extremely helpful throughout the years. Penn Sociology could not exist without them and by corollary, neither could this dissertation. Especially Aline and Audra have helped me in countless ways. They helped me secure funding so I could conduct the research, get the necessary bureaucratic documents so I could continue to stay as a legal non-resident alien in this country as an international student, and helped me stay focused on being a graduate fellow.

Emily Hannum has been an amazing Director of Graduate Students at Penn Sociology, but even after she moved to other positions, she always provided the moral support and professional guidance, which proved to be extremely valuable once I became ABD.

Simone Polillo shared his code with me and when he did I had no idea that it was the beginning of a dive through a rabbit hole that was deeper than I could ever imagine. His dozens of lines of unfinished STATA code is where I started teaching myself loops and small do files that finally led to complicated machine learning algorithms in Python years later. In a parallel universe without his code, I might have tried to replicate the earlier preferred method of previous students

at Penn that relied on Excel and even imagining that gives me nightmares so I'm really happy that Simone gave me that code in this particular universe.

Witold Hennisz, Joe Cohen, Sadia Saeed, Charlie Kurzman, Damon Mayrl, Neil Gross, Ann Orloff, Paul Almeida, and Michael McQuarrie have either made valuable comments to various early drafts of the articles in this dissertation or supported me by discussing my ideas and suggesting improvements.

Without my friends at Penn Sociology it would be impossible to get here. As social networks appear in the wild, some ties are stronger than others and the stronger ties are reflected in my work in one way or another. In my specific social network at Penn, Alex, Valerio, and Sarah have been the strongest ties throughout the years. Although it is hard to pinpoint how they exactly should be acknowledged in regards to this dissertation, I know they all gave me lots of ideas and helped me improve my research for many years.

Over and over, Alexander Jerneck told me to write a "function" for years. He didn't really explain what a function was and I wasn't sure what he meant, but he kept telling me. I also constantly heard of these weird sounding phrases and words like machine learning, topic modeling, and Python -- also, this new thing called *Data Science*. I finally gave up and spared some time to really look into those things. I owe Alex so much! I am so happy that I got the chance to share the same department with him; I learned a great deal from him. His help, of course, was not limited to just programming advice. His friendship and experience

helped me navigate the graduate school. He happened to be my trail blazer and all I had to do was follow the path. He also kept me company through many ASAs, helped me make beer, and drink beer; all required things for a good dissertation.

Valerio Baćak showed me how graduate school should be done, how a PhD Candidate becomes a stellar scholar, and through his example I could see what I should do. He gave me ideas and good advice (that I didn't always follow, but should have), commented on my work and always stayed humble even though he did not need to.

Sarah Spell has provided constant moral support, read drafts, and gave me comments I did not always want, but definitely needed. But more importantly, from her I learned what true conviction is. Her stubborn pursuit to follow what she believes in even though it might not be popular is an exemplary trait of a true PhD. She provided a great lesson for me especially because we did not always see eye to eye. I didn't always think or realize at the time, but she was right in her pursuits. Seeing her confidence in herself helped me be more confident in myself, as we don't always need to follow popular ideas or paths.

The program directors and fellows at 2016B Insight Data Science program taught me principles of Agile, most importantly how to pivot and the concept of MVP. This resulted in me learning how to let go. They also told me how to get to

that final required 1% once you have done 99% of the work. I used what I learned there to finish the last 1% of my PhD education.

Robin Gauthier and Nicole Denier have been strong partners in [committing] crime (that is ‘committing sociology’) since my years in McGill. I think they helped me keep sane through the craziest turns of grad school through being outsider insiders. I am grateful to Robin for always keeping me grounded and thankful to Nicole for visiting me in Philadelphia for a day and especially screaming at me at Sam’s Morning Glory Diner.

On the subject of settings, I would like to thank the countless metal bands that came to Philadelphia (especially In Flames and Katatonia) for concerts and released albums (especially Heaven Shall Burn and Cult of Luna) during the last seven years. Their music and live shows gave me the much needed emotional energy to get through the years. I would like to thank all the coffee shops of Fishtown and their baristas (especially those in Steap and Grind and La Colombe Fishtown). They have provided amazing places for me to work. Most of these articles were written in these places, where I made friends and found out that what I did was interesting to people outside of a closed academic circle. This gave me the much required emotional energy to continue writing.

I also cannot thank Audrey and Arnaud Libois enough for always showing interest in my work and respecting me for what I do. I am lucky to have them as

friends in the ‘real world.’ They were rare in actually caring and wanting to discuss what I do and I always appreciated it.

Similarly Erdem Çapar was always happy to give me his insights at short notice via various forms of written communication whenever I felt like bouncing off ideas with him. Some of his work experiences in Turkey has been highly insightful for me in the early stages of theory building regarding the formation of institutional processes.

I am grateful to Dilber and Ismail Sunnetçioğlu for opening their home and letting me stay with them during part of my archival research in Istanbul. They have also been very supportive through the years of my PhD across the ocean, which is much appreciated.

I am thankful to Buket and Murat Pençe for hosting me for the other part of my archival research in Istanbul and for accepting me into their family, giving me amazing moral support and trusting me with their daughter, without whom this dissertation would prove to be much more difficult than it already is, but I’ll get to her later.

My grandparents Vasfi and Sabiha Kerestecioglu and the memories they shared with me have inspired the research for the third article. They were the children of the Republic and among the first teachers that came out of it. Unfortunately, my grandfather Vasfi passed away about 5 months before the

dissertation was completed and my grandmother Sabiha passed away days after the PhD defense so neither got to see the final product that was dedicated to them and they can't be acknowledged enough for their enormous influence in making me who I am and this dissertation what it is.

My immediate family has been very supportive throughout the years. My sister, Damla Kerestecioğlu, has always been very understanding. She cheered me up when I needed even though she had to do it on Skype most of the times. I don't think I'll ever appreciate enough what it meant for my parents, Ayşe and Merih Kerestecioğlu, to send me across the ocean and support me in what I've been doing ever since. They also always believed in me and gave me mental support when I needed it. Especially my mother, who always told me it was going to be better even when there was not really any good signs for it. She was right; things ended well. Even though I rarely had to rely on it, they also always provided me with the financial security I needed. The fact that I had a safety net that I could rely on helped me avoid it entirely and it is an amazing luxury for a PhD student in social sciences.

Finally, Esen Pence deserves the most credit for all that is good in this research. She read countless drafts, ran the required errands when I was indisposed to do so, double checked everything for me, suffered through the graduate school with me even though she wasn't getting a degree out of it. She helped me get through the practical work and she was also there for me as a

completely open and very intelligent person to discuss any ideas I had in mind. She shared most of the burden with me even though I didn't acknowledge it in every moment. She couldn't be acknowledged enough here even if I wrote about it for the entire length of this dissertation.

As it is traditional to say, all the help I received from all of these amazing people are the good things about this research. Any faults or mistakes are solely mine.

Doğa Kerestecioglu – Fishtown, Philadelphia, PA, October 2016

---

<sup>1</sup> And of course 'adventure' is a euphemism for a rejection from a journal.

## ABSTRACT

### BEFORE AND AFTER THE GREAT CONTENTIONS: EXPLAINING THE DIFFUSION OF CRISES WITH MACHINE LEARNING AND ARCHIVES

Doğa Kerestecioğlu

Mauro F. Guillén

This dissertation presents three articles that study crises from a sociological perspective. The first two articles studies the effects of global trade networks on financial and political crises with the implantation of big data and supervised machine learning methods on a dataset for a sample of 70 countries for the years between 1962 and 2009. Using the institutional and network theories, the first article finds support that normative pressures lead countries to commit sovereign defaults. Countries are more likely to commit sovereign default if other structurally equivalent or role equivalent countries did so in the previous year. The second article finds that role equivalent and structurally equivalent countries occupying a similar position in the global trade networks are affected similarly by revolutionary waves and experience revolutionary situations simultaneously. The third article argues that state secularization is a process involving mobilization, political tactics, and resources as opposing forces struggle over three major institutional dimensions. Examining the history of state



secularization in Turkey, Mexico, and France in the aftermath of revolutions, this article demonstrates that the degree of secularization is determined by political contention. (1) The revolutionary state attempts to seize church property, which opens the way for further struggles. (2) If the church administers law through its own courts, or has an autonomous code of law, revolutionary states struggle to substitute secular courts and state-enacted law. (3) Churches often control education; a revolutionary state eventually attempts to take control of education when it mobilizes sufficient resources for the required state capacity. Taking all these dimensions together, the struggle over secularization has many partial outcomes and stopping places, and thus mixed patterns are much more typical than an ideal type transition to pure secularist modernity.

## TABLE OF CONTENTS

<b>DEDICATION</b>	<b>iii</b>
<b>ACKNOWLEDGMENTS</b>	<b>iv</b>
<b>ABSTRACT</b>	<b>xiii</b>
<b>LIST OF TABLES</b>	<b>xviii</b>
<b>LIST OF FIGURES</b>	<b>xix</b>
<b>PREFACE</b>	<b>xx</b>
<b>1. Crisis and Sociology</b>	<b>xx</b>
<b>2. Global Diffusion of Crises</b>	<b>xxii</b>
<b>3. Why Big Data?</b>	<b>xxvi</b>
<b>4. The Aftermath of Revolutions</b>	<b>xxix</b>
<b>5. Dissertation Plan</b>	<b>xxx</b>
<b>6. References</b>	<b>xxxii</b>
 <b>ARTICLE 1: EXPLANING FINANCIAL CRISES THROUGH GLOBAL TRADE</b>	
<b>NETWORKS: THE INTERNATIONAL STRUCTURE OF SOVEREIGN DEBT</b>	
<b>DEFAULTS AND SOVEREIGN STATES' WILLINGNESS TO PAY</b>	<b>1</b>
<b>1. Abstract</b>	<b>1</b>
<b>2. Introduction</b>	<b>2</b>
<b>3. The Ambiguities of Sovereign Defaults in A Global Economy</b>	<b>7</b>

4. Data	16
5. Dependent Variable	16
6. Explanatory Variables	17
7. Control Variables	21
8. Method	21
9. Results	24
10. Conclusion	30
11. References	33

**ARTICLE 2: REVOLUTIONARY WAVES AND INTERNATIONAL STRAINS: THE  
EFFECTS OF GLOBAL TRADE NETWORKS ON REVOLUTIONARY SITUATIONS\_38**

1. Abstract	38
2. Introduction	39
3. Interstate Relationships and Revolutions	43
4. Data	51
5. Dependent Variable	53
6. Explanatory Variable	56
7. Other Variables	62
8. Method	63
9. Results	65
10. Discussion and Conclusion	71
11. References	75

<b>ARTICLE 3: a theory of state secularization through post-revolutionary</b>	
<b>political contention</b>	<b>78</b>
<b>1. Abstract</b>	<b>78</b>
<b>2. Introduction</b>	<b>79</b>
<b>3. The Ambiguity of Religious Secularization</b>	<b>81</b>
<b>4. “Unsettled lives” and Political Opportunities following Revolutions</b>	<b>86</b>
<b>5. Secularizing Revolutions in Turkey, Mexico, and France</b>	<b>90</b>
<b>6. Political Struggle over Church Property</b>	<b>94</b>
<b>7. Political Struggle over Religious Law and Civic Rights</b>	<b>99</b>
<b>8. Political Struggle over Religious Education</b>	<b>106</b>
<b>9. Conclusion: The Sequence of Secularizing Institutional Changes</b>	<b>110</b>
<b>10. REFERENCES</b>	<b>115</b>
<b>CONCLUSION</b>	<b>119</b>

## LIST OF TABLES

<i>Table I - Sample Descriptive Statistics</i> _____	21
<i>Table II - List of Countries in the Sample</i> _____	23
<i>Table III - Correlation Matrix of the Variables</i> _____	25
<i>Table IV - Coefficients as Odds Ratios from Random-Effects Logistic Regression Models for Sovereign External Defaults as the Dependent Variable</i> _____	26
<i>Table V - Coefficients as Odds Ratios from Random Effects Logistic Regression Models for Sovereign External Defatuls and "Near" Defaults as the Dependent Variable</i> _____	27
<i>Table VI - Coefficients as Odds Ratios from Fixed-Effects Logistic Regression Models for Sovereign External Defaults as the Dependent Variable</i> _____	27
<i>Table VII - Coefficients as Odds Ratios from Fixed Effects Logistic Regression Models for Sovereign External Defaults and "Near" Defaults</i> _____	28
<i>Table VIII - Descriptive Statistics</i> _____	63
<i>Table IX - Countries in the Sample</i> _____	66
<i>Table X - Pairwise Correlations</i> _____	66
<i>Table XI - Panel Random Effects Logistic Regression Models for Revolutionary Situations</i> _____	68
<i>Table XII - Panel Fixed Effects Logistic Regression Models for Revolutionary Situations</i> _____	68
<i>Table XIII - Three Cases of State Secularization</i> _____	89

## LIST OF FIGURES

<i>Figure I - External Defaults Since 1800</i>	6
<i>Figure II - Revoutionary Situations Since 1963</i>	55

## PREFACE

### **1. Crisis and Sociology**

This dissertation presents three articles that focus on understudied issues regarding crises in the sociological literature. Crises by definition are rare, but they are key and frequent events that punctuate processes of state building, episodes of international conflict, and other macro trends. Sociologists have been studying crises in one form or another ever since the inception of the field. In its earliest days a specific form of crises, revolution, has received close attention. This was mostly due to the fact that when sociology was coined as a social science, it happened in a period of history that was heavily affected by the French Revolution and its aftermath. The dominant paradigm of the Enlightenment at the time had a path-dependent effect on how revolutions and crises in sociology came to be studied over the last century or so.

Affected by this positivist paradigm of their period, theories presented by Marx and Engels assumed that the existence of natural laws applied to not only hard science such as physics, chemistry, and biology, but also for the social sciences. This supposition lead them to argue that revolutions play a significant role in the societies as marking the point in time when the societies move from one specific stage to another.

Despite the changing paradigms and dominant theories in sociology over the centuries, this special status conferred upon revolutions has persisted mostly unchanged. Revolution has been one of the most common topics in the field of historical and comparative sociology, which consistently built upon a coherent literature on revolutions. The evolution of theories in the field over decades has been well documented (Goldstone 1980, Goodwin 1994).

An interesting and striking fact about these theories is that until recently revolutions were perceived as special and significant, unique events. While recent generations of revolution theories allow for discussion over types of revolutions and whether certain events qualify as a revolution or not, the general assumption in the field is that revolutions are a specific type of social phenomenon that has its own unique causes and dynamics. This is mainly due to the path-dependent evolution of the theories starting from the Marxian notion that revolutions are supposed to have a transformational effect, progressing societies from a certain stage to the next one.

As such, historically, most attention has been paid to causes and the periods leading to the revolutions, rather than its aftermath. This also led to successful revolutions being used as a unit of analysis, instead of crises, which covers a greater spectrum of events under the definition of the term<sup>1</sup>. This trend was recently identified by both in the subfield of revolutions and in other related subfields that deal with different types of contention in societies. There have been



calls for focusing research on the aftermaths of revolutions (Goldstone 2001). There have also been calls for studying revolutions along with other dynamics of contention such as conflict, social movements, etc. with the notion that all these varying types of contention might be affected by the same dynamics (McAdam, Tarrow, and Tilly 2001).

This dissertation recognizes the dearth in research pointed out by these calls and presents three articles that inform on these issues by focusing on the conditions leading to crises, and the patterns that happen in their aftermath. By using quantitative methods such as machine learning and statistical modeling, the first two articles focus on two different forms of crises and study how they diffuse globally. These methods allow for the study of a larger number of cases and observations from big data to scrutinize crises as the dependent variable. Studying crises, in place of revolutions, allow for learning from not only a limited number of successful cases matched to similar failed ones, but from a comprehensive systematic comparison of all potential cases. The third article presents a study on the aftermath of revolutions, the severest form of crises, to identify patterns that lead to stability.

## **2. Global Diffusion of Crises**

The commonly preferred methodology in theories of revolution is comparative historical methods that favor in-depth case studies and qualitative methods that are occasionally also supported by demographic or statistical

models. These approaches allow the researchers to gather highly detailed information regarding the processes that underlie revolutions and compare them to other potential cases that had different outcomes. While these approaches are extremely useful for explaining the causal mechanisms that lead to revolutions, the number of cases they can study are limited. In practice, researchers are required to study thousands of historical documents in multiple languages and analyze them in depth before they can implement a systematic comparison to discover these patterns. These methods are highly fitting for the original questions of the literature that are interested in studying specific great revolutions in the history. Skocpol (1979)'s classic work studying the social revolutions in France, Russia, and China is a typical example of this, as the author's main interest is explaining *social revolutions* and the author finds the three cases to be the most fitting examples of these phenomena in history.

When the goal is to only explain a handful of cases in history, historical and comparative methods are the most fitting ones; however, when the subject is approached from a dynamics of contention perspective, where the goal is to discover common dynamics that underlie various types of conflict, the limited number of cases allowed by the qualitative methods become less satisfactory. The number of contentions that take place decreases as the severity of the contention increases. Contentious cases with lower severity, such as demonstrations or riots, take place much more commonly than high severity cases, like revolutions or

rebellions. As there are thousands of these low severity cases compared to the high severity ones, studying them using historical and comparative methods is problematic during the process of case selection. While selecting ideal type cases for revolutions might be possible due to their rarity, it is harder to select an ideal type case that is exemplary of all demonstrations or riots. It is even more difficult to select failed cases to which to compare.

For example, a common finding in theories of revolution is that international strains play a significant role in leading to state breakdowns. Traditionally these strains are studied from a bilateral perspective and researchers mostly pay attention to the greatest of these strains such as international warfare. Yet, international strains are not only limited international warfare, nor do these strains solely result from relationships in which the focal country engages.

To remedy this problem, this article opts for using big data and supervised and unsupervised machine learning techniques to account for the great number of variables potentially having effects. If the dynamics of contention are similar in cases of varying severity, one should observe similar conditions affecting the outcomes. In other words, different types of contention should be affected by similar variables. Two of the articles presented in this dissertation focuses on two different but highly severe types of crises: external sovereign defaults and revolutionary situations.

External sovereign defaults, as frequently evidenced in literature, is closely related to the willingness of the states to pay their debt and happens when they are no longer willing to honor their previous agreements. This key concept of willingness to pay, which determines whether states commit an external sovereign default or not, qualifies sovereign defaults as a case of contention. The parties involved in the crises, debtor country and lenders, engage in political contention over the terms of a potential default or restructuring of the debt. Meanwhile, the debtor country risking bankruptcy also faces political contention locally with its subjects, who will be affected greatly by the outcome. As such, economic crises are neither solely economic nor financial events. Instead, they should be studied as contentious events that are affected by similar dynamics as other types of contentious events.

Revolutionary situations, similar to successful revolutions, are contentious events with the highest severity. There will be special conditions for when these revolutionary situations will end up as successful cases, which are studied in depth by the existing literature, but there are fewer studies that try to discover common strains that lead to all potential revolutionary situations. If the school of thought introduced by dynamics of contention is valid, then one should expect similar dynamics to affect both successful and failed cases of revolutions, regardless of their outcome.

A systematic comparison of dynamics that has a significant effect on both sovereign defaults and revolutionary situations is not immediately apparent or intuitive. This is, where recent technological developments in data collection and analysis come to aid. This dissertation favors the use of graph theory, methods developed by social networks theory, and big data to develop a comprehensive study that discovers the common variables that serve as significant dynamics of contention.

An in-depth review of the existing literature focusing on these two different types of contention reveals that there is ample evidence that patterns of trade have a significant role. Both articles presented in this dissertation use big data, methods suggested by graph theory, and social networks analysis to build measures that can test the effects of trade ties on these crises. The results in both articles demonstrate that similar dynamics of trade play a significant role in leading to the two different types of crises and leads credence to the approach suggested by dynamics of contention.

### **3. Why Big Data?**

Advances in technology and innovations in data collection and storage have lead to an immense amount of data accumulation that did not exist in prior stages of human history. In our present day, more data is available to researchers than there ever was. As of the writing date of this dissertation, there is an apprehension towards big data in the field of sociology<sup>2</sup>; however, as evidenced

by the articles in this dissertation with a solid theoretical foundation, big data can be a powerful tool in sociological research.

As sociologists, for decades we have focused on the motivations and actions of individuals. Big data—whether it is provided through technological companies such as Twitter or Facebook, or international organizations such as United Nations—and advanced computers allow researchers to study millions of observations at once and control for all the variables that might be affecting a phenomenon. One big advantage of the existing big data that is presently available to researchers is the fact that it reports on the actions that individuals have taken, instead of motivations that they claim. Data coming from a tweet, an individual posts on the internet, or trade data reported by United Nations is not an opinion claimed or a memory recalled, but actual action that was carried out by the subject in study. This presents itself as a great strength over survey results, where the researchers have to deal with various problems of recall and cognition that lead to reliability and validity errors.

The biggest problem that arrives with big data is the sheer size of the data that the researcher has to deal with. Social sciences and their quantitative methods have developed over the years to deal with the scarcity of data and dealing with small datasets. Once the researchers no longer deal with small samples of larger populations, the p-values that they tend to rely on and accept become less meaningful. Mathematically, as the sizes of the samples increase, the

p-values decrease. The researchers need to be aware of this fact and not simply rely on small values derived from millions of observations; however, this should not mean that they should simply ignore the new resources available to them.

The articles in this dissertation use ensemble methods to deal with this problem. Motivated by the literature, I collected highly granular data on the trade behavior for a sample of 70 countries. Based on data that was reported by United Nations on types of products countries have imported and exported, I have gathered data on approximately 30 million<sup>3</sup> observations over 47 years. I also gathered data on bilateral trade between countries as reported by the Correlates of War Project.

While it is not possible to implement a systematic comparison of so many observations using historical and comparative methods nor is it reliable to conduct causal inference using statistical methods over such a large amount of observations, I have used methods derived from graph theory and social networks methods to implement dimensionality reduction. To put things into perspective in relation to the problem of limited number of cases a researcher can systematically study when using qualitative methods, the number of bilateral trade relationships between the countries reported for my sample between the years 1962 and 2009 is 108,590. It is not humanly possible to keep track of so many relationships from a qualitative perspective.

The methods derived from graph theory and social networks analysis allowed me to make systematic analyses of all of these relationships along with accounting for other variables. I came up with measures that consider how the position of one country has changed in comparison to others in the world society across years when these millions of relationships across the world were held into account. It is significant that both articles in this dissertation find that the measures that were derived using the same big data and machine learning methods had similar effects on two different types of contention that were previously assumed to be of different causes. In fact, these two types of crises are traditionally studied by two different disciplines of social sciences. On one hand, categorized as a type of financial crises, sovereign defaults are commonly seen as a subject covered by research in the field of economics. On the other hand, revolutionary situations are categorized as either political or sociological phenomena and are commonly studied by sociologists and political scientists. As these dissertation reveals, even crises that are solely seen to be derived by economic factors should be studied from a sociological perspective and sociological variables should be taken into account in their explanations.

#### **4. The Aftermath of Revolutions**

The final article in this dissertation pays attention to the aftermath of crises, which was recognized as an understudied issue in a recent call in the literature mentioned above. Motivated by the finding that crises tend to diffuse



around countries with similar types of culture, it studies three cases that had a similar type of outcome following revolutions.

Because of the exploratory nature of the question posed by the literature, I have opted for an in-depth study of three historical cases using comparative and historical methods. This study reveals that there is a pattern to post-revolutionary state formation when the challenger groups find themselves facing against an incumbent political group that are mainly legitimated through a religious authority. Studying the cases of France, Mexico, and Turkey in the aftermath of revolutions, I observe that the methods of post-revolutionaries implemented by the French in their earlier experiences diffuse into the later cases of Mexico and Turkey.

The article identifies the major dimensions of political struggles that have a determining effect on the degree of secularism a state will have in the aftermath of a revolution. As the political crises resulting from struggles between modern states and religious authorities are still an ongoing problem in our present day, the findings regarding the underlying patterns for what results in a 'settled time' following a revolution is valuable for understanding current cases as well.

## **5. Dissertation Plan**

The first article in the dissertation studies the effects of global trade network structure on sovereign defaults. It finds that countries that are

structurally equivalent in the global trade networks are more likely to commit sovereign defaults during the same waves of financial crises in historical time periods.

The following article studies the effects of global trade network structure on revolutionary situations. Similar to the first article, it finds that structurally equivalent and role equivalent countries are likely to be affected during the same revolutionary waves. While these two articles are motivated by relevant literatures studying their specific phenomenon, they use similar statistical and machine learning methods that rely on big data and quantitative analyses. This is a significant point, which not only reveals that different subfields of sociology have valuable contributions for each other, but also strengthens the point made by dynamics of contention literature: different types of contention are likely to be affected by similar strains.

The third article is an in-depth study of aftermath of crises and presents a theory of secularizing revolutions by analyzing the cases of France, Mexico, and Turkey. It reveals a pattern that secularization happens through struggles across religious property, civic rights, law, and education. The final chapter concludes the dissertation with a summary of conclusions and potential avenues for future research with lessons based on these three articles.

## 6. References

- Goldstone, J. A. 1980. "Theories of Revolution: the Third Generation." *World Politics* 32(3):425–53.
- Goldstone, J. A. 2001. "Toward a Fourth Generation of Revolutionary Theory." *Annual Review of Political Science* 4:139–87.
- J. Goodwin. 1994. "Toward a New Sociology of Revolutions." *Theory and Society* 23(6):731–66.
- McAdam, Doug, Sidney Tarrow, and Charles Tilly. 2001. *Dynamics of Contention*. Cambridge, UK: Cambridge University Press. Kindle Edition.
- Skocpol, T. 1979. *States and Social Revolutions: a Comparative Analysis of France, Russia and China*. Cambridge University Press.
- 

<sup>1</sup> Another possible reason for the dearth of studies on the aftermath of revolutions also has to do with the positivistic roots of these theories. Because revolutions are perceived to be transformational events that *progresses* societies from one stage to another, there is a rarely voiced implicit assumption that revolutions bring positive outcomes. When the periods following the revolutions are studied; however, it is soon realized that there is a great diversion between the intentions of revolutionaries and the acts of post-revolutionaries. This can be problematic for theories when the social revolutions that are carried out by the support of masses and peasant classes end up as new forms of state that do not necessarily favor the masses.

<sup>2</sup> The latest issue of *Perspectives*, the official newsletter of the American Sociological Association's Theory Section was devoted to the topic of "Big Data," which surveyed leading scholars from various subfields of sociology to provide their opinions on the topic. The editor of the issue summarizes these scholars' views as "from celebratory and optimistic to wary and cautioning." This summary is barely a euphemism for most of the scholars' apprehension towards big data. One of the scholars describe big data as "the new fad in social sciences..." Most scholars do not give much credence to this "fad" of big data. The general consensus is that big data is unlikely to be of any use without concrete theories. Interestingly enough, the scholars, who approach big data most positively are those working on comparative historical and social movements fields.

<sup>3</sup> The size of the raw data I gathered from Feenstra et al's dataset had 27,573,764 observations. The observations related to the sample I used were around 3.3 M observations. After wrangling the data and pre-processing, the measures I built were done by using around 400 k observations.

ARTICLE 1: EXPLAINING FINANCIAL CRISES THROUGH GLOBAL  
TRADE NETWORKS: THE INTERNATIONAL STRUCTURE OF  
SOVEREIGN DEBT DEFAULTS AND SOVEREIGN STATES'  
WILLINGNESS TO PAY<sup>1</sup>

**1. Abstract**

In sovereign bankruptcies, willingness to pay plays a more significant role than in the case of individual or corporate bankruptcies. This results in sociological processes taking place at a global level affecting the decisions of individual countries when they face financial hardships. How countries identify themselves among others, and how they are identified by the world society, affects their default behavior. Trade is one of the most important relationships that countries constantly and frequently engaged in, and as such they can be used for determining countries positions in the global space. Using the institutional and network theories, this article uses unsupervised machine learning to process big data reporting on volumes of products traded to implement dimensionality reduction to analyze millions of observations on traded products. Based on a dataset of 70 countries reporting on social, political, and economic features for the years between 1962 to 2009, I find support that normative pressures lead countries to commit sovereign defaults. Countries are more likely to commit sovereign default other structurally equivalent or role equivalent countries did so in the previous year.

---

<sup>1</sup> This article is co-authored with Mauro F. Guillen

## **2. Introduction**

In the market economy, crises are as old as the existence of the capitalist system itself (Arrighi [1994] 2010). The sociological literature sees economic crises as a necessary condition for social and political change, especially social revolutions (Skocpol 1979; Goldstone 1993). They also play an important role in determining the hegemonic structure of the world-system (Wallerstein [1974] 2011; Arrighi 2010).

In recent decades, most crises—especially financial ones—occurred in emerging economies. The global financial crisis of 2008; however, represents a stark reminder that no economy is immune from the market system running amok. Even after the U.S. economy has (partially) recovered from the crisis, as late as 2013, there was a non-zero-probability risk of default due to the stalemate in Congress, resulting in a downgrading of U.S. government debt by the credit rating agencies, although a U.S. default would be purely “technical<sup>1</sup>.”

This idiosyncratic event in the U.S. financial history is just a particularly striking example of a more general finding. Financial crises are driven not just by economic fundamentals but also by social and political processes at the state and global levels (Carruthers and Kim 2011). One specific type of financial debacle that tends to play an especially important role in state building and in international conflicts is the sovereign debt crisis and default. The extraction power by states and the ability to raise revenue play an important role in

determining the state's capacity to engage in policymaking (Centeno 1997; Tilly [1990] 1992).

This article focuses on social-structural processes at the global level that affect the financial capacity of states. We develop arguments about how the interconnections between pairs of countries affect the propensity of a country declaring itself in default. In economic and financial analyses of default, state actors are assumed to be rational decision makers with the ability to assess macroeconomic fundamentals and act accordingly. The macroeconomic variables entertained in these analyses include fiscal deficit, inflation, GDP growth, and exchange rate overvaluation, among flow variables, and debt-to GDP ratio and short-term debt among stock variables. Economic and financial perspectives provide a baseline argument for sovereign defaults arguing that they happen when states lose the ability to service their debts. This has motivated research-developing measures of solvency, liquidity, deficits, and volatility to predict their effects on sovereign defaults (Detragiache and Spilimbergo 2001; Hemming, Kell, and Schimmelpfenning 2005; Catão and Sutton 2002). While there is a wide agreement that economic indicators are significant, there is debate on whether political variables are significant or not. Existing research has shown that political uncertainty leads to economic uncertainty (Manasse, Roubini, and Schimmelpfenning 2003), and democracy plays a significant role in external sovereign defaults (Verma 2002), but others find that “political events and

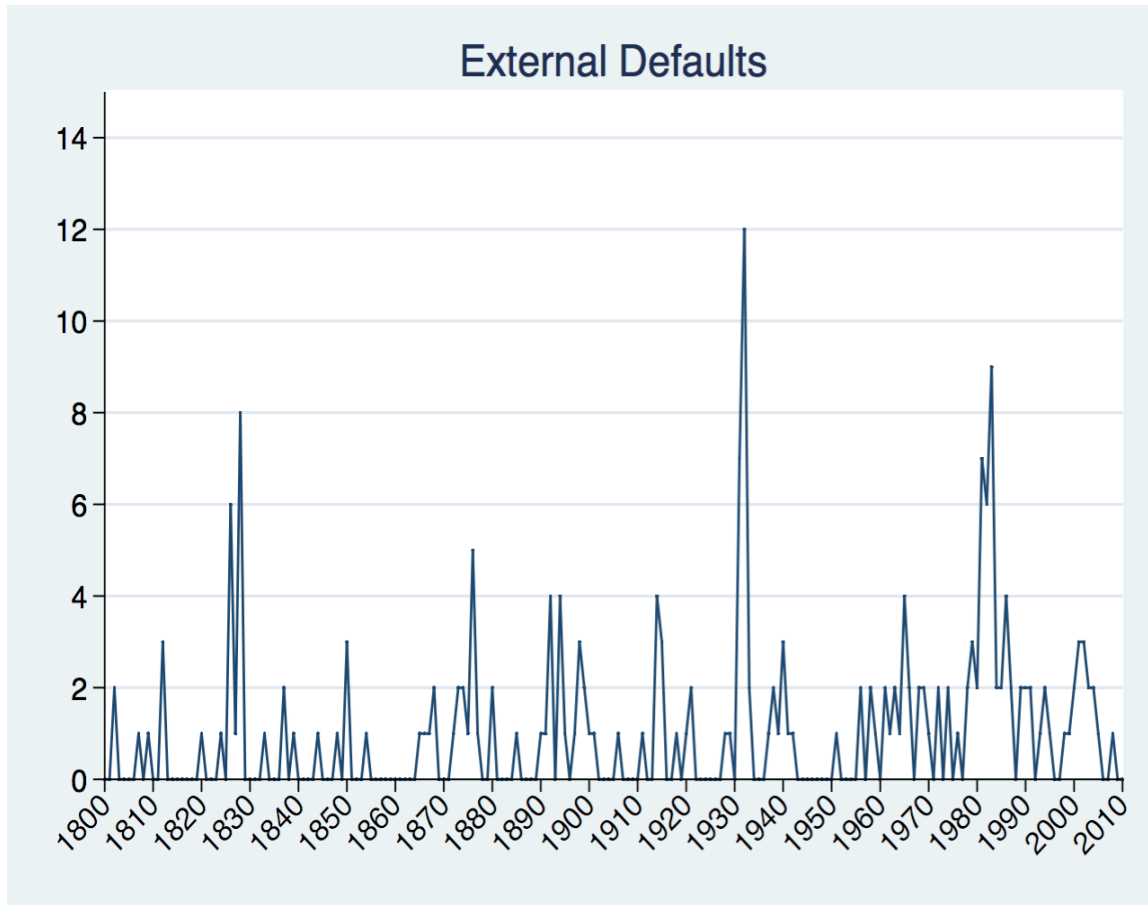
variables do not add any additional information once economic factors have been accounted for” (Haque 1998, 12).

These perspectives, however, either downplay or ignore the social processes that take place at a more global-structural level. The socially constructed nature of global finance is frequently neglected in market approaches (Carruthers 2011; Biggart 1991). In order to account for these shortcomings more recent research identified willingness-to-pay to have a central role in declaring sovereign defaults (Reinhart and Rogoff 2009). Even if there might not be well-defined procedures against a sovereign default from the creditors, the indirect costs are still significant enough to deter states from reverting to defaults as the first best option. In fact it is the existence of these indirect costs that allow for the existence of sovereign debt. Had such indirect costs not existed, the states would simply default in every given opportunity. Willingness-to-pay is explained through countries making decisions based on their perceived costs of defaulting, including loss of autonomy, tarnishing of national prestige, and international ostracism. Assuming an anarchic space with no overseeing authority, Tomz (2007) argues that reputational costs allow sovereign lending and stresses that context matters in decision to default. He argues that the defaults of the Russia, Mexico, and Ecuador happened “when external conditions did not justify a lapse” (228), and thus they were not allowed to borrow for the rest of the decade. Borensztein and Panizza have identified three additional categories of costs that

also play a significant role in decision-making process before committing defaults. These include “international trade exclusion costs, costs to the domestic economy through the financial system, and political costs to the authorities” (Borensztein and Panizza 2009, 5).

Despite the acknowledgment of the importance of willingness-to-pay by this line of research, assumptions of an anarchic global space and atomized decision making are not satisfactory from a sociological perspective. The willingness to pay is usually associated with the internal traits of countries, such as credit culture and stability of the political system (Tomz and Wright 2013). Yet, defaults do not take place in isolation, as one empirically observes a clustering of defaults over time (see Figure I). The peak years in terms of defaults are 1828, 1876, 1932, and 1983. In other words, sovereign defaults occur in waves, with several states getting into trouble simultaneously. It seems that once a country defaults, others tend to follow suit, as in the Latin American debt crisis of 1982, and the East Asian flu crisis of 1996. Economists explain this clustering by reference to business cycles, where credit booms typically result in sovereign defaults (Sturzenegger and Zettelmeyer 2006).





**Figure I - External Defaults Since 1800**

Sociological research shows that institutional and cognitive processes (Carruthers 2011; Swedberg 2011), organizational structures and regulation (Guillén and Suarez 2011; Palmer and Maher 2011), and historical processes (Fligstein and Goldstein 2011; Dobbin 1994; Mizruchi 2011) play significant roles in economic crises. Changes in organizational structure, regulation, and political context may lead actors to readjust their considerations for short-term effects, which might lead to crisis-prone situations in the long run (Krippner 2011). The common conclusion underlying the sociological literature is the embeddedness of

the actors, whether they are individuals, organizations, or political entities, within a social network, where they are affected by their ties. However, many studies mostly focus on the US due to its role as a financial leader. Both this common finding and the trajectory of the global crisis, which first began as a mortgage crisis in the US but then diffused to other countries, and mutated to become a sovereign debt crisis in Europe reveals that finance, or more specifically, sovereign debt is not an issue specific to single countries but it is a matter embedded in the global finance system. Existing research within countries can be improved by transnational research that considers not only one country but also the connectedness of the global economy.

In this article, we improve upon the existing literature by testing measures of interconnectedness and reveal the significant effects that relationships between countries have on sovereign defaults. We develop two hypotheses based on two dominant global-level theories, world polity and world-system. We argue that learning and similarity in behavior happens among states that trade more with each other instead of having a diffused pattern of trade spread evenly across all countries. We also find that states occupying a similar position in the global trade structure will experience crises at similar points in time.

### **3. The Ambiguities of Sovereign Defaults in A Global Economy**

Bankruptcy is one of the foundational elements of the market economy because it provides an exit mechanism for individuals, companies and entire

countries. Sovereign defaults are a foundational and important element of the global economic system. They have been a part of the global economy since the existence of modern nation-states. The first modern nation-states also happened to be the first serial defaulters. England, the Italian city-states, France, and Portugal were all defaulted repeatedly before the 1800s, i.e. until they could establish stable national economies and strong institutions (Reinhart and Rogoff 2009). Defaults became more common after industrialization. This happened due to two reasons. First, more modern nation-states became established in the global political arena. It is only after a modern nation-state establishes a national economy that it can have the capacity to carry out substantive amounts of borrowing. Without a large borrowing capacity, states cannot incur sufficient sovereign debts to default. Second, the creation of markets for public debt increased both the size and depth of financial markets. Markets for public debt increased potential capacity for sovereign debt incurred by states, which increased the potential for borrowing beyond capacity, leading to sovereign defaults.

Public debt continues to be a core element in the present global economy. However, public debt is different from private debt. For private agents, lending and borrowing are routine activities. When investments do not pay off as planned, bankruptcy is a regular outcome for underperforming firms; when firms fail, there are clear guidelines about how lenders can take action using the state

as a mediator. Creditors can make claims on the assets of the bankrupt debtor and retrieve some (if not all) of their loss. However, the process changes when the bankrupt agent is a sovereign state. While it may have been tried in the past, gunboat diplomacy is too costly for states to coerce other states into paying their debts. Moreover, at the present time declaring war over another state due to economic failures is no longer legitimate. There is no single international overseer legal agency to facilitate the default of a sovereign. Most states' assets cannot be appropriated when states default on their debt because such assets are usually immune and off limits. The claims of creditors are not well defined and it is unlikely for judges to rule against their own state (Yeyati 2005; Borensztein and Panizza 2009). Bankrupt states do not go out of business, either. States continue to exist in their sovereign capacity. They might default on some of their debt instead of going completely bankrupt. In other cases, when facing the default of a debtor, lenders might choose to pre-emptively bail them out to prevent greater overall costs. While defaults have been common in the global economy throughout the history, the legitimate ways to resolve them has varied across different time periods.

This creates an ambiguous situation in terms of power between lenders and borrowers. While lender states and other parties are powerful due to their economic capacity, debtor states can also become powerful as lender states become dependent on collecting the debt. In the case of sovereign defaults, the

issue becomes even more complicated given Borensztein and Panizza's (2009) conclusion that the economic effects of sovereign defaults tend to be short-lived, and usually do not extend beyond two years. The dependency increases with the amount of debt. Focusing solely on the countries that participate in lending and borrowing from each other is not sufficient to understand the entire mechanism underlying sovereign lending. In order to get a complete picture of the sovereign lending system, one should also account for the global-level mechanisms that play an underlying role in the bilateral relationships. Sociologists have long demonstrated that cultural construction of nation states play a role in determining legitimate behavior, which effects decision making (Meyer 2010), and global trade patterns play a significant role in how power is distributed among countries that occupy different spaces in the world system (Wallerstein [1974] 2011; Arrighi [1994] 2010).

Institutional processes can play a significant role in determining the behavior of states as they participate in a common world polity and strive for legitimacy independent of their efficiency (Meyer and Rowan 1977). This results in mimetic processes among states, where they replicate each other's behavior. The behavior of other states that is deemed legitimate is replicated. As states have become globally more connected, they have structurally expanded around the globe. This process has legitimated the world models helping in the consolidation of a world society. In this new world society, the states' responsibilities have

increased compared to earlier eras (Meyer, Boli, and Thomas 1997; Meyer 2010). While they have been required as necessary actors to make and enforce rules, they have also been expected to remain legitimate within the world polity and society. While the expansion of world society has resulted in increasing convergence, the result is not increasing flattening of the world polity. Instead, the world polity becomes more fragmented and regionalized (Beckfield 2010). In other words, the perception of legitimacy across the world society is not flat but instead may vary across different states based on their varied connections with each other.

In a global system in which countries interact with one another, they start to influence each other's actions, resulting in the formation of a collective culture. Let us build the argument about cohesion from the group level to the organizational field, and then to the world-polity and world-system level. High social density translates into social cohesion, which in turn tends to produce behavioral similarity (Durkheim [1915] 1995; Durkheim [1933] 1997; Collins 1994). Actors in social networks who share strong connections to one another tend to develop strong group identity, solidarity and conformity. Cohesive networks establish "sacred objects", i.e. symbols of focused attention that demarcate the boundaries of the group. Similarity in behavior is driven by the actors' desire to appear appropriate and legitimate within their shared social context.

At the level of the organizational field, Harrison White was the first to conceptualize the argument in his sociology of markets. He defines markets as social structures arising among cliques of firms watching one another as they position themselves in distinct market niches (White 1981, 2002). The organizations in the field or market observe and benchmark against other organizations or actors they consider to be their peers (Strang and Tuma 1993). As the number of organizations in the same field that adopt a given innovation, structure or practice grows; the behavior becomes legitimized (Abrahamson and Rosenkopf 1993).

The argument about social cohesion and behavioral similarity can be extended to states in the world-polity and world-system (Guler et al. 2002; Polillo and Guillen 2005). When two states have intense relationships with one another, they are more likely to adopt common patterns of behavior. In particular, the intensity of trade transactions indicates the density of the social network in which a given country is embedded. To use Durkheim's terminology, defaulting on sovereign debt is conferred with the "sacredness" of group membership. Our argument is that countries that exhibit cohesive trade relationships with each other are likely to adopt similar patterns of behavior, including the decision to default. Sovereign debt crises involve high level of uncertainty; precisely the situation in which neo-institutional theory predicts that isomorphic behavior driven by social norms will emerge (DiMaggio and Powell 1983). When one state

commits sovereign default, it sets a precedent for others who consider it as a peer and have an intense relationship with it. In particular, seeing one country go into default in a socially cohesive environment prompts others in the same context to ask for similar terms of treatment.

Examples of this pattern abound. In times of high violent conflict, countries might stop servicing their debt, as it happened in the cases of Austria-Hungary, Bulgaria, and Turkey before World War I, and Italy, Japan, and Turkey before World War II. Cohesiveness also takes place among lenders, which typically result in formation of associations or institutions that can facilitate harmonized behavior among them. In late 19<sup>th</sup> and early 20<sup>th</sup> centuries creditors lending countries formed their own local associations to take united action among debtors. In England, the British Corporation of Foreign Bondholders (CFB) was the major creditor association that acted on behalf of lenders to resolve issues of default. Similar institutions were also set up in, France, Belgium, Switzerland, Germany, and the United States. In late 20<sup>th</sup> Century “Bank Advisory Committee” (BAC) assumed a similar role. Such institutions result in cohesive action from creditors and result in similar treatments deemed to be legitimate by the world polity to countries perceived to be in similar situations in a given time period. For example in the late 19<sup>th</sup> Century and early 20<sup>th</sup> Centuries, creditors could form administrative units that would assume the public financial management of the defaulting countries (Sturzenegger and Zettelmeyer 2006). In



other time periods, countries might be bailed out before they an actual default, such as the IMF bailouts of Thailand and South Korea in 1997. Given these arguments and historical evidence, we expect that

**Hypothesis 1: Controlling for macroeconomic and political-economic variables, the more a state trades with another state that declares sovereign default, the more it is likely to declare sovereign default.**

Intense relationships between pairs of countries are one mechanism underpinning behavioral similarity. The other key effect identified in the literature is structural equivalence. Burt (1987) proposed that individuals and organizations occupying the same position in social structure are likely to behave similarly. He considered two actors to be in the same position if they are structurally equivalent, i.e. they each have the same set of relationships with third actors.

Applying the concept of structural equivalence at the global level runs parallel to the tenets of world-system and world-polity theories. Countries in the world-system occupy different structural positions, namely, some are industrialized core countries and others are peripheral providers of natural resources and cheap labor (Wallerstein [1974] 2011). The development of industry in the periphery led to the concept of “semi-periphery,” that is, newly-industrialized countries that are still dependent on core countries for technology

and markets (Guillén 2001). In the world-polity, some countries are more frequently sources of cultural models than others, which tend to be recipients (Meyer et al. 1997).

We argue that countries embedded in the same structural position in trade networks are more likely to exhibit similar behavior because they face similar opportunities and threats. Common relationships puts countries in a situation in which they share the same sources of supply and destination markets, even if they do not trade with one another, i.e. if their dyadic cohesion is low. Financial markets, and especially sovereign debt markets, tend to see structurally equivalent countries as similar. In particular, research has shown that crises often occur in waves affecting different parts of the world, in a pattern that reveals an underlying structure of positional equivalence (Reinhart and Rogoff 2009). For instance, the Asian flu crisis of 1997 spread from Thailand like wildfire to other East and South East Asian economies, all of which used local labor to make manufactured goods for export to the U.S. and European markets. The economies in that part of the world were structurally equivalent, and many were driven to situations of near default. We therefore predict that:

**Hypothesis 2: Controlling for macroeconomic and political-economic variables, the more a pair of countries trades with the same third countries, the more likely a default in one of them will be followed by a default in the other.**

## **4. Data**

We have gathered panel data for 70 countries across six continents for the years between 1962 and 2009. The sample was mainly based on Reinhart and Rogoff's (2009) compendium and subsequent online updates, from which our dependent variables were collected<sup>2</sup>. The sample is representative of the world economy, as it includes both developed and developing economies accounting for approximately 95% of global GDP. The sample includes countries with different default behavior in the period studied. Not all countries experienced a default or near default in this period. Some of these countries have graduated after previous experiences; others have never experienced defaults in their history. It should also be noted that the panels are not balanced, as the time period we study includes two major time periods when the geopolitical landscape changed. The late 1960s experienced the wave of decolonization and the late 80s witnessed the fall of USSR. In both time periods new countries declared independence. Some of these countries are included in our sample, and they are left-censored for all the years before their independence. We also treat the Federal Republic of Germany before unification as a separate group from Germany so the former is right-censored after unification and the latter is left-censored before unification.

## **5. Dependent Variable**

The dependent variable in our analysis is external sovereign defaults. Different financial agencies use varying criteria for categorizing events as a

sovereign default (Borensztein and Panizza 2009). For the purposes of this paper, we use Reinhart and Rogoff's definition, which states that

...[A] sovereign default is the failure of a government to meet a principal or interest payment on the due date (or within the grace period). These episodes include instances in which rescheduled debt is ultimately extinguished in terms less favorable than the original obligation (Reinhart and Rogoff 2009, 11).

According to this definition, defaults cannot occur in two consecutive years. If a state declares sovereign default, a further default in the next year is considered as a part of the same sovereign default; however, a second sovereign default is possible two years after the first default. Due to this definition of sovereign defaults, there are no cases where multiple events occur in a year. Sovereign defaults are coded as a binary variable valued as 1 when the country declares sovereign default in a given year and as 0 in all other cases. The dataset also includes six cases of "near" defaults for hypothetical cases of defaults, which were effectively prevented by IMF interventions<sup>3</sup>. Because our hypothesis about trade cohesion considers cohesive behavior among both creditors and debtors, we have also created a second variable that includes cases of near default as if they were cases of default.

## **6. Explanatory Variables**

World systems theories argue that trade networks play an important role in the global social structure and one can understand the world order by analyzing these structures (Chase-Dunn 1999; Arrighi 1999). Previous work has shown that trade network measures have significant effects in the diffusion of institutional standards and behaviors across sovereign states (Guler, Guillén, and Macpherson 2002; Henisz, Zelner, and Guillén 2005; Polillo and Guillén 2005; Weber, Davis, and Lounsbury 2009). Following this line of work, we calculated trade cohesion in trade and structural equivalence in trade measures regarding sovereign defaults. The trade cohesion effect in sovereign defaults measure is the explanatory variable we use for testing Hypothesis 1. Building the trade cohesion measure requires both data on bilateral trade between countries and data on the total trade of a country for each year. We gathered these data from the Correlates of War (COW) Project Trade Data Set<sup>4</sup>. Based on our two dependent variables, we built two measures on trade cohesion in trade. First we created a separate symmetric bilateral trade matrix of all the countries for each year in our sample. Next, absent ties in bilateral trade data were coded as 0 values in these matrices. As Barbieri, Keshk, and Pollins (2009) explain, imputation of missing bilateral trade values is problematic. Moreover, as they explain, sometimes trade data is purposefully misreported by states. Since our theory is interested in social perceptions of the world society, treating non-existing information as 0 is fitting because lack of reporting is also a signal. These trade matrices were used for building both trade cohesion measures. We created two separate vectors external

sovereign defaults. In order to account for the time it might take for the cohesion processes to settle we consider a three-year period for countries having a trade cohesion effect. The first group of vectors ( $ESD_{jt}$ ) was coded as 1 if country  $j$  has declared default at any time between  $t$  and  $t-3$ . Otherwise they were coded as 0. The second group of vectors ( $ESND_{jt}$ ) was coded as 1 if country  $j$  has declared default or experienced a “near” default situation at any time between  $t$  and  $t-3$ . Following the method used by Polillo and Guillén (2005) we have constructed a trade cohesion measure for country  $i$  at time  $t$  as the following:

(a) For external sovereign defaults only:

$$\text{Trade Cohesion Effect}_{it} = \left( \sum_j ESD_{jt} \times \frac{\text{Trade}_{ijt}}{\text{Trade}_{it}} \right) \div 1000$$

(b) For external sovereign defaults and “near” defaults:

$$\text{Trade Cohesion Effect}_{it} = \left( \sum_j ESND_{jt} \times \frac{\text{Trade}_{ijt}}{\text{Trade}_{it}} \right) \div 1000$$

Where  $\text{Trade}_{ijt}$  is the total trade (sum of imports and exports) between country  $i$  and country  $j$  in year  $t$ , and  $\text{Trade}_{it}$  is the total trade country  $i$  carried out with all other countries in year  $t$ . The measure is the sum of a focal country’s cohesion scores with its defaulting trading partners in a given year. The score increases when  $i$  and  $j$  are stronger trade partners and  $j$  is a country that defaults in year  $t$  and it further increases if  $i$  has more strong partners with defaults in a given year. In other words, the trade cohesion measure captures the strength of trade ties between a focal state and a state that defaults on its debt. Higher

scoring states will share a high proportion of their total trade with states that declare sovereign default in a given year. States that have no trade ties with a defaulting state in a given year will receive 0 as their score that year. The score is divided by 1000 for scaling purposes. According to H1, we expect trade cohesion to have a significant positive effect on the dependent variable.

To test hypothesis 2, we constructed a structural equivalence measure that accounts for occupying similar positions in the trade network. Using the same data from COW Trade Dataset, we calculated the correlation of trade partners for all the countries in the network per given year. We then multiplied the correlation matrix by  $ESD_{jt}$  and  $ESND_{jt}$  vectors for the given year to create the two structural equivalence scores:

(a) For external sovereign defaults only:

$$\text{Structural equivalence in trade effect}_{it} = \sum_j ESD_{jt} \times r(\text{Trade}_{it}, \text{Trade}_{jt})$$

(b) For external sovereign defaults and “near” defaults:

$$\text{Structural equivalence in trade effect}_{it} = \sum_j ESND_{jt} \times r(\text{Trade}_{it}, \text{Trade}_{jt})$$

This score increases if the focal state’s volume of trade with partners have a high correlation with defaulting states’ volume of trade partners in a given year. In other words, states that trade with the same partners in similar volumes get higher scores. This score is not bounded and can also be negative if the correlations between the types of products between two countries are negative.

According to hypothesis 2, we expect structural equivalence in trade to have a significant positive effect on sovereign defaults.

## 7. Control Variables

Table I lists the descriptive statistics of the control variables we included along with the explanatory variables. To test the effects of democracy, we used Polity IV dataset’s polity variable, which is an index of autocracy and democracy that ranges between values -10 and 10, where more democratic states get higher values and more autocratic states get lower negative values<sup>5</sup>. Other control variables were collected from World Development Indicators dataset from World Bank<sup>6</sup>. We use gross domestic product per capita and terms of trade to control for the economic development of the country. Both of these variables are taken from WDI.

**Table I - Sample Descriptive Statistics**

Variable	Mean	Std. Dev.	Min	Max
Sovereign External Defaults	0.029	0.168	0	1
Sovereign External Defaults and “Near” Defaults	0.031	0.174	0	1
Cohesion in Trade for Defaults	0.467	5.372	0	108.194
Cohesion in Trade for Defaults and “Near” Defaults	0.467	5.372	0	108.194
Structural Equivalence in Trade for Defaults	3.84	3.283	-0.142	17.611
Structural Equivalence in Trade for Defaults and “Near” Defaults	3.84	3.283	-0.142	17.611
Polity2	3.57	7.02	-9	10
GDP Growth (Annual %)	3.791	4.328	-26.479	42.410
Population Growth (Annual %)	1.608	1.032	-1.723	5.322

*n=2916, 70 countries*

## 8. Method



Our sample consists of unbalanced panel data, where each country is observed as a fixed unit annually and our dependent variable is a binary categorical variable. All the independent variables are time-dependent variables. To test our hypotheses, we used two modeling strategies. Because our dependent variable is binary, we used logistic regression models. First, we built two sets of logistic regression models using random effects. One set has only sovereign defaults as the dependent variable and the other set has sovereign defaults and “near” sovereign defaults as the dependent variable. Second, we built two sets of logistic regression models using fixed effects with the same sets of dependent variables. To build the logistic regression models, letting  $\pi_{it}$  be the probability of a sovereign default by country  $i$  at time  $t$ , we set  $\log\left(\frac{\pi_{it}}{1-\pi_{it}}\right)$  equal to a linear function of  $x$  variables,  $\beta x_{it}$ , where  $\beta x_{it} = \beta_0 + \beta_1 x_{it1} + \dots + \beta_k x_{itk}$ . These models allow for easy interpretation of the coefficients. With a simple transformation,  $100(e^\beta - 1)$ , they can be interpreted as percent change in the odds caused by a 1-unit increase in  $x$  (Allison 1999).

We estimate logistic regression models with random effects,

$$\log\left[\frac{\pi_{it}}{1-\pi_{it}}\right] = \beta x_{it} + \alpha_i,$$

where  $\alpha_i$  is country-specific factors that do not vary over time. In other words, these models assume that the errors based on the individual countries are not correlated to specific years in the models and stay stable over the time period

under consideration. These models report coefficients based on unit changes in the individual country and not the entire population.

**Table II - List of Countries in the Sample**

Algeria*	Angola	Argentina*
Australia	Austria	Belgium
Bolivia*	Brazil*	Canada
Central African Republic*	Chile*	China
Colombia	Costa Rica*	Cote d'Ivoire*
Denmark	Dominican Republic*	Ecuador*
Egypt*	El Salvador	Finland
France	German Federal Republic	Germany
Ghana*	Greece	Guatemala*
Honduras*	Hungary	Iceland**
India*	Indonesia*	Ireland
Italy	Japan	Kenya*
Korea, Republic**	Malaysia	Mauritius
Mexico*	Morocco*	Myanmar*
Netherlands	New Zealand	Nicaragua*
Nigeria*	Norway	Panama*
Paraguay*	Peru*	Philippines*
Poland	Portugal	Romania*
Russian Federation*	Singapore	South Africa*
Spain	Sri Lanka*	Sweden
Switzerland	Thailand**	Tunisia*
Turkey*	United Kingdom	United States
Uruguay*	Venezuela*	Zambia*
Zimbabwe*		

\*countries that are included in the subsamples for Table V and VI, \*\*countries that are included in the subsample for Table VI.

We also estimate logistic regression models with fixed effects:

$$\log \left[ \frac{\pi_{it}}{1-\pi_{it}} \right] = \mu_t + \beta x_{it} + \alpha_i ,$$

where  $\alpha_i$  is a fixed constant that may be correlated with the time varying  $x$ . Whereas random effects assume the unobserved factors stay stable over time, the fixed-effects models assume the errors might be correlated with time. Fixed-effects models allow the correlation of omitted time-invariant explanatory variables with measured explanatory variables, and therefore control for unobserved heterogeneity. For our purposes, we expect these models to have a better fit because we argue that default behavior might vary in certain periods depending on the social conditions of the population. However, any variables that do not vary across time or any countries that do not vary in the dependent variable across time cannot be included in the analysis. Given that sovereign defaults are relatively rare events, and even though we consider a long period of time, only a smaller subset of the countries in the sample experience a sovereign default. In these fixed effects models, we report results based on the smaller subsets of countries that experience a sovereign default between 1962 and 2008 (Allison 2009).

We estimated the models using conditional maximum likelihood with `xtlogit` command in STATA. For random effects models we used the `re` option and for fixed effects we used the `fe` option . In order to control for reverse causation all variables are lagged by 1 year.

## **9. Results**

Table II presents the correlation matrix. The Pearson correlations in this matrix does not control for random or fixed effects. Tables III and IV present logistic regression models with random effects. Finally, Table V and VI present the results for the logistic regression models with fixed effects. Coefficients for all the models are reported in the form of odds ratios for easier interpretation. Table III and V report results using sovereign external defaults as the dependent variable, which does not include any cases of “near” defaults. Tables IV and VI consider cases of both defaults and “near” defaults.

**Table III - Correlation Matrix of the Variables**

Variable	1	2	3	4	5	6	7	8
External Sovereign Defaults	...							
External Sovereign Defaults and “Near” Defaults	0.965*	...						
Cohesion in Trade for Defaults	-0.015	-0.016						
Cohesion in Trade for Defaults and “Near” Defaults	-0.015	-0.016	1.000*	...				
Structural Equivalence in Trade for Defaults	0.16*	0.151*	-0.046*	-0.046*	...			
Structural Equivalence in Trade for Defaults and “Near” Defaults	0.16*	0.151*	-0.046*	-0.046*	1.000*	...		
Polity2	-0.071*	-0.063*	0.073*	0.073*	-0.037*	-0.037*	...	
GDP Growth (Annual %)	-0.109*	-0.104*	-0.027	-0.027	-0.095*	-0.095*	-0.159*	...
Population Growth (Annual %)	0.091*	0.088*	-0.089*	-0.089*	0.108*	0.108*	-0.518*	0.153*

*n=1711, 38 countries ; \*p<0.05*

Our results lend some support for hypothesis 1 on cohesion among borrowers or creditors. The dependent variable including “near” defaults were built to capture potential cohesion effects that might happen across creditors that could bail out a country before it technically declares sovereign default. In the models excluding the cases of “near” defaults, cohesion did not reach

significance. However, when the dependent variable included “near” defaults, the models with fixed effects support hypothesis 1. This hints that the cohesion processes plays a more important role amongst creditors compared to borrowers. This supports the historical evidence of creditor associations appearing during the time periods that experience high volumes of sovereign defaults (Sturzenegger and Zettelmeyer, 2006).

The regression models lend strong support for hypothesis 2 on structural equivalence regardless of the inclusion of “near” defaults in the dependent variable. These results give credence to the argument that countries in similar structural positions in the network of trade behave similarly.

**Table IV - Coefficients as Odds Ratios from Random-Effects Logistic Regression Models for Sovereign External Defaults as the Dependent Variable**

Independent Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Cohesion in Trade for Defaults	0.000 (0.000)		0.000 (0.000)		0.000 (0.000)
Structural Equivalence in Trade for Defaults		1.12*** (0.028)		1.092** (0.029)	1.085** (0.029)
Polity2			0.969 (0.019)	0.969 (0.019)	0.97 (0.019)
GDP Growth (Annual %)			0.892*** (0.019)	0.904*** (0.019)	0.9*** (0.019)
Population Growth (Annual %)			1.649** (0.252)	1.558** (0.233)	1.557** (0.231)
Year	0.985 (0.008)	0.981 (0.009)	1.001 (0.011)	0.996 (0.011)	0.999 (0.011)

Constant	1.31x10 <sup>11</sup> (2.21x10 <sup>12</sup> )	5.13x10 <sup>14</sup> (9.69x10 <sup>15</sup> )	0.001 (0.019)	44.359 (0.897)	0.130 (2.863)
Observations	2916	2916	2916	2916	2916
No. of Countries	70	70	70	70	70

Lagged independent variables; panel-corrected SEs in parentheses; \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

**Table V - Coefficients as Odds Ratios from Random Effects Logistic Regression Models for Sovereign External Defaults and "Near" Defaults as the Dependent Variable**

Independent Variable	Model 6	Model 7	Model 8	Model 9	Model 10
Cohesion in Trade for External Defaults and "Near" Defaults	0.991 (0.035)		0.998 (0.033)		1.000 (0.033)
Structural Equivalence in Trade for External Defaults and "Near" Defaults		1.11*** (0.028)		1.083** (0.028)	1.086** (0.028)
Polity2			0.973 (0.023)	0.974 (0.018)	0.974 (0.018)
GDP Growth (Annual %)			0.899*** (0.018)	0.907*** (0.019)	0.907*** (0.019)
Population Growth (Annual %)			1.653** (0.245)	1.568** (0.224)	1.568** (0.225)
Year	0.987 (0.008)	0.987 (0.009)	1.003 (0.013)	1.002 (0.011)	1.002 (0.011)
Constant	3.23x10 <sup>9</sup> (5.29x10 <sup>10</sup> )	2.85x10 <sup>9</sup> (5.13x10 <sup>10</sup> )	0.000 (0.000)	0.000 (0.006)	0.000 (0.006)
Observations	2916	2916	2916	2916	2916
No. of Countries	70	70	70	70	70

Lagged independent variables; panel-corrected SEs in parentheses; \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

**Table VI - Coefficients as Odds Ratios from Fixed-Effects Logistic Regression Models for Sovereign External Defaults as the Dependent Variable**

Independent Variable	Model 11	Model 12	Model 13	Model 14	Model 15
Cohesion in Trade for Defaults	0 (0)		0 (0)		0 (0)
Structural Equivalence in Trade for Defaults		1.108*** (0.029)		1.076* (0.03)	1.071* (0.03)
Polity2			0.971 (0.024)	0.978 (0.024)	0.978 (0.024)
GDP Growth (Annual %)			0.904*** (0.019)	0.913*** (0.02)	0.914*** (0.02)
Population Growth (Annual %)			1.491 (0.481)	1.223 (0.411)	1.218 (0.405)
Year	0.99 (0.008)	0.986 (0.009)	1.004 (0.013)	0.995 (0.014)	0.997 (0.014)

Observations	1618	1618	1618	1618	1618
No. of Countries	36	36	36	36	36

Lagged independent variables; panel-corrected SEs in parentheses; \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

**Table VII - Coefficients as Odds Ratios from Fixed Effects Logistic Regression Models for Sovereign External Defaults and "Near" Defaults**

Independent Variable	Model 16	Model 17	Model 18	Model 19	Model 20
Cohesion in Trade for External Defaults and "Near" Defaults	1.430* (0.222)		1.472* (0.242)		1.484* (0.246)
Structural Equivalence in Trade for External Defaults and "Near" Defaults		1.094*** (0.028)		1.061* (0.029)	1.063* (0.03)
Polity2			0.971 (0.023)	0.978 (0.024)	0.977 (0.024)
GDP Growth (Annual %)			0.901*** (0.019)	0.911*** (0.02)	0.910*** (0.02)
Population Growth (Annual %)			1.654 (0.532)	1.37 (0.443)	1.407 (0.468)
Year	0.991 (0.008)	0.992 (0.009)	1.009 (0.013)	1.004 (0.014)	1.004 (0.014)
Observations	1750	1750	1750	1750	1750
No. of Countries	39	39	39	39	39

Lagged independent variables; panel-corrected SEs in parentheses; \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

The magnitude of effects for both hypothesized variables are relatively high in the models in which they are significant. In Table III, Model 5 includes both hypothesized variables along with control variables for the logistic regression model with random effects using only sovereign external defaults as the dependent variable. This model provides no support for hypothesis 1 but confirms hypothesis 2. Structural equivalence is statistically significant at the  $p < 0.01$  level. For every unit increase in structural equivalence in trade the odds of a sovereign default increase by 8.5%. This value corresponds to an increase of 13.9% in the odds ratio of sovereign defaults for every half standard deviation

increase in the structural equivalence in trade score. In Table IV, the same method is used for building the models but the dependent variable also includes cases of “near” defaults. The results in model 10, which includes all variables, are very similar, with a slightly higher coefficient. In this model, for every half standard deviation increase in structural equivalence in trade the odds of a sovereign default or a “near” sovereign default increases by 13.6%. Table V and VI report on the results for the logistic regression models with fixed effects. Hypothesis 2 is supported in all of these models as well. According to Model 15 in Table V, for every half standard deviation increase in the structural equivalence in trade score, the odds of a sovereign default increase by 11.6%. Table VI reports on the dependent variable that includes both sovereign defaults and “near” sovereign defaults. In Model 20, the magnitude is slightly lower at an increase of 10.4% in the odds of a sovereign default or a “near” sovereign default for every half standard deviation increase in the structural equivalence in trade score. In both models the variable is significant at  $p < 0.05$  level.

All of the results reported above confirm hypothesis 2. Models in Table VI also show support for hypothesis 1. In Model 20, the trade cohesion score is significant at  $p < 0.05$  level with a very high magnitude. For every half standard deviation increase in the score the odds of a sovereign default or a “near” sovereign default increase by 174%.



Among the control variables, GDP growth is the only other variable that is significant in all of our models. Population growth was significant in the models using random effects but lost its statistical significance in the models using fixed effects. Polity2 variable, which controls for democracy was not significant in any of our models not supporting some of the previous literature.

## **10. Conclusion**

The purpose of this article was to examine the effects of the position of countries in global trade networks on their propensity to declare a sovereign default. Using the perspectives of world-system, world-society, and institutional theories, we argued that relationships through trade networks result in social processes that can affect countries' financial behavior. Specifically, we posit that trade networks generate isomorphic pressures based on social cohesion and structural equivalence.

The empirical results for structural equivalence in trade networks were robust across the models. The empirical results regarding high volumes of trade leading to cohesion among partners revealed a more complicated process. The results hint that repeated interactions are significant when both default and “near” default situations are considered. “Near” default situations are the cases when the country gets bailed out by creditors or international organizations before they declare sovereign default. When a close trade partner commits sovereign default or finds itself in a “near” default situation, the focal country also

finds itself in a similar situation. The results suggest that creditors observing the other partner might step in to rescue other countries they perceive to be in similar situations. Nevertheless, policymakers seem to be affected by these isomorphic pressures. While the existing literature displays a state-centered focus and provides explanations through internal traits of countries, our analysis stresses that in an increasingly global economy, where local economies are highly connected and dependent on each other, countries are also affected by traits and behavior of other countries. A country will not only be affected by changes in its own economic and political variables, but also by the changes in other countries. Recent analyses in sociology of finance have shown that changes in the perception about depreciation of value for certain assets created a domino effect of many other similarly positioned assets losing their value. The connectedness of these assets through securities played a role in the great recession in 2008 (Fligstein and Goldstein 2011). Our findings reveal that changes of perception might also happen due to changes in trade networks. Trade network measures still reveal statistically significant results after controlling for GDP growth, which is a robust indicator for sovereign defaults. This is important because changes in trade networks might not necessarily be related to changes in the traits of local economies or local debt in a country. Nevertheless, due to the socially-constructed nature of global finance, these changes can still lead to self-fulfilling prophecies to a country's default.

Another interesting finding in our results is the lack of support for democracy having a significant effect on sovereign defaults when trade network position is controlled for. Previous theories have argued that democracy plays a significant role because of the desire for maintaining political power by local actors affect decision making regarding sovereign defaults (Verma 2002). Instead we find that perceptions of a country by others might play a more important role than the internal decision making.

One limitation of our study is that the sample includes only relatively large economies. While they account for the vast majority of the global economy, many small nation-states were left out due to lack of data, especially on trade networks. Future research can perhaps compensate for this shortcoming through case studies. Research on sovereign defaults can also turn to understanding their consequences for economic growth and social stability over the medium and long run. Economic sociology can add considerable insight to standard models of political and economic development by emphasizing the embeddedness of countries in global networks.

## 11. References

- Abrahamson, Eric and Lori Rosenkopf. 1993. "Institutional and Competitive Bandwagons: Using Mathematical Modeling as a Tool to Explore Innovation Diffusion." *Academy of Management Review* 18 (3): 487-517.
- Allison, Paul D. 1999. *Logistic Regression Using the SAS System: Theory and Application*. Cary, NC: SAS Institute Inc.
- Allison, Paul D. 2009. *Fixed Effects Regression Models*. Thousand Oaks, CA: Sage Publications, Inc.
- Arrighi, Giovanni. [1994] 2010. *The Long Twentieth Century: Money, Power and the Origins of Our Times*. New and Updated Edition. New York: Verso.
- Arrighi, Giovanni. 1999. "The Global Market." *Journal of World-Systems Research* 5 (2): 217-51.
- Barbieri, Katherine, Omar M.G. Keshk, and Brian M. Pollins. 2009. "Trading Data: Evaluating Our Assumptions and Coding Rules." *Conflict Management and Peace Science* 26 (5): 471-91.
- Beckfield, Jason. 2010. "The Social Structure of the World Polity." *American Journal of Sociology* 115 (4): 1018-68.
- Biggart, Nicole Woolsey. 1991. "Explaining Asian Economic Organization: Toward a Weberian Institutional Perspective." *Theory and Society*. 20 (2): 199-232.
- Borensztein, Eduardo, and Ugo Panizza. 2009. "The Costs of Sovereign Default." *IMF Staff Papers* 56 (4): 683-741.
- Burt, Ronald. 1987. "Social Contagion and Innovation: Cohesion versus Structural Equivalence." *American Journal of Sociology* 92 (6): 1287-1335.
- Carruthers, Bruce G. 2011. "Knowledge and Liquidity: Institutional and Cognitive Foundations of the Subprime Crisis." In *Markets on Trial: the Economic Sociology of the U.S. Financial Crisis*, edited by Michael Lounsbury and Paul M. Hirsch, 155-180. Bingley, UK: Emerald Books.
- Carruthers, Bruce G, and Jeong-Chul Kim. 2011. "The Sociology of Finance." *Annual Review of Sociology* 37 (1): 239-59.
- Catão, Luis, and Bennet Sutton. 2002. "Sovereign Defaults: The Role of Volatility." *International Monetary Fund Working Paper*, 26.

- Centeno, Miguel Angel. 1997. "Blood and Debt: War and Taxation in Nineteenth-Century Latin America." *American Journal of Sociology* 102 (6): 1565-1605.
- Chase-Dunn, Christopher. 1999. "Globalization: a World-Systems Perspective." *Journal of World-Systems Research* 5 (2): 187-215.
- Collins, Randall. 1994. *Four Sociological Traditions*. New York: Oxford University Press.
- Detragiache, Enrica, and Antonio Spilimbergo. 2001. "Crises and Liquidity: Evidence and Interpretation." *International Monetary Fund Working Paper WP/01/2*.
- DiMaggio, Paul J, and Walter W Powell. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." *American Sociological Review* 48 (2): 147-60.
- Dobbin, F. 1994. "Cultural Models of Organization: the Social Construction of Rational Organizing Principles." In *The Sociology of Culture: Emerging Theoretical Perspectives*, edited by Diana Crane, 117-141. Cambridge, MA: Blackwell Publishers.
- Durkheim, Emile. [1915] 1995. *The Elementary Forms of Religious Life*. New York: Free Press.
- Durkheim, Emile. [1933] 1997. *The Division of Labor in Society*. New York: Free Press.
- Fligstein, Neil, and Adam Goldstein. 2011. "The Anatomy of the Mortgage Securitization Crisis." In *Markets on Trial: the Economic Sociology of the U.S. Financial Crisis*, edited by Michael Lounsbury and Paul M. Hirsch, 155-180. Bingley, UK: Emerald Books.
- Goldstone, Jack A. 1993. *Revolution and Rebellion in the Early Modern World*. Berkeley and Los Angeles, CA: University of California Press.
- Guillén, Mauro F., 2001. "Is Globalization Civilizing, Destructive or Feeble? A Critique of Five Key Debates in the Social-Science Literature." *Annual Review of Sociology* 27: 235:260.
- Guler, Isin, Mauro F Guillén, and John Muir Macpherson. 2002. "Global Competition, Institutions, and the Diffusion of Organizational Practices: the International Spread of ISO 9000 Quality Certificates." *Administrative Science Quarterly* 47: 207-32.
- Guillén, Mauro F, and Sandra L Suarez. 2011. "The Global Crisis of 2007-2009: Markets, Politics, and Organizations." In *Markets on Trial: the Economic*

- Sociology of the U.S. Financial Crisis, edited by Michael Lounsbury and Paul M. Hirsch, 155–180. Bingley, UK: Emerald Books.
- Haque, Nadeem U., Donald J. Mathieson, and Nelson C. Mark. 1998. “The Relative Importance of Political and Economic Variables in Creditworthiness Ratings.” International Monetary Fund Working Paper WP/98/46.
- Hemming, Richard, Michael Kell, Axel Schimmelpfenning. 2005. *Fiscal Vulnerability and Financial Crises in Emerging Market Economies*. Kindle Edition. Washington, DC: International Monetary Fund.
- Henisz, Witold J, Bennet A Zelner, and Mauro F Guillén. 2005. “The Worldwide Diffusion of Market-Oriented Infrastructure Reform, 1977–1999.” *American Sociological Review* 70 (6): 871–97.
- Krippner, Greta R. 2011. “The Political Economy of Financial Exuberance.” In *Markets on Trial: the Economic Sociology of the U.S. Financial Crisis*, edited by Michael Lounsbury and Paul M. Hirsch, 155–180. Bingley, UK: Emerald Books.
- Manasse, P., Roubini, N., & Schimmelpfenning, A. 2003. “Predicting Sovereign Debt Crises.” IMF Working Paper, WP/03/221.
- Meyer, John W. 2010. “World Society, Institutional Theories, and the Actor.” *Annual Review of Sociology* 36: 1–20.
- Meyer, John W, John Boli, George M. Thomas and Francisco O. Ramirez. 1997. “World Society and the Nation-State.” *American Journal of Sociology* 103 (1) (July):144-181.
- Meyer, John W, and Brian Rowan. 1977. “Institutionalized Organizations: Formal Structure as Myth and Ceremony.” *American Journal of Sociology* 83 (2): 340–63.
- Mizruchi, Mark S. 2011. “The American Corporate Elite and the Historical Roots of the Financial Crisis of 2008 In *Markets on Trial: the Economic Sociology of the U.S. Financial Crisis*, edited by Michael Lounsbury and Paul M. Hirsch, 155–180. Bingley, UK: Emerald Books.
- Palmer, Donald, and Michael Maher. 2011. “A Normal Accident Analysis of the Mortgage Meltdown.” In *Markets on Trial: the Economic Sociology of the U.S. Financial Crisis (Research in the Sociology of Organizations)*, 30:217–54. Emerald Group Publishing.
- Polillo, Simone, and Mauro F Guillén. 2005. “Globalization Pressures and the State: the Worldwide Spread of Central Bank Independence.” *American Journal of Sociology* 110 (6): 1764–1802.

- Reinhart, Carmen M, and Kenneth S Rogoff. 2009. *This Time Is Different: Eight Centuries of Financial Folly*. Princeton, NJ: Princeton University Press.
- Skocpol, Theda. 1979. *States and Social Revolutions: A Comparative Analysis of France, Russia and China*. Cambridge, UK: Cambridge University Press.
- Strang, David and Nancy B. Tuma. 1993. "Spatial and Temporal Heterogeneity in Diffusion." *American Journal of Sociology* 99 (3): 614-39.
- Sturzenegger, Federico, and Jeromin Zettelmeyer. 2006. *Debt Defaults and Lessons From a Decade of Crises*. Kindle Edition. Cambridge, MA: The MIT Press.
- Swedberg, Richard. 2011. "The Structure of Confidence and the Collapse of Lehman Brothers." In *Markets on Trial: the Economic Sociology of the U.S. Financial Crisis*, edited by Michael Lounsbury and Paul M. Hirsch, 155–180. Bingley, UK: Emerald Books.
- Tilly, Charles. [1990] 1992. *Coercion, Capital, and European States, AD 990-1992*. Revised Paperback Edition. Malden, MA: Blackwell Publishing.
- Tomz, Michael. 2007. *Reputation and International Cooperation: Sovereign Debt Across Three Centuries*. Princeton University Press.
- Tomz, Michael, and Mark L J Wright. 2013. "Empirical Research on Sovereign Debt and Default." *Annual Review of Economics* 5 (1): 247–72.
- Verma, Sujata. 2002. "Determinants of Sovereign Defaults: What Does the Empirical Evidence Tell Us?" *Economic and Political Weekly* 37 (48): 4817–22.
- Wallerstein, Immanuel. [1974] 2011. *The Modern World System I: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*. Berkeley and Los Angeles, CA: University of California Press.
- Weber, Klaus, Gerald F Davis, and Michael Lounsbury. 2009. "Policy as Myth and Ceremony? the Global Spread of Stock Exchanges, 1980-2005." *Academy of Management Journal* 52 (6): 1319–47.
- White, Harrison. 1981. "Where Do Markets Come From?" *American Journal of Sociology* 87 (3): 923-38.
- White, Harrison. 2002. *Markets from Networks*, Princeton, NJ: Princeton Univ. Press.
- Yeyati, Eduardo Levy. 2005. "Recurrent Debt Problems and International Safety Nets." In *The Political Economy of Recurrent Debt*, edited by Miguel A. Centeno,

Harold James, and John Londregan, 19–33. Princeton, NJ: Princeton University Press

---

<sup>1</sup> Onaran, Yalman. 2013. “A U.S. Default Seen as Catastrophe Dwarfing Lehman’s Fall.” *Businessweek.com*. Accessed on May 14, 2015.

<http://www.bloomberg.com/news/articles/2013-10-07/a-u-s-default-seen-as-catastrophe-dwarfing-lehman-s-fall>

<sup>2</sup> The online updates on the dataset can be found at <http://reinhartandrogoff.com> we used data accessed on May 16, 2013.

<sup>3</sup> The definition of “near” defaults in the dataset is based on e-mail correspondence with Carmen Reinhart.

<sup>4</sup> We have used the Version 3.0 of the Bilateral Trade Dataset reported in dyadic trade relationships. Accessed on Jan 15, 2015. The data can be found online at <http://correlatesofwar.org>.

<sup>5</sup> Because Polity IV dataset presently reports only on countries with populations greater than 300,000, Iceland is no longer in their dataset. Based on correspondence with the projects representatives, we have assigned Iceland a score of 10 for each year as this was the score Iceland had before it was removed from the dataset.

<sup>6</sup> World Development Indicators Dataset can be found online at <http://data.worldbank.org/data-catalog/world-development-indicators>. We have relied on the STATA version compiled by Joseph N. Cohen available at [www.josephncohen.info](http://www.josephncohen.info) Accessed on May 16, 2013



ARTICLE 2: REVOLUTIONARY WAVES AND INTERNATIONAL  
STRAINS: THE EFFECTS OF GLOBAL TRADE NETWORKS ON  
REVOLUTIONARY SITUATIONS

**1. Abstract**

If revolutions result from state-breakdowns due to a combination of state-centered causal mechanisms, why do we also observe international diffusion of revolutions in clusters across certain time periods? This paper analyzes the global diffusion of revolutionary situations by embedding them in global economy and world polity. I expect international strains to be distributed unevenly. Specifically role equivalent or structural equivalent countries occupying a similar position in the global trade networks, should be affected similarly and experience revolutionary situations simultaneously. Countries with cohesion in trade should also be affected similarly by international strains due to sharing high cultural linkages. I build three measures of interconnectedness based on trade networks and use data on revolutionary situations for 69 countries between 1962 and 2009 and test the hypotheses using logistic regression with random effects and with country fixed effects. I find support for hypotheses based on global positions but no statistical support is found for the hypothesis based on cohesion.

## 2. Introduction

On December 18<sup>th</sup>, 2010, the overthrow of Zine El Abidine Ben Ali of Tunisia started a wave of uprisings that since came to be known as the “Arab Spring.” Within eight months the governments were also overthrown in Egypt, Yemen, and Libya, and protests spread to fifteen more countries. The Arab Spring represents the most recent example in the phenomena of revolutionary waves following the likes of the Atlantic revolutions at the end of 18<sup>th</sup> century, the revolutions of 1848, and the revolutions of 1989. The phenomenon that revolutions tend to cluster across time is well documented in the literature (Tilly 1996; Goldstone 2001; Beck 2011). It is also documented as an expectation of revolutionaries, who believe others share their local causes against their relevant states. This notion was apparent as early as 1906 when Trotsky was reflecting on the 1905 first workers’ revolution in Russia in *Results and Prospects* (1906) when he expected other parts of Europe to experience similar revolutions following the Russian experience.

While revolutionary waves are a common observation, existing literature finds that domestic factors play a highly significant role in leading to revolutions. Accumulated research over decades concludes that state breakdowns lead to revolutions. In other words, revolutions do not cause state-breakdowns, but follow them. Therefore, the mechanisms leading to revolutions are closely related to strains on the state structure. State-breakdowns tend to happen when a

combination of mechanisms takes place simultaneously. Such interactions do not frequently occur and this is one of the reasons why revolutions tend to be rare events (Skocpol 1979; Goldstone 1991, 2001; Collins 1999; Goodwin 2001).

While the significance of international factors are generally recognized by the theories of revolutions, there is not a common agreement on the degree of their significance and how they affect revolutions. Studies stress the importance of domestic variables, but not all of the research in the literature pays significant attention to the international variables. Moreover, the research that considers the international dimension can still have weaknesses due to leaving international factors out of the causal analysis or creating an analytical bifurcation between the domestic and international (Lawson 2015, Go 2014). This leads to a theoretical puzzle in the literature given the observation of revolutionary waves: If revolutions result from state-breakdowns due to a combination of state-centered causal mechanisms, why do we also observe international diffusion of revolutions in clusters across certain time periods?

This paper improves the existing literature by analyzing the embeddedness of states in global economy and world polity. My analysis adds to the existing literature in two ways. First, by accounting for all the multilateral relationships between states across the period of investigation, I control for significant relationships that might go unnoticed. Most research on revolutions relies on in depth explanations of case studies, which provide robust explanations for the

causes in the particular cases under investigation. While such analyses allows the researchers to account for domestic developments for the focal country and most of the cross national relationships the focal country has with significant others in great depth, it is not possible to account for all the developments in the international developments in equal scrutiny. Moreover, it might be hard to pinpoint significant international developments among the extremely great number of international relationships that continue to change dynamically across time. This is especially the case if the important relationship is one that does not include the country in focus. For example, Lawson (2015) claims Haitian Revolution in late 18<sup>th</sup> Century played a significant role by leaving a significant legacy to provide world cultural scripts for later uprisings in the international order. By analyzing the measures of interconnectedness based on all the multilateral relationships of the countries in the population, I can account for important relationships that might not appear as such in the a priori analysis, but still keep the analysis on state level to study both domestic and international strains simultaneously.

A second important contribution of this study to the literature on revolutions is to control for multiple types of international strains simultaneously to estimate their relative importance. Because of the aforementioned problems regarding difficulties on in-depth analyses of cross-national processes, it is difficult to study multiple types of international strains simultaneously. This has

lead to reducing international strains to certain significant events, such as defeat in war. In this paper, I develop three hypotheses derived from theories of revolutions and global level world polity theory. The hypotheses are based on previous works that find world-systemic openings, dependency, and world cultural linkages to be significant international strains on the state structure. By including the explanatory variables simultaneously in the models, comparison on the magnitude and statistical significance of these effects can be made.

A more general contribution of this paper is to reveal that processes of diffusion that were generally associated with business outcomes in economic sociology and organization theory can also be observed for political crises of state. This echoes recent collaborations in the social movements and organization theory literature's claims on the relatedness of the theories in the two fields (Davis et al. 2005).

To test the hypothesis derived from research in state-centered theories of revolutions, I build three measures of interconnectedness in trade networks for a sample of 69 countries for the period between 1962 and 2009. These measures focus on positions of countries in the global space across different relative dimensions across time. Two of the measures focus on positioning in the global trade and another measure focuses on the strength of trade ties between trade partners. I argue that increased structural and role equivalence in the trade networks will lead to similar fiscal strains in the state power. I also argue that

trading in higher volumes with each other might lead to higher fiscal strains when one of the cohesive partners experience a revolutionary situation.

Two sets of models logistic regression models are built for panel data, with one set controlling for random effects and the other set controlling for fixed effects. Both sets of models reveal similar results and support the hypotheses on the significance of position in global trade networks. The hypothesis based on cohesive partners is not supported.

### **3. Interstate Relationships and Revolutions**

The importance of interstate relationships has long been recognized in the theories of revolutions since the third generation of revolutionary theories since Skocpol (1979)'s seminal work on revolutions stresses the importance of transnational relationships in studying revolutions. Specifically, she argues that world historical time and positions in the international arenas play a significant role in causing revolutions. Improving on the mechanisms underlying international processes, Collins (1999) identifies interstate power-prestige as a significant factor in Geopolitical Theory. He argues that interstate power-prestige, which is closely affected by geopolitical conditions, is directly linked to the legitimacy of rulers and ruling institutions. Significant loss of legitimacy by the rulers is argued to potentially lead to revolutions. In these theories military conflict is identified as the main international strain affecting revolutions.

More recent research continues to signify international strains. Dependent development and world-systemic openings are one of the necessary conditions leading to revolutions in the Third World in Foran (2005)'s model. Potential world-systemic openings occur when the status quo between core and periphery states experience major developments. Perceptions of other countries on the revolutions in the focal country are also important. International relations play a significant role and revolutionary trajectories might change based on foreign support or resistance (Goldstone 2014). The global position of foreign support or resistance might also play an important role, as revolutionary intellectuals supported by Great Powers might increase likelihood of successful revolutionary outcomes (Kurzman 2008).

Despite the recognition of the international mechanisms and inclusion of the global level in the models, Lawson (2015) argues that in analyses there is a tendency to reduce international processes to limited number of factors; such as Skocpol's reduction of international conjecture to defeat in war, or to refrain from including the international in the causal processes altogether. He reiterates Go (2014)'s argument that this results to analytical bifurcation, possibly due to methodological preferences. These criticisms point toward a gap in the research, rather than fundamental problems in the existing research. As the preferred methodology of research in revolutions is based on case studies, a common strategy is to focus on a certain world historical time or geography. For example

Skocpol (1979) explicitly stresses the importance of world historical time for the particular international strains being incurred by the cases under review, but makes an analyses based a frozen world historical time period. Foran (2005)'s model limits the geography of the cases to third world countries and conditions such as dependent development apply to the selected sample. This condition is not necessarily contradicted by revolutions that take place in core countries. By freezing the time period or focusing on a certain position in the global space, researchers can focus on the causal factors that play a significant role in their cases. This allows for building robust models for the relevant cases; however, also results in limiting variance in the international developments.

Moreover, it should be recognized that holding positions or world-historical time constant allows the analyses to be fairly controlled against changes in the bilateral relationships between third parties. For example, the international Great Powers identified by Kurzman (2008) are significant actors in the 1905-1915 period, but in other periods other states might replace them due to relationships that take place without the focal states participation. As analyses focusing on longer time periods or higher levels reveal, world hegemons change over long centuries (Arrighi 2010). This does not necessarily contradict Kurzman's findings or create problem for his model, but points to places, where we can improve our understanding of international processes.



When the existing research in the literature is compared to each other, the effects of international strains are observed as varying across different time periods and different dimensions. For example, contrasted to Foran's conclusion that dependent development is a necessary condition for revolutions in third world countries, Wallerstein (2011)'s argument that French Revolution in 1789 happened precisely because it was a country positioned in the core of the world system might seem as two conflicting theories. Yet, in fact it reveals that international strains are not evenly distributed across the global space and dynamically vary across time and positions.

To improve upon the existing understanding of international effects on revolutions, one should consider both dynamic changes in the international strains across time and different positions while still accounting for domestic strains. In order to capture these dynamic changes; one should also take into account the international developments that take place without the participation of the focal state. One promising way of achieving this goal is focusing on all the bilateral relationships between the international actors by borrowing methods and concepts from social network theory. As such, instead of limiting the focus to only the relationships that include the focal state and significant others. Focusing on multilateral relationships comprehensively can increase the power of analyses.

Taking these considerations in the account, three major inferences can be derived from the existing models regarding the significant effects of international

level strains. A commonly stressed international factor that plays an important role in revolutionary theories is the global positioning. Whether treated as world-systemic openings or placement relative to the international power structure, global positioning is included in the models. As explained above, global positions are not affected evenly across different positions or time. In order to analyze dynamic changes in the global positioning, social network theory provides valuable tools and methods. By focusing on the set of relationships between actors, one can determine their positioning.

According to world system theories, the global positioning of a country is determined by its trade relationships (Wallerstein [1974] 2011). To determine the placement of the countries and their dynamic changes over time, one can utilize Burt (1987)'s concept of structural equivalence. Structural equivalence is determined by the sets of relationships that actors have with third parties. Two actors are structurally equivalent if they possess the same sets of relationships with the third party actors. Because world systemic position is mainly determined by trade relationships, one can expect states with similar sets of trade relationships to incur similar international strains, which might lead to revolutionary situations. If two states are positioned similarly in the world system, they are more likely to be influenced by similar world-system openings. Thus, I predict that:

**Hypothesis 1: Controlling for domestic strains, the more similarity between the sets of trade relationships of two countries are, the more likely a revolutionary situation in one of them will be followed by the other.**

Sharing the same sets of relationships with third parties is one mechanism that creates an equivalent position to identify states with a similar distribution of international strains. Another type of equivalent position is due to sharing similar types of relations. Role equivalence considers similarity in the types of relationships carried out by actors in the network, as opposed to the similarity in the sets of relationships. By considering the role equivalency of two states, one can account for comparison across different populations (Winship and Mandel, 1984). Regarding the analyses of revolutionary situations, accounting for role equivalence might play an important role in the cases, when states engage in similar type of relationships across core and periphery but with varying countries. For instance the International Powers might have a similar perception on a certain type of states specializing in the trade of certain products. The revolutionaries in these states might receive foreign support but the actual actors sending the support might differ. This might be due to historical reasons or territorial differences.

For example Kurzman (2008) displays the importance of Great Powers in the cases under investigation, but the Great Power making a significant effect is not necessarily the same country for each case.

In such cases, when structural equivalency fails to capture these effects, they can still be captured by role equivalence. Thus, following with the arguments iterated above, one should expect the type of trade being engaged in to have a significant affect in the distribution of international strains. Therefore, I expect:

**Hypothesis 2: Controlling for domestic strains, the more similar the type of products traded by two countries are, the more likely a revolutionary situation in one of them will be followed by the other.**

Aside from global positioning, a second type of international causal factor commonly identified in the literature on revolutions refers to the world cultural linkages between countries. At the global level, Beck (2011) demonstrates correlations between the expansion of world cultural linkages and revolutionary waves even when controlled for hegemonic periods and hegemonic wars, which do not reveal statistically significant coefficients in the models. He cites the importance of global scripts distributed across the world society and argues that the expansion of world cultural linkages play a significant role in revolutionary

waves which are “events of an entire international system” and “cultural events” (p. 193). At this level of analyses, how the international strains are distributed internationally is not specified.

Analyses at lower level hints at why the distribution might be uneven. Tarrow (2012) stresses the importance of transnational activists whose numbers have increased over the years. He identifies this as “a diffusing phenomenon” mainly from industrialized world to industrializing (187). Selbin (2010) stresses the importance of available scripts at the individual level echoing Beck’s findings at the global level and demonstrates the power of stories that can be adapted and distributed by revolutionaries. He argues that the distribution happens based on familiarity and states “(w)e like our stories familiar” (67), to explain that stories result in mimesis not just due to mimicking or passive contagion, but through active engagement of individuals, where they also strive to rise to the occasions told by the stories. Stories of success from revolutionaries in other countries might become inspirational.

Other work on world cultural linkages also reveal that diffusion processes are not distributed across the globe evenly (Beckfield, 2010) and confirm that diffusion of global processes are more likely to diffuse across cohesive trade partners (Polillo and Guillén 2005; Henisz, Zelner and Guillén 2005). As such, cohesive partners are those who trade in greater volumes with each and this is akin to Selbin’s notion of familiarity at a higher level. Thus, if world cultural

linkages are indeed increasing international strains upon the domestic state structures, they are more likely to be distributed similarly among cohesive trade partners. This could be due to mimesis happening through higher frequency of relationships between actors through trade interactions. Thus, I predict that:

**Hypothesis 3: Controlling for domestic strains, the more a state trades with another country experiencing a revolutionary situation, the more it is likely to have a revolutionary situation**

#### **4. Data**

I have collected variables at the state-level from various international time-series datasets to create panel data for 69 countries across six continents between the years 1962 to 2009. The sample selection is based on Reinhart and Rogoff's collected sample and is representative of the global economy as it represents 95% of the world GDP. Because the time period includes close to half a century, not all the countries in the sample exist in each year of the investigation. The countries, which do not exist or do not participate in international trade in the beginning of the sample, are left censored until they become independent states or start participating in international trade. The only country that is right-censored in the dataset is German Federal Republic as it is treated as a separate country from Germany after the unification. The mean GDP per capita of this sample across all years is \$7433 in Constant USD for the year 2000. Using this sample, I have built trade network matrices for each year to calculate the

explanatory measures. In the models that use fixed effects, variables that do not vary in the dependent variable drop from the models. In other words, if a country does not experience any revolutionary situation between 1962 and 2009 they are dropped from the models. For this sample only 48 out of the 69 countries experience at least one revolutionary situation between 1962 and 2009. The fixed effects models report on this smaller sample. The mean GDP per capita for this smaller sample is \$3215. The significant difference between the means of the two samples further support existing literature from both state-centered and world systems theories that economic causes are significant in leading to revolutionary situations.

While it would be more ideal to include a longer time frame with a larger sample of countries, the sample is mainly restricted by data limitations. As it will be detailed below, one of the explanatory variables is based on the Standardized International Trade Codes, which were first reported by UN in 1962, disallowing one to build the measure with as much detail and precision on the types of relationships as required for the earlier years. While it would have been ideal to include all the countries that participate in international trade, the quality of the data decreases when countries with smaller populations or GDPs are added to the sample.

## **5. Dependent Variable**

As discussed above, one of the key findings of state-centered theories of revolutions is that state breakdowns are a pre-condition for revolutions. In other words, revolutions do not break states but state breakdowns may lead to revolutions (Goldstone 1993). Therefore, successful revolutions are the outcome of a series of mechanisms that lead to increased strains on the state structure. Thus, focusing at the state-level instead of a more macro level, such as revolutionary waves is more informative. State-level analysis coupled with an accounting for potential relationships also allows for identifying connections between revolutions that might not appear immediately.

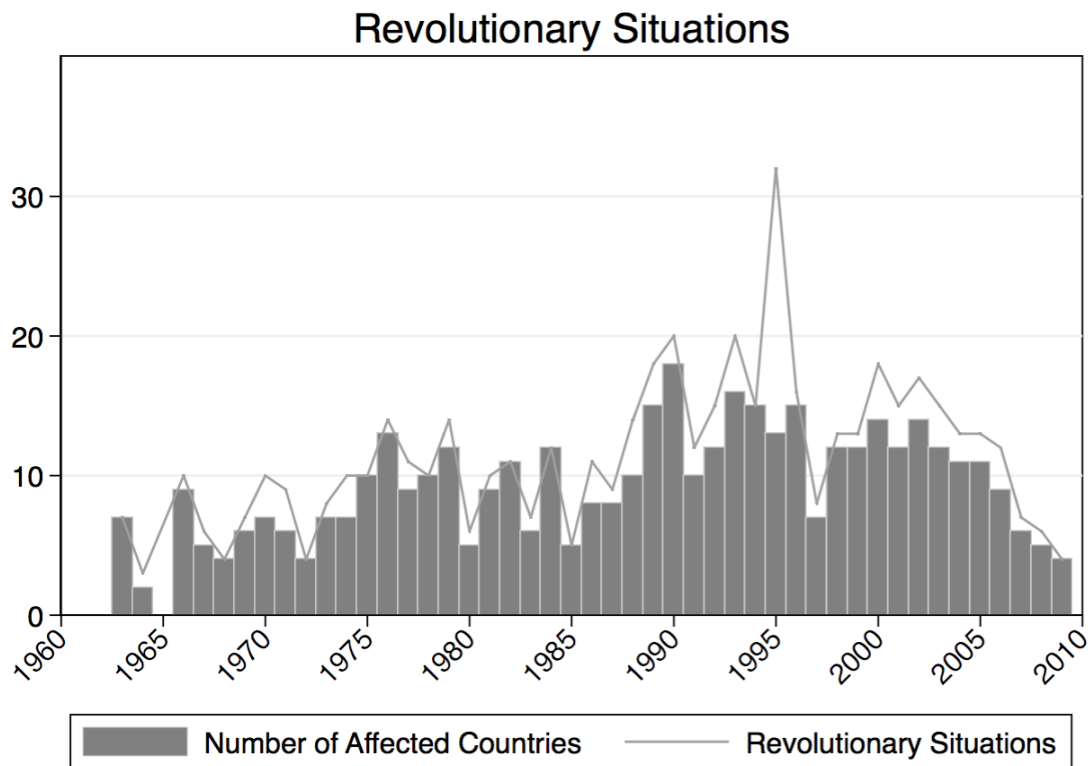
When the goal is to identify the significance of international strains in revolutionary waves, considering revolutionary situations instead of successful revolutionary results is more fitting. Limiting the analysis to only successful cases might result in dropping some important cases from the analyses (Beck 2011). For example, most recently, Arab Spring has affected an entire region but has resulted in successful revolutions in only a fraction of the cases. This should not necessarily be interpreted as unsuccessful cases not being affected by international strains.. For this paper I follow Beck (2011)'s lead to separate revolutionary onsets from revolutionary outcomes and focusing on the former when studying the revolutionary waves. I will utilize the former for the dependent variable.



There is also another important reason for not limiting the dependent variable to successful revolutions and focusing on the onset of revolutions instead: Considering only the successful cases might undermine the international effects of the whole revolutionary wave. World-Systemic openings or cultural linkages might cause significant international strains, but might not interact with other domestic strains. For example, the process of mimesis happening through stories argued by Selbin (2010) does not need to be stories of successful revolutions: they can also be about the promise of revolution. When multiple countries are affected by world-systemic openings or cultural linkages but only a handful of them experience successful revolutionary outcomes, it might be harder to identify what type of international strain was significantly at play. Considering all revolutionary onsets in the analyses might overcome this problem. Therefore, for the analyses below, I control for revolutionary situations as the dependent variable.

To build a dependent variable that accounts for whether a country experiences a revolutionary situation in a given year or not, *Revolutions* (domestic 7) variable was collected as the dependent variable from Banks' Cross-National Time-Series Data Archive (Banks 2010), where events are defined as “[a]ny illegal or forced change in the top government elite, any attempt at such a change, or any successful or unsuccessful armed rebellion whose aim is independence from the central government.” *Revolutions* (domestic7) is a count

variable that reports on the number of events for any given year at the state level. For this sample, there are 524 cases of revolutionary situations experienced by 48 countries (Figure 1). I have then created a dummy variable based on the domestic 7 data to account for whether a country has experienced a revolutionary situation in a given year or not<sup>1</sup>. This dummy variable, revolutionary situations, is utilized as the dependent variable in the models.



**Figure II - Revolutionary Situations Since 1963**

## 6. Explanatory Variable

Echoing the world-systemic and world cultural approaches, previous literature analyzing global diffusion of processes, institutions, and practices have identified trade network measures to play a significant role (Guler, Guillén, and Macpherson 2002; Henisz, Zelner, and Guillén 2005; Polillo and Guillén 2005; Weber, Davis, and Lounsbury 2009). Based on the lead of this line of work, I have built structural equivalence in trade, role equivalence in trade, and cohesion in trade measures to test the three hypotheses. The trade data for structural equivalence and trade cohesion measure was collected from Correlates of War (COW)<sup>2</sup> Project Trade Data Set and the trade data with the required Standardized International Trade Codes was collected from two separate sources. For the years between 1962 and 2000, I used Feenstra et al. (2005)'s World Trade Flows: 1962-2000 Dataset. For the years between 2000 and 2009, I have relied on United Nations COMTRADE Database. For the earlier years, the former dataset provides a more reliable alternative to COMTRADE as the dataset includes multiple sources including but not limited to UN COMTRADE. Three explanatory variables are used for testing the international strains identified in the three hypotheses.

The first hypothesis is tested by structural equivalence in trade variable. I built this variable to account for the occupancy of similar positions in the trade network. This measure relies on correlations of the sets of trade partners between

two countries in a given year while also taking the volume of trade in each sets in account. A hypothetical perfect correlation would happen if two countries were to trade in the same volume of products with the same set of countries in a given year. This measure increases for a country if it occupies a similar position with other countries that experience a revolutionary situation in a given year. To calculate the measure, first I built a separate symmetric bilateral trade matrix for each year. Missing ties were coded as 0 and were treated as absent ties. Imputation of missing bilateral trade values is problematic, especially for cases regarding international conflict or sovereign crises (Barbieri, Keshk, and Pollins 2009). These bilateral trade matrices were used for both this measure and the cohesion in trade measure. After the matrices were built, the correlation matrix of trade partners for each country was calculated. Then, a vector of revolutionary situations ( $RS_{jt}$ ) for each year was created. These vectors, which were used in the construction of each explanatory variable, were coded as the number of revolutionary situations a country experienced in a given year and coded as 0 if otherwise. Finally, the correlation matrices was multiplied by the  $RS_{jt}$  (Revolutionary Situations) vectors for the given year to attain the measure:

$$\text{Structural equivalence in trade effect}_{it} = \sum_j RS_{jt} \times r(\text{Trade}_{it}, \text{Trade}_{jt}),$$

where  $i$  and  $j$  are the countries in a trade relationship and  $t$  is time.

This score is not bounded and can be either positive or negative. The score increases if a focal country is has higher structural equivalence with other countries that experience a revolutionary situation. It also is susceptible to the number of revolutionary situations in the given year. If structurally equivalent countries are experiencing multiple revolutionary situations in the give year this also adds to the score. According to hypothesis 1, structural equivalence in trade effect is expected to have a significant effect with a positive magnitude on the probability of a revolutionary situation taking place in a given year.

For the second hypothesis, I calculated a Role Equivalence for Revolutionary Situations in Trade measure, which is adapted from the previously used Role Equivalence in Trade measures in literature. This measure was initially conceptualized by Winship and Mandel (1984) and later realized by Guler et al (2002). It considers the similarities of the types of products that are traded by the countries in the sample to account for the similarities in their trade structures. This requires data on the types of product that are traded by each country in the sample. The operationalization is carried out by utilizing The Standardized International Trade Codes (SITC), which are reported by the United Nations Statistics division. Since the implementation of SITC began only in 1962, this measure cannot be built for earlier dates and limits the earliest date of data available for the sample to 1962. The Standardized International Trade Codes go from general to specific as the number of digits in a code increases. The single

digit codes are the most general ones. The two digit codes are subgroups of single digits and three digit codes are subgroups of two digit codes. For example, SITC 0 is “food and live animals.” SITC 01 is “meat and meat preparations.” SITC 011 is “meat of bovine animals, fresh, chilled or frozen.” The measure is built using the 2-digit level codes, which are neither too specific nor too general.

To build the measure, I have collected the relevant SITC data from two separate sources. For the years between 2000 and 2008, I have relied on United Nations COMTRADE Database. For the years between 1962 and 2000, I used Feenstra et al. (2005)’s World Trade Flows: 1962-2000 Dataset. For the earlier years, Feenstra et al.’s dataset provides a more reliable alternative to COMTRADE, as the dataset includes multiple sources including but not limited to UN COMTRADE. The World Trade Flows: 1962-2000 Dataset only reports 4-digit SITC codes, so to build the network measure, I have collapsed them into 2-digit product categories. I have collected the data from UN COMTRADE at 2-digit product level. Then I followed the procedure used by Polillo and Guillén (2005). First I constructed an export product category share vector (EPSV) and an import product category share vector (IPSV) for each country  $i$  and year  $t$ :

$$EPSV_{it} = \frac{exports_{ikt}}{\sum_k exports_{ikt}},$$

$$IPSV_{it} = \frac{imports_{ikt}}{\sum_k imports_{ikt}},$$

where  $exports_{ikt}$  is the value of exports in dollars for country  $i$  in year  $t$  for product  $k$ , and  $imports_{ikt}$  is the value of imports in dollars for country  $i$  in year  $t$  for product  $k$ . Then for each given year, I stacked these two vectors together, to form a product category share vector,  $PSV_{it}$ . Finally, I calculated my measure of role equivalence in trade with the following equation:

$$Role\ Equivalence\ in\ Trade_{it} = \sum_i RS_{jt} \times r(PSV_{it}, PSV_{jt}),$$

where  $r$  is the Pearson correlation coefficient between product share vectors, PSVs, for states  $i$  and  $j$  during year  $t$ ;  $RS$  equals the number of revolutionary situations state  $j$  has in year  $t$ . This score increases if the focal state's product share vector has a high correlation with revolutionary states' product share vectors in a given year. If a state's product share vectors are highly positively correlated with states that experience revolutionary situations in a given year, the score will increase. This score is not bounded and can also be negative if the correlations between the types of products of two countries are negative.

The objective in using this measure is creating a score based on a bimodal social network. For a given year  $r(PSV_{it}, PSV_{jt})$ , creates a matrix that determines the location of each country in the role equivalence in trade dimension of global space.  $RS_{jt}$  identifies the countries that experienced a revolutionary situation in the given year. The score is then calculated upon a focal state's distance to

number of revolutions that took place in that given year. According to hypothesis 2, I expect role equivalence in trade to have a significant positive effect on the number of revolutions in the focal state in a given year.

Finally, to test hypothesis 3, I have built cohesion in trade measure. This measure considers the share of a focal country's trade with another country so it requires both bilateral trade data and total trade data, which COW Data Set provides. The values in the trade matrices were then divided by the total trade in each country to create a matrix that reports on share of a focal country's trade with another compared to its total trade. This new matrix was then multiplied with the  $RS_{jt}$  vector for the given year as the following:

$$Trade\ Cohesion\ Effect_{it} = \left( \sum_j RS_{jt} \frac{Trade_{ijt}}{Trade_{it}} \right)$$

where,  $Trade_{ijt}$ , refers to sum of bilateral trade between country  $i$  and  $j$  in year  $t$ , and  $Trade_{it}$  refers to the total trade country  $i$  engaged in with all other countries in year  $t$ . As with the other measures, trade cohesion effect considers the sum of a focal countries cohesion scores with all other countries that experience a revolutionary situation in the give year. A country gets higher scores if cohesive trade partners experience more number of revolutionary situations in the given year. If a country has no cohesive partners experiencing a revolutionary situation, then the score is 0. According to hypothesis 3, this measure should



have a statistically significant effect with a positive magnitude on the dependent variable.

## 7. Other Variables

To control for domestic strains, I introduce state-level controls identified by Goldstone (1993) and build multivariate models. I have collected annual population growth and annual GDP growth variables from World Development Indicators (WDI) Dataset<sup>3</sup>. These variables report the percentage change from the values in the previous year. In order to control for economic strain, I have collected the *crisis\_tally* variable from Reinhart and Rogoff's Varieties Dataset (Reinhart and Rogoff 2013). This dataset provides an exhaustive list of various economic crises experienced by states between 1800 and 2010. The *crisis\_tally* variable is a count variable based upon the total count of banking crises, currency crashes, sovereign domestic and external debt crises, inflation crises, or stock market crashes a state has experienced in a given year. To control for international warfare, I have collected the Interstate Major Episodes of Political Violence (*inttot*) variable from Major Episodes of Political Violence, 1946-2008 Dataset (Marshall, n.d.)<sup>4</sup>. This variable represents a magnitude score summed from interstate violence and interstate war happening in a state. It excludes any war or violence due to non-independent state or groups and is fitting to control for international strains due to interstate wars. A time trend (calendar year) is

also included in all the models. Table VIII lists the descriptive statistics of the control variables along with the explanatory variables.

**Table VIII - Descriptive Statistics**

Variable	Mean	SD	Min	Max
Revolutionary Situations	0.154	0.361	0	1
Revolutions (domestic)	0.186	0.51	0	9
Structural Equivalence in Trade	6.408	3.403	-0.412	23.846
Role Equivalence in Trade	3.551	2.001	-0.074	13.614
Trade Cohesion	0.586	18.936	0	913.468
GDP Growth (Annual %)	3.865	4.238	-26.479	42.410
Interstate Major Episodes of Violence (inttot)	0.052	0.342	0	4
Crisis Tally	0.937	1.17	0	7
Population Growth (Annual %)	1.618	1.046	-4.529	5.322

*n=2821, 69 Countries*

## 8. Method

The dependent variable is a binary categorical variable. This violates the assumptions of homoscedasticity and uncorrelated error terms for ordinary least squares regression. While Poisson regression is applicable for violation of these assumptions, the dependent variable is also overdispersed, as its mean is not equal to its variance. For such a dependent variable, logistic regression model fits better (Allison 2009).

For  $\pi_{it}$  as the probability of a revolutionary situation by country  $i$  at time  $t$ , I built logistic regression models setting  $\log\left(\frac{\pi_i}{1-\pi_i}\right)$  equal to linear function of  $x$  variables,  $\beta x_i$ , where  $\beta x_{it} = \beta x_0 + \beta_1 x_{it1} + \dots + \beta_k x_{itk}$ . Easy interpretation of these coefficients as a percent change in the odds caused by a 1-unit increase in  $x$

is allowed by the transformation,  $100(e^\beta - 1)$  (Allison 1999). I have built two sets of models. The first one estimates logistic regression models with random effects,

$$\log \left[ \frac{\pi_{it}}{1-\pi_{it}} \right] = \beta x_{it} + \alpha_i ,$$

built by using *xtlogit* command with the *re* option. Here  $\alpha_i$  is country-specific factors that do not vary over time. These models assume that errors based on individual countries are stable over the time period of analysis. I also built logistic regression models with fixed effects,

$$\log \left[ \frac{\pi_{it}}{1-\pi_{it}} \right] = \mu_t + \beta x_{it} + \alpha_i ,$$

built by using *xtlogit* command in STATA with the *fe* option. Here  $\alpha_i$  may be correlated with time varying  $x$ .

The former models are built with the assumption unobserved factors stay stable over time and correct against inefficiency, whereas the latter models correct against spuriousness by controlling for unobserved heterogeneity. Controlling for the unobserved variables that do not change over time is valuable when analyzing revolutionary waves, as many variables that are traditionally of interest but hard to be observed can be accounted for. For example, in this sample only independent states are considered, and as such, fixed effects allows for controlling for whether a country has a colonial past or not. Similarly, using fixed effects also controls for the geographies of the states that do not change over

this period. While controlling for unobserved heterogeneity adds to the power of the analyses, fixed effects models can only include variables that vary in the group over the period of observation. This also applies to the dependent variable. Therefore, introducing fixed effects results in the groups, which do not experience a revolutionary situation in the period studied, to drop from the analyses. After introducing the fixed effects, 48 countries remain in the models.

Random effects models are expected to fit better if  $\alpha_{it}$  is not correlated with the  $x$ . For the purposes of this paper, fixed effects models are likely to be a better fit, as based on the literature, the effects due to global population is expected to change over time. Nevertheless, the random effects models including all the countries are reported first in the paper to check for any significant changes in the results due to the loss a subset of countries with a significantly higher GDP per capita average. In order to control for reverse causation all variables are lagged by 1 year.

## **9. Results**

Table X reports the correlation matrix of the variables for the sample. The results in this table are the correlations before controls for panel data. Table XI reports the results of the logistic regression models with random effects using incidence rate ratios for easier interpretations. Finally, Table XII reports the results of logistic regression models with fixed effects.

The results reveal some support for hypothesis 1, strong support for hypothesis 2, and no support for hypothesis 3. This seems to support theories based on structural positions, compared to the hypotheses derived from world cultural linkages arguments; however, some caution should be taken before drawing strong conclusions, which will be discussed in the final section of the paper.

**Table IX - Countries in the Sample**

Algeria*	Angola*	Argentina*
Australia	Austria	Belgium
Bolivia*	Brazil*	Canada
Central African Republic*	Chile*	China*
Colombia	Costa Rica	Cote d'Ivoire*
Denmark	Dominican Republic*	Ecuador*
Egypt*	El Salvador*	Finland
France	German Federal Republic*	Germany
Ghana*	Greece*	Guatemala*
Honduras*	Hungary*	India*
Indonesia*	Ireland	Italy*
Japan	Kenya*	Korea, Republic*
Malaysia*	Mauritius	Mexico*
Morocco*	Myanmar*	Netherlands
New Zealand	Nicaragua*	Nigeria*
Norway	Panama*	Paraguay*
Peru*	Philippines*	Poland
Portugal*	Romania*	Russian Federation*
Singapore	South Africa*	Spain*
Sri Lanka*	Sweden	Switzerland
Thailand*	Tunisia*	Turkey*
United Kingdom*	United States	Uruguay
Venezuela*	Zambia*	Zimbabwe*

*\*countries included in the models for Table XI*

**Table X - Pairwise Correlations**

Variable	1	2	3	4	5	6	7
----------	---	---	---	---	---	---	---

1.Revolutionary Situations	...						
2.Structural Equivalence in Trade	0.217*	...					
3.Role Equivalence in Trade	0.217*	0.576*	...				
4.Trade Cohesion	-0.006	-0.026	-0.013	...			
5.GDP Growth (Annual %)	-0.081*	0.020	0.076*	-0.018*	...		
6.Interstate Major Episodes of Violence (inttot)	0.014	-0.073*	-0.062*	0.01	-0.003	...	
7.Crisis Tally	0.130*	0.194*	0.126*	-0.008	-0.260*	-0.031	...
8.Population Growth (Annual %)	0.114*	0.067*	-0.153*	-0.013	0.160*	0.026	0.073*

*n=2795, 69 countries; \*p<0.05*

The results of the models built with random effects are very similar to the models built with fixed effects. For the explanatory variables, the statistical significances are at the same level and the magnitudes of the variables are in the same direction for each corresponding model. There are minute differences in the strength of the magnitude in the models, but this is almost negligible. For the control variables, there is some variance in the level of significances, but the significant variables in first set of models are still significant in the second set of models except the constant variable for the annual population growth. However, the interaction variable for population growth is still significant in the fixed effects models revealing a significant effect in the expected direction. This similarity in the two sets of models, adds further confidence to the robustness of the results. As the models with fixed effects are expected to be a better fit, only the results of Table XI are interpreted below due to space constraints.

It is worth noting that Role Equivalence in Trade is statistically significant at  $p<0.001$  level in all of the models in which it is included and reveals results in the expected direction. Contrary to the constant significance of Role Equivalence in Trade, Trade Cohesion does not reach statistical significance in any of the

models it is included in. Structural Equivalence in Trade is significant in all the models that exclude Role Equivalence in Trade.

**Table XI - Panel Random Effects Logistic Regression Models for Revolutionary Situations**

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Structural Equivalence in Trade	1.091*** (0.020)			1.082*** (0.021)			1.013 (0.027)
Role Equivalence in Trade		1.229*** (0.042)			1.209*** (0.042)		1.189*** (0.059)
Trade Cohesion			1.003 (0.004)			1.003 (0.004)	1.002 (0.004)
GDP Growth (Annual %)				0.936*** (0.014)	0.939*** (0.014)	0.938*** (0.014)	0.939*** (0.014)
Interstate Major Episodes of Violence (inttot)				1.587* 0.283	1.628** (0.293)	1.544* (0.274)	1.631** (0.293)
Crisis Tally				1.045 (0.058)	1.059 (0.058)	1.080 (0.059)	1.055 (0.059)
Population Growth (Annual %)				3.651*** (1.311)	3.583*** (1.287)	3.927*** (1.406)	3.566*** (1.283)
[Population Growth (Annual %)] <sup>2</sup>				0.689*** (0.062)	0.698*** (0.062)	0.675*** (0.060)	0.698*** (0.062)
Calendar year	1.008 (0.005)	1.000 (0.005)	1.014 (0.005)	1.001 (0.007)	0.995 (0.007)	1.006 (0.007)	0.995 (0.007)
Constant	0.000 (0.000)	0.014 (0.146)	0.000 (0.000)	0.007 (0.088)	345.886 (4811.055)	0.000 (0.000)	283.535 (3946.963)
Log likelihood	-992.385	-985.073	- 1003.372	-963.866	-957.761	-972.391	-957.501
<i>n</i>	2821	2821	2821	2821	2821	2821	2821
<i>Number of Countries</i>	69	69	69	69	69	69	69

**NOTE** – Coefficients are reported as odds ratios; standard errors are reported in parentheses; all independent variables are measured with a one-year lag; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

**Table XII - Panel Fixed Effects Logistic Regression Models for Revolutionary Situations**

Variables	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14
Structural Equivalence in Trade	1.082*** (0.020)			1.076*** (0.021)			1.000 (0.027)
Role Equivalence in Trade		1.228*** (0.042)			1.209*** (0.043)		1.205*** (0.061)
Trade Cohesion			1.057 (0.057)			1.061 (0.052)	1.052 (0.043)
GDP Growth (Annual %)				0.938*** (0.014)	0.941*** (0.014)	0.941*** (0.014)	0.942*** (0.014)
Interstate Major Episodes of Violence (inttot)				1.616** 0.287	1.661** (0.297)	1.489* (0.268)	1.582* (0.288)
Crisis Tally				1.019 (0.056)	1.030 (0.057)	1.054 (0.057)	1.033 (0.057)

Population Growth (Annual %)				2.090 (0.824)	2.021 (0.792)	2.223* (0.874)	1.982 (0.783)
[Population Growth (Annual %)] <sup>2</sup>				0.689** (0.062)	0.749** (0.070)	0.711*** (0.068)	0.739** (0.070)
Calendar year	1.009 (0.005)	1.000 (0.005)	1.014 (0.005)	0.993 (0.007)	0.987 (0.007)	0.995 (0.007)	0.986 (0.007)
Log likelihood	-797.439	-788.518	-804.122	-769.653	-762.697	-774.282	-760.336
<i>n</i>	2035	2035	2035	2035	2035	2035	2035
Number of Countries	48	48	48	48	48	48	48

**NOTE** – Coefficients are reported as odds ratios; standard errors are reported in parentheses; all independent variables are measured with a one-year lag; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

The first three models in Table XI are models built with only the explanatory variable and a time trend. These models are followed by three models that include a single explanatory variable with all the control variables. The final model includes all variables. In Model 8, Structural Equivalence in Trade is highly statistically significant at  $p < 0.001$  level with a magnitude of 8.2% increase in the odds of a revolutionary situation for every unit increase in the measure. In Model 9, Role Equivalence in Trade is statistically significant at the same level with a high magnitude of 22.8% in the odds of a revolutionary situation for every unit increase in the measure. Model 10 reveals no statistical significance for Trade Cohesion although its magnitude is in the expected direction with a 5.7% increase in the odds of a revolutionary situation for every unit increase in the measure.

Models 11, 12, and 13 introduce the control variables to the models. Despite the introduction of the controls, the results do not deviate much from the first three models. In Model 11, Structural Equivalence in Trade remains statistically significant at  $p < 0.001$  level. Its magnitude diminishes slightly to an increase of 7.6% in the odds of revolutionary situations for every unit increase in



the measure. In Model 12, a similar observation can be made for Role Equivalence in Trade with its statistical significance at  $p < 0.001$  level and a slight drop of its magnitude to 20.9% increase in the odds of a revolutionary situation for every unit increase in the measure. In Model 13, Trade Cohesion fails to reach statistical significance again. In all these models, Annual GDP Growth, Interstate Major Episodes of Violence, and Population Growth are statistically significant and have magnitudes in the expected directions. Higher levels of annual GDP growth have a negative impact in the odds of a revolutionary situation happening in a given year. The effect is a 6.2% decrease in the odds of a revolutionary situation for every percent increase of Annual GDP growth in a year for Model 11 and 5.9% decrease for Models 12 and 13. A unit increase in Interstate Major Episodes of Violence increases the odds of a revolutionary situation by 61.6%, 66.1%, and 48.9% in the Models 11, 12, and 13 respectively. Population Growth displays a u-shaped effect where lower values of population growth significantly decrease the odds of a revolutionary situation, but higher values of population growth significantly increases them. Crisis Tally is not statistically significant in these models.

Finally, Model 14 controls for all the variables. Here, Structural Equivalence in Trade loses its statistical significance and the magnitude drops to a value that makes less than a 0.001% increase. Its confidence interval is between a 5.2% decrease and a 5.6% increase in the odds of a revolutionary situation,

stressing its failure to reach significance. Whereas, the Structural Equivalence in Trade loses its magnitude in significance, Role Equivalence in Revolution reveals a very similar result to Model 12 with reaching statistical significance again at the level of  $p < 0.001$  and a magnitude of 20.5% increase in the odds of a revolutionary situation for every unit increase in the measure. This variable has the second highest level of significance in the model after Annual GDP Growth. Its magnitude corresponds to an increase of 45.5% increase in the odds of a revolutionary situation for every standard deviation increase in Role Equivalence in Trade. Control variables display similar results in the final model with all of them reaching statistical significance remaining statistically significant in the same direction of magnitude. Crisis Tally fails to reach statistical significance in this model as well.

## **10. Discussion and Conclusion**

The goal of this paper was to investigate effects of international strains on revolutionary situations. As recent reviews in the literature pointed out international strains are not included in all the analysis of variations and when they do they might not always be considered to have causal effects. This results in a gap in the literature regarding the topography of international strains (Go 2014, Lawson 2015). To diminish this gap, I have created measures of connectedness across different dimensions of relationships related to trade in the global space. Compared to previous research, which identify the revolutionary waves based on

cultural connections, I have refrained from a priori identification of waves, but instead applied tests to investigate linkages through these three dimensions of trade. The three hypotheses were derived from existing research in the literature of revolutions.

The results confirm the significance of international strains on revolutions. Future research should continue to account for international strains and treat them rigorously. Moreover, the models further point towards confirming a common finding in the literature on the importance of global positioning. The two hypotheses that revealed significant results in models were derived from previous findings that suggested that the positioning in the world system play a significant role. Out of the two measures testing the effects of global positions, Role Equivalence in Trade has reached statistical significance at  $p < 0.001$  in all levels and revealed a high magnitude in all models. This hints that clusters of revolutionary situations across time are highly clustered around countries that share a similar role in global trade networks<sup>5</sup>. This is likely to be due to foreign groups having a similar perception regarding role equivalent countries. However, Structural Equivalence in Trade losing its significance when Role Equivalence is introduced might be hinting another process, as it will be discussed below along with hypothesis 3.

Although there was no confirmation for hypothesis 3, this does not necessarily negate the previous findings regarding world cultural linkages. While

these results reveal that there does not seem to be any process of cohesion or normative mimesis happening among trade partners, other cultural linkages such as religious networks or immigration networks might play a significant role in the diffusion of revolutionary situations and future research should investigate them. Other types of cultural networks should rigorously be studied in the future research, especially the complication of results in Model 14, which hints that the Structural Equivalence in Trade might be spurious. If indeed the real effect is happening due to Role Equivalence and not Structural Equivalence, this might also indicate a mimetic behavior.

Previously in the organizations literature, Role Equivalence in Trade has been interpreted as a proxy for competitive mimicry and explained as a world cultural process in economic sociology literature. While this explanation is fitting for diffusion of practices and institutions, it does not fit as well for the case of revolutions as competition among revolutionaries is unlikely. However, there could be two alternative explanations based on this line of thought opposed to the hypothesis derived above based on dependency arguments. One potential explanation could be competition among states in the global markets resulting in a zero-sum game for states specializing in certain type of products in certain time periods. Therefore, by mimicking the behavior of their competitors, countries might be experiencing higher strains eventually leading to revolutionary situations in competitors. A second potential explanation could be due to the

people of countries trading in similar products sharing a similar culture. The people of a country specializing in agriculture might identify more with another country's fellow farmers. This might result in Selbin (2010)'s concept of mimesis due to familiarity. Future research should focus on uncovering these effects.

As these results show, further scrutiny of global processes can significantly increase our understandings of not only global processes, but also state institutions. Previously, these measures of interconnectedness were used in economic sociology and management literatures to test economic and business related phenomena. This paper finds that these dimensions of trade networks have significant effects beyond economic phenomena. Global networks also affect political and social crises. These findings add more to the existing evidence of embeddedness of markets in social processes.

## 11. References

- Allison, P. D. 2009. *Fixed Effects Regression Models (Quantitative Applications in the Social Sciences)*. 1st ed. Sage Publications, Inc.
- Arrighi, G. 2010. *The Long Twentieth Century: Money, Power and the Origins of Our Times (New and Updated Edition)*. New and Updated Edition. Verso.
- Barbieri, K. et al. 2009. "Trading Data: Evaluating Our Assumptions and Coding Rules." *Conflict Management and Peace Science* 26(5):471–91.
- Beck, C. J. 2011. "The World-Cultural Origins of Revolutionary Waves Five Centuries of European Contention." *Social Science History* 35(2):167–207.
- Beckfield, J. 2010. "The Social Structure of the World Polity." *American Journal of Sociology* 115(4):1018–68.
- Burt, R. S. 1987. "Social Contagion and Innovation: Cohesion Versus Structural Equivalence." 92(6):1287–1335.
- Collins, R. 1999. *Macrohistory: Essays in Sociology of the Long Run*. 1st ed. Stanford, CA: Stanford University Press.
- Davis, G. F., D. McAdam, W. R. Scott, and M. N. Zald. 2005. *Social Movements and Organization Theory*. Cambridge University Press.
- Feenstra, R. C., R. E. Lipsey, H. Deng, A. C. Ma, and H. Mo. 2005. "World Trade Flows: 1962-2000." NBER Working Paper Series.
- Foran, J. 2005. *Taking Power: on the Origins of Third World Revolutions*. Cambridge University Press.
- Goldstone, J. A. 1991. *Revolution and Rebellion in the Early Modern World*. Berkeley and Los Angeles, CA: University of California Press.
- Goldstone, J. A. 2001. "Toward a Fourth Generation of Revolutionary Theory." *Annual Review of Political Science* 4:139–87.
- Goldstone, J. A. 2014. *Revolutions: a Very Short Introduction*. Oxford University Press.
- Goodwin, J. 2001. *No Other Way Out: States and Revolutionary Movements, 1945-1991*. 1st ed. Cambridge University Press.
- Guler, I., M. F. Guillén, and J. M. Macpherson. 2002. "Global Competition, Institutions, and the Diffusion of Organizational Practices: the International

- Spread of ISO 9000 Quality Certificates.” *Administrative Science Quarterly* 47:207–32.
- Henisz, W. J., B. A. Zelner, and M. F. Guillén. 2005. “The Worldwide Diffusion of Market-Oriented Infrastructure Reform, 1977–1999.” *American Sociological Review* 70:871–97.
- Kurzman, C. 2008. *Democracy Denied, 1905-1915*. Harvard University Press.
- Lawson, G. 2015. “Revolutions and the International.” *Theory and Society* 44(4):299–319.
- Marshall, M. G. 2010. “Major Episodes of Political Violence (MEPV) and Conflict Regions, 1964-2008.” Retrieved ([www.systemicpeace.org](http://www.systemicpeace.org)).
- Polillo, S. and M. F. Guillén. 2005. “Globalization Pressures and the State: the Worldwide Spread of Central Bank Independence.” *American Journal of Sociology* 110(6):1764–1802.
- Reinhart, C. M. and K. Rogoff. n.d. “This Time Is Different - a Book by Carmen M. Reinhart and Kenneth S. Rogoff.” Retrieved May 15, 2015 (<http://reinhartandrogoff.com>).
- Selbin, E. 2009. *Revolution, Rebellion, Resistance: the Power of Story*. Zed Books.
- Skocpol, T. 1979. *States and Social Revolutions: a Comparative Analysis of France, Russia and China*. Cambridge University Press.
- Tarrow, S. 2012. *Strangers at the Gates*. Cambridge University Press.
- Tilly, C. 1996. *European Revolutions: 1492-1992 (Making of Europe)*. Wiley-Blackwell.
- Trotsky, L. 2011. *Results and Prospects*. Kindle Edition. Charles River Editors.
- Wallerstein, I. 2011. *The Modern World-System I: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century, with a New Prologue*. 1st ed. University of California Press.
- Weber, K., G. F. Davis, and M. Lounsbury. 2009. “Policy as Myth and Ceremony? the Global Spread of Stock Exchanges, 1980-2005.” *Academy of Management Journal* 52(6):1319–47.
- Winship, C. and M. Mandel. 1983. “Roles and Positions: a Critique and Extension of the Blockmodeling Approach.” *Sociological methodology* 14:314–4

---

<sup>1</sup> There were two main reasons for opting for a binary categorical variable as the dependent variable. First, although they are not as rare as successful revolutionary outcomes, revolutionary situations are still rare events. Most countries in the sample do not experience more than a single revolutionary situation in a given year so a binary categorical variable is less susceptible to being affected by outlier cases. Second, negative binomial models are not as easily controlled for conditional fixed effects properly (Allison and Waterman 2002). Using a binary categorical variable allows for building logistic regression models with conditional fixed effects. Negative binomial models using *domestic7* variable with random effects provided similar results to the models with random effects presented in the paper.

<sup>2</sup> Version 3.0 of the Bilateral Trade Dataset reported in dyadic trade relationships was used to build the measures. Accessed on Jan 15, 2015. The data can be found online at <http://correlatesofwar.org>.

<sup>3</sup> World Development Indicators Dataset can be found online at <http://data.worldbank.org/data-catalog/world-development-indicators> I have relied on the STATA version compiled by Joseph N. Cohen available at [www.josephncohen.info](http://www.josephncohen.info) Accessed on May 16, 2013

<sup>4</sup> Goldstone argues for an interaction between domestic variables, however, the models that tested for interactions between *crisis\_tally* and *inttot* did not reveal any significant results. Because revolutionary events are relatively rare, introducing too many problems might create problems due to losing degrees of freedom. Due to this reason and lack of statistical significance in interaction terms, the interactions were dropped in the models reported.

<sup>5</sup> Models controlling for Terms of Trade adjustment (constant LCU) (NYTTFGNFSKN) variable from WDI neither changed the significance levels of any of the other variables nor revealed any statistically significant effects of Terms of Trade. The coefficient displayed a 0% magnitude of effect in the odds of revolutionary situations. This suggests role equivalence effect is happening independent of global price changes. Models with this variable were not reported in the paper due to introducing missing data problems (Number of observations in fixed effects models drops to 1805).



# ARTICLE 3: A THEORY OF STATE SECULARIZATION THROUGH POST-REVOLUTIONARY POLITICAL CONTENTION

## **1. Abstract**

State Secularization is a process involving mobilization, political tactics, and resources as opposing forces struggle over three major institutional dimensions. Examining the history of state secularization in Turkey, Mexico, and France in the aftermath of revolutions, this paper demonstrates that the degree of secularization is determined by political contention. (1) The revolutionary state attempts to seize church property, which opens the way for further struggles. (2) If the church administers law through its own courts, or has an autonomous code of law, revolutionary states struggle to substitute secular courts and state-enacted law. (3) Churches often control education; a revolutionary state eventually attempts to take control of education when it mobilizes sufficient resources for the required state capacity. Taking all these dimensions together, the struggle over secularization has many partial outcomes and stopping places, and thus mixed patterns are much more typical than an ideal type transition to pure secularist modernity.

## **2. Introduction**

In September 2011, Recep Tayyip Erdoğan, who was the Prime Minister of Turkey at the time, made his first visit to Egypt following the fall of Mubarak regime and was greeted by signs that stated he was a “hero” and even “the Savior of Islam and Saint of Allah.” Speaking to these fervent supporters, which were composed mostly of Muslim Brotherhood supporters, Erdoğan declared “I recommend a secular constitution to Egypt” (İdiz 2011; Vatan 2011). At first, this might seem as a triumphant moment from a modernist perspective that expects secularism as a historical terminus. Yet, during the same trip Erdoğan also stated that secularism is not atheism and individuals cannot be secular. He stressed that as an individual, he is a devout Muslim leading a secular state. For such a perspective, an individual claiming to be both at the same time is contradictory.

In this paper, I argue that although they interact and affect each other, secularism at state and individual level are different processes. I depart from previous works that stress the importance of comparative studies that focus on a higher level of analyses (Jacobsohn, 2003; Kuru 2009; Halikiopoulou 2011; Dobbelaere 2002; Cady and Hurd 2010). Viewed in a historical and comparative perspective, state secularization is the primary driving force of religion’s place in social life; as it happens above all in revolutionary transformations. State secularization is a struggle over the structural position on religious institutions. This struggle is multi-sided and has a range of outcomes because it takes place

along three different dimensions of political contention. Instead of assuming that secularization is a terminal outcome, I problematize secularization itself, and argue that it's a reversible and continuous process. Instead of binary typologies of secular and religious states, but I argue for differentiation on the degree of secularism in the state institution at a given time.

Examining the history of the state secularization in Turkey, France, and Mexico, I introduce three structural dimensions and demonstrate how the degree of secularization in each is determined by political contention. The pattern of these struggles can be generalized as the following: (1) The revolutionary state attempts to seize church property. It's motivations may be to overcome feudalism, solve government budget problems, or prevent counter-revolutionary groups still loyal to the previous regime; in any case, attempting to seize church property as a resource for mobilization is the first step. It creates an antagonism between the new regime and the Church, and opens the way for further struggles. (2) If the Church administers law through its own courts, or has an autonomous code of law that the state must respect, revolutionary secularists struggle to substitute secular courts and state-enacted law. This happens as secularists attempt to legitimate their acts of resource mobilization. But revolutionary states may also find it expedient to keep religious institutions as part of the state instead of removing or delegitimizing them completely, because they can be used to publicize revolutionary changes themselves. Rights of individuals and religious

groups to practice religion in their own lives are formed in the context of these political struggles over legal institutions. (3) Churches often control education, especially elementary education; a revolutionary state eventually attempts to take control of education as well, but this process is the most expensive and requires the most state capacity; hence it comes later, and may involve substantial compromises. Taking all these dimensions together, the struggle over secularization has many partial outcomes and stopping places, and thus mixed patterns are much more typical than an ideal type transition to pure secularist modernity. Indeed, pure secularism in the form of the limitation of religion entirely to private life cannot be taken as the default setting, but needs to be explained by its own particular political circumstances.

### **3. The Ambiguity of Religious Secularization**

Internationally comparative and historical analyses can be useful in filling the gaps in literature regarding state secularization that has been criticized for the dearth of comparative studies and paying uneven representation of the United States of America, as about two thirds of all the articles published in the top three sociology journals in the last three decades until 2007 has focused on the USA. (Gorski and Altınordu 2008; Smilde and May 2010). United States has a unique historical experience of formation of its state institutions and theories from this unique trajectory might not always be applicable to other cases and might even lead to operationalization problems in international surveys, when

individuals might not be able to relate to the contexts being tested (Bender, Cadge, Levitt, and Smilde 2013).

For studying state level secularization, comparative analysis has even more insight, as focusing on one historical trajectory and potential counterfactuals has less power of analysis compared to the information gathered from the variance across multiple cases. Specifically, United States as a secular state that allows for religious competition is far from being a universal model. As Centeno (2003: 18) demonstrates focusing on western examples as the only theoretical models leads to ignoring “contingency, contextuality, and relationality [which] play too important a role in historical developments to allow for all encompassing general laws, and certainly when these are based on faulty samples.” As it will be discussed below, church property plays a significant role in the secularization of states. Yet, the United States being founded with extremely limited church property makes it a deviant case rather than the norm.

Comparative and historical analysis is also powerful for operationalizing Chaves (1994: 750)’s definition of secularism “as the declining scope of religious authority,” which directly refers to a dynamic process—“declining,” not declined. In order to analyze how the declining scope of a particular institution, comparison should be made not only with the trajectory of the institution across time, but also its relation to others. These problems have been recognized in the existing literature by either providing comparative cases within the religious

space in United States or analyzing various forms of secularisms across the globe (Smith 2003a; Jakobsen and Pellegrini 2008; Cady and Hurd 2010; Levey and Modood 2009; Halikiopoulou, 2011; Kuru 2009). In this paper, I add to the existing comparative research by focusing on the state formation periods and identifying underlying mechanisms that lead to multiple forms of secularism. I identify three historical cases of modern state formations in Turkey, Mexico, and France, where the rate of secularism at state level significantly increases in the aftermath of revolutions. While secularization has been suggested to be a process of revolution as a matter of conflict between authorities before (Smith 2003b), based on comparing the similarities in the processes experienced in the three cases, I find that revolutions may lead to secularization processes by presenting the political opportunities that allow opposing groups to significantly alter the legitimating processes for the existence of a state. The challenger groups claiming power to form the new state can legitimate the formation of the new state by deferring to new forms and ideals that would have been entirely available in the previous regimes. Specifically reforms of secularization or challenging religious authority, cannot even be proposed in forms of state that are legitimated through religious authority. Coupled with the necessity to mobilize resources, this leads to distancing of the new state's institutions from the old ones. When previous regimes are tightly coupled with religious authorities, following revolutions formations of new states happen through rapid secularization at state level.

Despite their varying historical trajectories, geopolitical placement, and dominant religious authority type, the historical experiences of France, Turkey, and Mexico reveal common patterns during their secularization processes. Based on these three cases, I argue that secularism of state structure is multi-dimensional and each dimension of secularism exists in degrees. I focus on the mechanisms and patterns that lead to the rise of secular states to provide a macro level theory that both sheds light on state structure, religious authority, and how those relate to individual religiosity.

Analyzing how the scope of religious authority is defined through political struggles across these identified dimensions allows for an in-depth analysis of how secularization is stabilized at state level. I argue that contention over distribution of resources acts as a fuse in the process of secularization over state level. By establishing a monopoly over the definitions of sacred and mundane in societies and power of rituals, religious authority maintains high ideological power. In states with strong religious authority, this ideological power is used to increase the material power of religious authority as well. This can happen through donations from the devout, exemptions from state taxes, or even acting as a trustworthy lending institution due to leveraging the status of being the representative of a supreme being. Challengers to incumbent authority in the state require mobilization of resources. When religious authority owns a significant proportion of the resources in such cases, their ownership becomes an

issue of contention. Because religious authority's material power is heavily supported by its ideological power, contention over religious property begins a process over contention over religious authority's scope over law, civic rights, rituals, and eventually education. In order to maintain the ownership of their resources and newly acquired power, challengers begin a process of acquiring power in other dimensions to secure their position.

While these three dimensions are subjects of ongoing political contention, they are fairly stable in established states. Property rights, makers and executors of law, and the right to provide education are unlikely to go through major changes. When they do, they are coupled with fundamental changes in the state structure. I argue that secularization of the state is an ongoing political struggle that can increase or decrease constantly. In other words, mechanisms of secularization and de-secularization are always at work in conflict. However, the rate of change under stable states is very slow and hard to analyze. For purposes of easier analyses and demonstration of how the contention is fought, state-formation period provides fruitful examples. This is especially the case for the states that are formed in the aftermath of a revolution, where religious authority has a high scope over state affairs before the state breakdown. When highly religious states face revolutions, the challengers attempting to establish a new state require resources for their mobilization. In these cases religious property and property protected under the religious authority is perceived as both threat



and an opportunity for the challenger groups. Left in the hands of the religious authority, these resources might be mobilized for counter-revolutionary purposes. Revolutions provide political opportunities for confiscating the church property. Confiscation of these resources not only weakens potential threats from the previous regime, but also can be utilized for the resource mobilization needs for the formation of a new state. In these cases secularization processes begin as a by-product of resource mobilization for the new state. Thus, secularization processes should not be explained solely as secularist ideologies resulting from growing questioning of religious beliefs, but also be understood as a structural mechanism arising due to the needs of a newly forming state, and they have the potential to create ideal situations for state secularization.

#### **4. “Unsettled lives” and Political Opportunities following Revolutions**

The aftermath of revolutions provide rich evidence for significant swings in the degree of secularism in the state structure. Cultural theories accept institutions to be fairly stable due to removing uncertainty from situations (DiMaggio and Powell 1991). The state with its constitution and laws is one of the most stable type of institutions. The scope of religious authority in the state structure is one of the core institutions in the state as it influences the state’s ethos directly. Moreover, as Mische (2009) shows religious networks overlap with activist and partisan networks and affect how political contention is shaped. Because of the inertia of coded laws and constitution supported by pervasive

networks at the micro and meso levels, change in the degree of secularization is highly costly and takes place over a long period of time.

In order to make clear demonstrations, one needs to find cases where there are significant changes in the degree of secularization in a state structure. Such changes are unlikely to happen in stable states, as secularization requires both structural and cultural changes within a state. As McAdam (1999) demonstrates such political opportunities play a significant role in the beginning of political processes. In the aftermath of revolutions challenger groups are not only presented with such structural political opportunities to cease power; but they can also find opportunities for striving for changes in the existing forms of institutions and scripts. Swidler (1986: 273)'s concepts of culture as a "toolkit" and dividing cultural periods into "settled" and "unsettled" provides a powerful explanation for why this should be expected. Swidler assumes that culture provides a "toolkit" of habits, skills, and styles from which people construct "strategies of action." She argues there are two distinct situations of "settled lives" and "unsettled lives," where culture is enacted differently. In "settled lives" culture permeates into action and distinct analyses of the two are harder. "Unsettled lives," however, are "periods of social transformation" when

*[e]stablished cultural ends are jettisoned with apparent ease, and yet explicitly articulated cultural models, such as ideologies, play a powerful role in organizing social life... In such periods, ideologies-explicit, articulated, highly organized meaning systems (both political and religious)-establish new*

*styles of strategies of action. When people are learning new ways of organizing individual and collective action, practicing unfamiliar habits until they become familiar, then doctrine, symbol and ritual directly shape action (278).*

As state-centered theorists have long argued state-breakdown leads to revolutions and not vice versa (Collins 1999; Goldstone 1993; Skocpol 1979). While these theories argue that ideology is not a decisive cause of revolutions, they accept that in its aftermath, ideology becomes significant for how society will be reconstructed. As such, these periods create “unsettled lives,” when due to increased uncertainty about established legitimacy; individuals rely on explicit stated scripts such as ideologies to guide their actions. Because there is no commonly agreed upon “settled” culture at these periods, they serve as ideal periods for political opportunities to use challenging ideologies to frame in opposition to previously dominant ones.

With regards to secularization processes, they require changes not only in the institutional and legal norms but also in the process of legitimizing the carried out actions. Thus, secularization at state level requires both structural and cultural reforms. The breakdowns of states with high scope of religious authority result in such “unsettled” periods and provide “political opportunities” for secularism to be a legitimating ideology in political contention for challenger groups. While under “settled” periods, it might be highly costly to challenge established authority due to being both legally and culturally disallowed, such as

being blasphemous and illegal, during “unsettled lives” they might become less costly. As the scope of religious authority in a state is tightly coupled with the very institutions that form the structure of a state, historical cases of state-breakdowns serve as great examples for studying such “unsettled” periods. Thus, it is expected to find significant changes to the degree of secularism in state structure following revolutions, especially in cases when the previous state is tightly coupled with a religious or secularist authority. It is, then, not surprising to find that certain revolutions might instigate political contention by secularists against religious authority. Such cases are seen following the breakdowns of states in Turkish, Mexican, and French Revolutions (Table XII).

**Table XIII - Three Cases of State Secularization**

Country	Dominant Religion	Church Property	Law and Civic Rights	Education
Turkey	Islam	Nationalization of all religious property with the abolition of Caliphate (March 1924)	Implementation of secular laws (1926), Religion removed from constitution(1928), ongoing regulation of people’s religious activities in daily lives through reforms (beginning 1925), secularism coded into constitution (1937)	Education brought under education ministry (1924). Major education campaigns in 1930s.
France	Catholic Church	Confiscation of all church property after the Great Revolution (1789)	Secularizing reforms and regulation of religious activities following the revolution (1789-1801). Secularization reforms begin again in the Third republic after 1880. Secularism coded into constitution in 1905.	Institutional legal changes following the Great Revolution (1794-1795). Ferry Laws secularizing education with educational campaigns (1879-1886).
Mexico	Catholic Church	First major confiscation attempts with limited success in mid 19 <sup>th</sup> century (1859 – act on nationalization of church property). Property ownership of church banned by 1917 constitution.	Secularization reforms in mid 19 <sup>th</sup> century. Anti-clerical and anti religious constitution of 1917 goes in effect following revolution in 1910. Secularization and close scrutiny over religious authority 1917-1929.	Deportation of educators from religious clergy to provide education only from secular educators (1924).

## **5. Secularizing Revolutions in Turkey, Mexico, and France**

All three cases witness such revolutions when pre-revolutionary regime is closely identified with the religious authority. Of the three cases the Turkish case reveals the most rapid undertaking of the reforms across the three dimensions with a concerted effort in the first 20 years following the declaration of the Republic. This happens partly because it happens later than the other cases and the rule makers of the new state have learned from the previous experiences of secularization. Here, the Turkish case is presented first, as it involves a more continuous increase in the rate of the secularization of its state in the period analyzed<sup>1</sup>.

At the end of world war during the revolutionary period when a dual sovereignty situation arises in the Ottoman Empire, both groups making a claim for the sovereign state identify state and religious authority in unison. Specifically the revolutionary parliament in Ankara is opened with the goal of saving the Sultan and the Caliphate (Akgun 1985). The Emperor of Ottoman Empire also held the title of Caliphate of Islam leaning on legitimating the state authority through religious justification (Deringil 1991) Similarly, in France before the Great Revolution in 1789, monarchy was closely connected to the Catholic Church. Since the revocation of the Edict of Nantes in 1685, Roman Catholic Church had monopoly over religious domain in France. The Church had established economic independence and had exercised sovereignty upon its own

institution. Furthermore, the Church had authority over non-religious domains as it exercised nearly complete authority over education, provided public assistance and healthcare, held registers over births, deaths, and marriages, provided employment, and had the power of censorship. In the last 15 years before the revolution, about 90% of the bishops belonged to the nobility (Lewy 1974). Following the First Federal Republic of Mexico in 1824, Catholic religion was seen as one of the three pillars of Mexico, where the Church enjoyed greater wealth than the state and held special privileges (*fueros*) (Bazant 1991).

In each three cases, the fall of empires through revolutions begins a process of secularization of state, which results in the scope of religious authority significantly diminishing in the institutions of the new states. Turkey and France had secularism coded into their constitution (Kuru 2009). Mexican has significantly limited the rights of church and civic rights of clergy and until the recent constitutional reforms in 1992 it could be described as “a secular anticlerical state, with anti-religious traits” (Reyes, 2010: 511). The length of the process varied across the three cases. In France and Mexico, it was spread over a century but in Turkey it took about two decades. Yet in all three cases, these contentions take place across three dimensions: (1) religious property, (2) law and civic rights, (3) education.

These dimensions of contention are experienced in the stated order although they can overlap. The issue of property is fought over first and the

outcome of how the material resources are distributed among religious and secularist groups become path-dependent in the secularization process of the state structure. As social movements literature informs, resource mobilization plays an important role in successful social movements. Opposed to the previous regime, in the post-revolutionary period the newly forming nation-state require material resources to compete for power. Since the ancien-regime gains its legitimacy through religious authority, revolutions allow the challenger groups to confiscate the wealth of not only the previous regime but also the closely tied religious authority. This might happen not only by revoking the monetary privileges of the religious authority, but also through confiscating religious property. The process begins with limiting the scope of religious authority on property because the act is used for mobilizing the resources for future political contentions. This act not only creates resource mobilization, but it also literally takes away the resources of religious authority and their supporters for the future contentions. The contention across the other dimensions can only succeed for the secularist groups after significantly limiting the scope of religious authority on property rights. Successful resource mobilization through antagonizing the religious authority leads to political contention across law and civic rights. Contention across this dimension happens to legitimate the new resources of state and gather support from the masses.

The law dimension is the contention for legitimacy of secularist ideologies at the macro level. Issues of whether to define a state religion or not, writing the constitution, criminal and civil codes, and whether they should be beholden to religious authority are decided through political struggles between the two groups. Secularist groups attempt to limit the scope of religious authority in law by forming secular judiciary and removing clergy from administration of law. They also attempt to secularize daily life by removing religion from public activities. The dimension of civic rights is the process of legitimation in the micro level. During the contentious period, both secularist and religious groups compete for dominance in society. They attempt to regulate public life through regulations and rituals. In the extreme periods of contention they might revoke certain civic rights entirely through declaring martial law.

The dimension of education begins in later stages as it is intended to trickle down the process to future generations and stabilize it. Secularizing education begins after there has been significant process in secularizing law and civic rights. This is because when the right of secular education is illegal, political opportunities for contention do not exist. The rate of secularism in the structure of state is determined by how contentions across these three dimensions are resolved.



## 6. Political Struggle over Church Property

Political contention over church property plays a key role in secularization processes. In states, where religious authority has a high scope, they maintain high ideological power (Mann 1986), but their scope is not limited to the ideological sphere. In absolute monarchies and pre-modern states, they also possess great material power by owning resources and holding privileges. The Ottoman Empire was based on the principle of forming religious war against the infidels and has been structured by its *gaza* principle throughout its existence (Inalcik [1994] 1997). In 1789 France, the Church had 10-15% of all the property in its possession, yet only paid 2% of taxes collected by the state due to waivers (Sargent and Velde 1995). In Mexico, after the independence, Catholic Church was the richest institution (Matson 1979). Economic resources play a large role in maintaining religious authorities' wide scope. Material power plays a key role in defeating rivals in social conflict and opposing parties strive to attain greater material power all the time (Collins 2012). Thus, secularization processes are unlikely to succeed against a religious authority that attains both great material and ideological power.

When these states broke down, the challengers forming the new state began to expropriate the material resources of the previous regime. Because the material resources of the previous regime were equated with religious authority, this led to enacting secularist ideologies. In order to distance oneself from the

ancien-regime, religious ideologies were also alienated. Thus, the blasphemous idea of stealing God's property, was legitimated through the nation claiming its rights. As this happened, the newly forming states not only increased their material resources, but also diminished the material resources of their main oppositions. In all three cases, the secularization processes began with appropriation of the material power belonging to the religious authority. Due to the radical nature of the act, it took place during a revolutionary period or war time, when there was imminent physical conflict.

In Turkey, the parliament of the newly formed republic could confiscate church property rapidly. This was mostly due to the economic and political weaknesses of the Ottoman State in the 19<sup>th</sup> and early 20<sup>th</sup> century. Following the sovereign default in 1875, the Ottoman State had given up part of its sovereignty to collect revenues to the Administration of the Ottoman Public Debt, which was overseen by European representatives (Eldem 2005). The heavy defeat in World War I and invasion of allied forces on the Ottoman Land led to a revolutionary period with double sovereignty. While the Sultanate continued its claim in Istanbul, a rival parliament convened in Ankara to save the Sultanate and the Caliphate (Akgün 1985). For the revolutionary government in Ankara, the weakness of the Ottoman State's sovereignty represented a political opportunity. The parliament in Ankara assumed the taxation rights of the Istanbul rule and blocked Istanbul's trade resources. They also exercised sovereignty over any land

that they won back from the allied invaders (Müderrisoğlu [1997] 2007). Following the end of independence war and declaration of peace with the Entente Powers, the parliament separated the institution of Caliphate from the Sultanate. As the last Ottoman Emperor Mehmed VI fled the country, a new Caliph was elected by the parliament. By separating the two entities, the parliament attempted to revoke the religious authority's sovereignty over the public treasury. Yet, the demands of Caliphate, which included having a share of the public budget that asked ten times the amount allotted for the presidential office, led to the parliament's abolishing of the position. With the abolishing of the Caliphate all the religious treasuries and waqfs—properties guaranteed under protection of religious authority—were also nationalized. Once the law regarding the Caliphate was passed, confiscation was perceived as a natural act (Akgün 1985).

In France, the financial crisis, which played a significant role in leading to the breakdown of Ancien Régime, also created the political opportunity to light the fuse for the secularization process. The process was similar, as the nationalization of the church property was one of the first acts of the revolutionaries. The August 4<sup>th</sup> Decrees issued in 1789 abolished all tithes including those collected by the Church (Dwyer and McPhee 2002). The first anticlerical act of the revolutionary government began with nationalizing religious property, as they issued the decree on the confiscation of Church property on November 2, 1789 about 3 months after the declaration of the Rights

of Man. The decree nationalized all Church property and promised minimum salaries for the clergy. This decree was the first of a series of decrees that would be issued in the next six years regarding the issues of secularization of state. Other decrees that would follow would focus on the rights of citizens to freely choose their religion, and describing the duties and allegiances of the existing clergy. The revolutionaries would also bring reforms to mundane activities in the daily life to decouple them from religious connotations such as the implementation of a new calendar, but it is worth noting that the secularization process began first with the issue of religious property. Moreover, most of these rapid secularization attempts were reversed at the end of the highly contentious revolutionary period when Napoleon assumed power, but the religious property that was confiscated during the Revolutionary period was not returned. When Napoleon signed the Concordat with the Holy See, Vatican accepted the legitimacy of the confiscations and ownership of the purchasers in Article 13, which states “His Holiness, in the interest of peace and happy reestablishment of the Catholic religion, declares that neither he nor his successors will trouble in any manner the purchasers of alienated ecclesiastical property, and that, in consequence, the ownership of these same properties, and the rights and revenues attached to them, shall rest unchallenged in their hands or in those of their assigns” (Maclear 1995: 97). The confiscation of the Church property and removal of tithes collected by the Church was part of the economic reforms carried out by the revolutionaries to overcome the economic crisis, but this has

also resulted in the secular state securing its position against the religious authority by significantly crippling its resources for mobilization.

In Mexico, following the declaration of independence in 1821, the Church was “the richest single corporation in the country” (Costeloe 1967: 2). The independence was followed by turmoil and ongoing conflict both within the Mexican State and with international powers. While both liberal and conservative governments made multiple attempts to confiscate church property to finance the weak state budget, they were unsuccessful until the reform period beginning with Lerdo Law in 1856. In this initial period following the independence, the Church not only owned great amounts of real estate, but also had successfully turned its ideological power into a material one through acting as the only lending bank in Mexico. The perennial existence of Church had been transformed into trust for investors. In the early years, high government debt and lack of funds in the state did not provide sufficient legitimacy for those in power to simply confiscate church property to raise revenues. Existing resource mobilization of the Church thwarted such attempts. The confiscation of the Church property only became possible when there is an “unsettled period” due to a rebellion, for which the Church could be blamed. This was the beginning of the reform period with the Lerdo Law of 1856. While the reform in the next three decades removed the position of the Church as the dominant bank and confiscated about two thirds of its property, the Church maintained its wealth through 1870s recovering through

donations of the wealthy supporters (Bazant 2008; Costeloe 1967). In the Mexican case, the failure of rapid and complete confiscation of religious property by the anticlerical groups had spillover effects on how the political contention fared in the other dimensions. The Church, which managed to find new channels of income after losing its role as the national bank and losing its property, remained as a formidable opponent against the anticlerical groups. Following the Mexican Revolution, the Church was still perceived as a threat by the anticlerical groups, which resulted in the Church losing its legal status in Mexico and being banned from property ownership after the 1917 constitution (Reyes 2010). Unlike the Turkish and French cases; however, the religious authority's resources allowed for armed resistance against the secular reforms; which resulted in a 3 year long civil war in the country between 1926 and 1929.

## **7. Political Struggle over Religious Law and Civic Rights**

The second dimension of political struggle over secularization happens over law and civic rights. This dimension has direct effects on the daily lives of individuals, as it is contention over defining how the state should regulate the behavior over individuals. It determines the limits of religious authority's regulation over citizens as well as secular authority's regulation over religious authority. With the resources mobilized through limiting religious authority, the secularizing groups attempt to legitimate their state structure through shaping

the law accordingly. The amount of resources mobilized from curbing religious property has an affect on the degree of contention and the results.

In Turkey, the rapid nationalization of all religious property to the modern state allowed for the secularist groups to implement legal changes with relatively weak political opposition after the end of the War of Independence and declaration of the Republic in 1923. Yet, as mentioned above, the economy of the Ottoman Empire before the World War I was weak and despite the nationalization of all the property that belonged to the religious authority and the Sultanate, the existing resources for the infrastructure of the country was limited. This led to the Turkish secularization groups co-opting the religious property and religious networks completely, instead of abolishing them. While the parliament was initially founded to save the Caliphate and the Sultanate, as stated above (Akgün 1985), the constitution of the parliament described the administrative order and the mission of the parliament during wartime did not specify any religion; however, its seventh article stated that the right of the execution of Sharia Law belonged to the parliament. Thus, initially the revolutionary parliament was founded on the premise of both saving and administrating the religious authority. However, after the War of Independence following the invasion of allied forces at the end of World War I was won, in November 1922, the Sultanate was deemed illegal. The institution of Caliphate was separated from Sultanate was brought under the power of parliament, which would elect the

Caliphs. When the republic was declared on October 29<sup>th</sup>, 1923, the constitution was revised to include that the religion of Turkish State was Islam while still keeping the article about administrating Sharia Law (Kili, 1980).

In March 1924, the Caliphate was abolished, as it was perceived as a significant political rival by the parliament. The same day Sharia Courts were also removed (Akgün 1985). The Caliphate was replaced with the Islamic Directorate, which served under the office of the prime minister as a tool for legitimating the secular state, government, and parliament. It could issue religious fatwas in accordance with the ideologies of the parliament, as well as issuing sermon scripts for Friday prayers to the imams of the mosques, who were employed and inspected by the directorate. These early legal changes transformed the legal structure of state from one, where the secular parliament was bound to the religious authority, to a new legal framework, where the religious authority was bound to secular authority. However, due to internal struggles within the parliament, the new constitution that the parliament set into place in 1924 still defined Islam as the religion of the state (Kili, 1980). In 1926, new civil and criminal codes were introduced, which were both adapted from European counterparts. In 1928, a defined religion was removed from the constitution. These changes made citizens legally responsible against the authority of secular state, instead of the religious authority.



While these legal changes defined the state structure, reforms were also introduced to secularize the behavior of citizens in their daily lives. In late 1925, the hat and clothing revolution was imposed, which required men to wear a European hat. It brought strict controls over the representation of self in public and attempted to eliminate traditional clothing emblems, which were also imbued with religious connotations, and replace them with what were perceived as “modern” ones. These reforms also banned religious clergy from wearing their religious clothing in public. The Islamic Directorate collaborated with the government’s efforts in spreading the reforms. Regulation of the clothing of the religious authority diminished their status in public sphere. Many of the religious officials also had other economic affairs and their religious clothing would help them in their daily affairs. Removal of religious symbols from public space disallowed them from using their religious status in non-religious transactions, which became problematic for them. At the end of 1925, international time and calendar was adopted. In 1934, surname law was imposed, which standardized people’s names instead of relying on their statuses in public (Kili, 1980). In 1935, weekend was changed into Sundays instead of Fridays as a holiday on which communal Friday prayers also took place (Yilmaz 2013). Finally in 1937, the secularism of Turkish State was coded into its constitution.

The legal reforms that were carried out in the two decades that followed World War I, represents a unique case of rapid legal secularization. A state with a

constitutionally defined religion, whose laws were executed through religious authority, and a public life, which revolved around time units, weekdays and calendar years set around religious ritual, was transformed into a constitutionally secular state with a secular public outlook. Through legal secularization, the new secular state was able to not only curb the scope of religious authority but also subdue its opponents.

While the Turkish experience demonstrates as an extremely rapid case, where revolutionaries introduce rapid reforms after entirely co-opting both material and ideological resources of the established religious authority, similarities can be found in the French and Mexican cases. The French case reveals that the process of secularization is not linear and can be reversible in both directions. While there was a period of rapid secularization following the 1789 Revolution, religious authority partly recovered its power during the periods, when the Republic fell and the Empire was reestablished. France eventually became a constitutionally secular state through the lengthy politically contentious period across both the legal/civic rights and education dimensions in the Third Republic from 1871 onwards.

Following the 1789 Revolution, the August 4th Decrees abolished the feudal system and every citizen was allowed to hold any ecclesiastic, civilian, or military positions. The Declaration of Human Rights issued in the same month placed state law above all. About a year later in July 1790, a Decree on the Civil

Constitution of Clergy was issued, which described the structure of the Church, its election processes, and its relationship with the Pope, disallowing clergy to ask the Pope for any confirmation. The decree also included Article 21, which stipulated that clergy must declare their allegiance to the nation before the consecration ceremony. About three months later in November the decree on Clerical Oath was issued, which required all the clergy to swear to be faithful to the nation and its law (Maclear 1995).

While legal changes were made to remove religious authority at the level of state structure, in the period of radical struggle in 1793-94, Robespierre also attempted to drastically change the daily lives of individuals through attempting to impose a new religion of supreme being. This attempt included changing the perception of calendar time through imposing 10-day weeks to decouple the calendar from religion as well as introducing the new metric measurement system. Marriage was changed into civil law and became a contract, rather than an oath made under divine law (Sewell 1985). Not all of these reforms lasted long. The radical social transformation following the revolution brought about the reign of Terror alongside; which was succeeded by Napoleonic rule. Napoleon followed less anti-clerical politics and signed Concordat with the Pope. The concordat restored the oaths but still allowed the practice of religions other than Catholicism within France. Following the Napoleonic Rule, King Louis XVIII restored the Church in 1815.

In the Third Republic, which was declared in 1871 after a war defeat by Prussia, political contentions over secularization fired up again. In March 1880, decrees against unauthorized religious congregations were issued. In July 1880, a law was passed that removed the obligatory Sunday rest. In July 1884, divorces were deemed legal again and public prayers were banned. Government measures were taken against religious teaching orders in 1901. France finally became constitutionally secular in 1905, about a century after the series of revolutions began in 1789. While the secularization process parallels the Turkish case by carrying out reforms both on the legal framework and daily activities, the French case should make us recognize that secularization is not a unidirectional process and that reversals of direction are possible everywhere, driven by the dynamics of political contention.

The first constitution of Mexico in 1824 stated that “[t]he religion of the Mexican nation is and shall be perpetually the Catholic, Apostolic, Roman religion. The nation protects it with wise and just laws and prohibits the exercise of any other” (Bazant 1991: 9). During the reform period in mid 19<sup>th</sup> century, beginning with constitution of 1857, a series of reform laws were passed to limit the scope of religious authority including the implementation of freedom of religion and civil marriages. The reforms and amendments made to the constitution in 1873 and 1874 introduced the principle of “separation between the Church and the State” to the constitution (Reyes, 2010: 509). Following the

revolution in 1910, the new constitution in 1917 had articles for regulating religious worship and banning clergy from criticizing the state. In 1926, President Calles increased the pressure on clergy by passing a law that made religious offenses to be prosecuted as criminal cases. This was responded to, first by the clergy going on strike, then by the Cristeros Civil War between 1926-1929.

As the legal changes experienced in the three cases above reveal, the legal dimension of secularization plays a role in both legitimizing secularism and affecting people's daily lives. Religious people are left with no choice but to live according to secularist conventions if they choose to continue to participate in public space. Otherwise going into public with banned religious garments or other emblems can result in them being removed from the public space through incarceration or even execution.

## **8. Political Struggle over Religious Education**

As the legal and civic rights changes that increase secularization disseminate through the public, secularization across education dimension begins. Similar to the pattern in the previous dimension discussed above, education is initially secularized legally earlier on, but practical implementation takes a longer time period. Another common pattern across the education dimension is that secularization initially begins at more advanced levels. In Turkey, education was united under a single curriculum with the *Tevhid-i Tedrisat* Law on the same day that the Caliphate was removed on March 3<sup>rd</sup>,

1924. With this law, the *medreses*, which served as religious advanced level schools were also shut down and transformed into secular universities. While this initial reform was carried out early on, the real thrust towards educational reform began in 1928 following the removal of religion from the constitution. The state focused on increasing literacy rates among the public while also educating them on a common national identity. This began in 1928 with the introduction of the new Turkish Alphabet based on the Latin Alphabet. This was followed by the opening of National Schools (*Millet Mektepleri*) at the end of the same year (Yılmaz 2013). These schools aimed at teaching the new letters to the citizens of all ages. Turkish History Institution and Turkish Language Institutions were founded in 1931 and 1932 respectively, to further the secular education. The foundation of Turkish Language Institute gave the start for “the Language Revolution,” which attempted to create a secular nation that all speaks the modern Turkish language. While these attempts were not very successful due to limited resources and lack of finances, meanwhile the number of primary schools and students enrolled were increased (Cumhuriyet Arşivi, n.d.). In the Turkish case one main obstacle against increasing the number of students enrolled were the lack of educated secular teachers, who could be appointed. This served as one reason to why more advanced levels of schooling were secularized first.

In France, the revolutionaries’ Constitution of 1793 included provisions for universal education; however, it did not come to be enacted due to lack of

resources. Despite the decree in November 1794 stressing the idea of universal education, a year later the decree issued in October 1795, made education optional again. Hampson ([1963]1995) states that at this period the main concern was on the *écoles centrales*, which provided secondary education in each Department. These schools would not be accessible to those with only primary education. These early stages echo the Turkish case and the *Tevhid-i Tedrisat* law. In both cases the legal framework on education changed, but enactment was left for later stages due to lack of resources. In the initial stages attention was paid to education at more advanced levels in both cases because these advanced levels served the more immediate needs of the secularists. In the Turkish case, those educated in foreign universities were brought into high positions in the state to lead departments. Also focusing on advanced education disproportionately benefits the classes that support the secularist cause. In the case of France, the *écoles centrales* mostly benefited the bourgeoisie.

Unlike the Turkish case, the French case was a lengthy process of state secularization that spread across a century. While the confiscation of religious property was rapidly achieved in the beginning, the law and civic rights dimension spread over century with swings between republics and monarchies. The major political contention over universal secular education took place in the Third Republic, when the Ferry Laws were introduced by a reforming Minister of Education between 1879 and 1886. The law on June 16, 1881 established public

education. The enactment of the law of October 30<sup>th</sup>, 1886 removed clergy from primary schools. This law provided a 5-year transition period for male schools, during which those with religious memberships would have to be replaced. Female schools did not have any such limits, but required that nuns were to be replaced by secular teachers in new teaching positions due to retirements, death or reassignments (Lehning 2001). The urgency for secularizing primary schools for males was related to the fact that this was a period of heavy debates and political struggles over universal manhood suffrage.

In Mexico, contention over secular education was heavily affected by the power of the Church throughout the 19<sup>th</sup> Century and carried onto the 20<sup>th</sup> Century. Because of the existence of a strong Church backed by material resources, the educational secularization went through progress and reversals. During the reform period in mid-19<sup>th</sup> Century, attempts were made at removing the Church's control over education; however, by the end of century during the Porfirian period, the Church's support to President Porfirio Diaz allowed them to be dominant in educational institutions again. After the revolution, The Church faced a serious backlash, as it suffered from being identified with the Porfirian regime. The constitution of 1917 banned religious education completely. Though Mexican State and the Church collaborated briefly again in 1920-1924 due to lack of state resources to provide secular education, once President Calles assumed power in 1924, a highly anticlerical program began, which included enforcing the



constitutional ban on religious education as well as deporting foreign clergy, most of which were educators. These rulings along with the harsher rulings discussed above in the law and civic rights dimension, resulted in the civil war, which ended in an accord that would not allow any religious education in state schools, but give freedom to the Church to provide religious education in church property (Espinoza 2015).

The dimension of education gets implemented in the later stages of secularization, because its purpose is achieving stability and longevity for the status quo. It also serves to further legitimate the secularist structure of the state, through inculcating future generations with the secularist ideology.

## **9. Conclusion: The Sequence of Secularizing Institutional Changes**

Secularization of the state is not a binary concept. While coding secularization into the constitution of the state might represent a significant capstone, the rates of secularization vary across different dimensions. As these cases show, patterns depend on how the contention is fought among different parties. Confiscation of church property happens early in the formation of the revolutionary state and lights the fuse of the secularization process. The amount of existing church property and the rate of confiscation have lasting effects on the other dimensions. In the Turkish case the dearth of religious property or other wealth from the previous regime results in the secularist state co-opting the ideological and network power of the religious authority, rather than entirely

weakening it. Compared to the French case, where attempts are made to remove or reduce the number of clergy, Turkish State creates an Islamic directorate to dictate the type of religious sermon that supports the secular state. While the secular state diminishes the scope of religious authority, they do not aim to remove it entirely.

For the periods discussed, all cases carry out reforms that affect both legal codes to transform the state structure and public practices to transform individual's daily behavior. Not only is defined religion removed from state constitution, other practices are dictated upon citizens to decouple their behavior and habits from religious authority. These include, but are not limited to, acceptable clothing in public, freedom of speech, and even perception of calendar time. Such changes make secularization of state a mandatory act to be accepted by citizens, rather than something to be opted in (Yılmaz 2013). For example in the Turkish and Mexican cases, if religious authorities want to appear in public places, they must remove their religious clothing, otherwise they are severely punished.

In the later stages of state secularization, the permeation of secularist values among the public is further achieved through education. Education is not only used for crafting literate individuals that can be valued members of the work force but also for imbuing the secularist ideas of the state. This is why both who gets to teach the students and what is taught to them becomes major issues of

contention. Because secularist groups start at a disadvantage compared to clergy in terms of not having established schools in these cases, the secularization of schools begin at the university level at first. This is both due to a lack of secularist, non-clergy teachers to fill in vacant positions in the mass elementary schools, and to the budget problem for funding such schools. In later stages, attempts are made to secularize primary education.

These dimensions also play an important role in the reversal of secularization processes. Over the last decade, the share of Islamic Directorate funds in the Turkish government's budget has more than doubled. In 2001, the year before Tayyip Erdoğan's Justice and Development Party (JDP) came into power the share of Islamic Directorate in the budget was 0.50%. After gradually increasing its share every year, in 2012 it received 1.12% of the government's budget (BUMKO n.d.). The increase in the financial resources of the Islamic Directorate was coupled with increases in the scope of its authority, such as a law in 2010 allowing Islamic Directorate to ban web sites that provide false information on Islam. These developments were followed by educational reforms increasing the number of religious teachings in elementary schools.

The theory presented here is intended to provide the tools for understanding the process of secularization beyond these particular cases and also for cases, where secularization is reversed. The argument here also stresses that the United States can be a misleading case to take as the archetype of the

secularization process generally. If the three main processes are a sequence of struggles over church property, religious courts and laws, and religious education, only the last of these has much importance in the United States. Church property, which plays a key role in igniting secularization processes, did not have a significant presence in colonial America. Similarly, the American states did not have to struggle over a Church monopoly over administration of law. Thus the secularizing process in the United States of America began from a relatively small scope of religious authority. The main issues of state secularization were already disposed of by the time the United States began, and it was these rather unusual historical circumstances that led to the vigorous religious competition studied extensively by the religious markets literature (Finke and Stark 1992).

As these historical cases reveal, secularization cannot properly be analyzed when it is assumed to be a terminal outcome. It is only through problematizing secular states, can one understand the mechanisms leading to them. As these cases show, neither religious authority nor secular authority is static. Instead, the scopes of both authorities vary and can increase or decrease across time. These changes happen through political contentions of opposing groups. As one group gains more power, they determine the scope of religious authority. An explanatory theory of state secularization must be a theory of the mobilization, political tactics and resources of opposing forces, as they struggle over the

institutional dimensions that constitute different amounts and kinds of religious secularization. This in turn means that increasing religiosity at state level will also involve struggle across these dimensions and successful mobilization of property or resources available by the Church in secular states are likely to bring political contentions across institutional dimensions of law and education in secular states.

## 10. REFERENCES

- Akgün, Seçil. 1985. *Halifeliğin Kaldırılması Ve Laiklik, 1924-1928*. Ankara: Turhan Kitabevi.
- Bazant, Jan. 1991a. "From Independence to the Liberal Republic, 1921-1867." In *Mexico Since Independence*, edited by Leslie Bethell, 1-48. Cambridge: Cambridge University Press.
- Bazant, Jan. 1991b. "From Independence to the Liberal Republic, 1821-1867." In *Mexico Since Independence*, edited by Leslie Bethell, 1-48. New York: Cambridge University Press.
- Bazant, Jan. 2008. *Alienation of Church Wealth in Mexico*. Cambridge University Press.
- Bender, Courtney, Wendy Cadge, Peggy Levitt, and David Smilde. 2013. "Introduction." In *Religion on the Edge*, edited by Courtney Bender, Wendy Cadge, Peggy Levitt, and David Smilde, Kindle Edition, 1-20. New York: Oxford University Press.
- Cady, Linell E, and Elizabeth Shakman Hurd. 2010. *Comparative Secularisms in a Global Age*. Edited by Linell E Cady and Elizabeth Shakman Hurd. New York, NY: Palgrave Macmillan. doi:10.1057/9780230106703.
- Centeno, Miguel Angel. 2003. *Blood and Debt: War and the Nation-State in Latin America*. University Park, PA: Pennsylvania State Univ Pr.
- Chaves, Mark. 1994. "Secularization as Declining Religious Authority." *Social Forces* 72 (3): 749-74.
- Collins, Randall. 1999. *Macrohistory: Essays in Sociology of the Long Run*. 1st ed. Stanford, CA: Stanford University Press.
- Collins, Randall. 2012. "C-Escalation and D-Escalation: a Theory of the Time-Dynamics of Conflict." *American Sociological Review* 77 (1): 1-20. doi:10.1177/0003122411428221.
- Costeloe, Michael P. 1967. *Church Wealth in Mexico*. Cambridge: Cambridge University Press. doi:10.1017/CBO9780511563119.
- Cumhuriyet Arşivi, Fon No 30 1 0 0, Box 90, Folder 559, Row 4. Statistics on Ministry of Education, 1944. T.C. Başbakanlık Arşivleri

- Deringil, Selim. 1991. "Legitimacy Structures in the Ottoman State: the Reign of Abdülhamid II (1876–1909)." *International Journal of Middle East Studies* 23 (3): 345–59.
- DiMaggio, Paul J, and Walter W Powell. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." *American Sociological Review* 48 (2): 147–60.
- Dobbelaere, Karel. 2002. *Secularization: an Analysis at Three Levels*. Brussels: P.I.E.- Peter Lang Presses Interuniversitaires Européens.
- Dwyer, Philip G, and Peter McPhee. 2002. *The French Revolution and Napoleon*. Routledge.
- Eldem, Edhem. 2005. "Ottoman Financial Integration with Europe: Foreign Loans, the Ottoman Bank and the Ottoman Public Debt." *European Review* 13 (3): 431–45.
- Espinoza, Grover Antonio. 2015. "Church-Sponsored Education in Latin America, C. 1800– C. 1930." In *Religion and Society in Latin America*, edited by Lee M Penyak and Walter J Petry. Orbis Books.
- Finke, Roger, and Rodney Stark. 2005. "The Churching of America, 1776-2005." New Brunswick, NJ: Rutgers University Press, 347.
- Goldstone, Jack A. 1991. *Revolution and Rebellion in the Early Modern World*. Berkeley and Los Angeles, CA: University of California Press.
- Gorski, Philip S, and Ateş Altınordu. 2008. "After Secularization?." *Annual Review of Sociology* 34 (1): 55–85. doi:10.1146/annurev.soc.34.040507.134740.
- Halikiopoulou, Daphne. 2011. *Patterns of Secularization*. Burlington, VT: Ashgate Publishing Company.
- Hampson, Norman. 2013. *A Social History of the French Revolution*. Routledge.
- İdiz, Semih. 2011. "PM Erdoğan's Surprising Message in Cairo." *Hürriyet Daily News*. September 15.  
<http://www.hurriyetdailynews.com/default.aspx?pageid=438&n=pm-erdogan8217s-surprising-message-in-cairo-2011-09-15>.
- İnalçik, Halil. 1997. *An Economic and Social History of the Ottoman Empire, 1300-1914*. Edited by Halil İnalçik and Donald Quataert. Vol. 1. Cambridge, UK: Cambridge University Press.

- Jacobsohn, Gary J. 2003. *The Wheel of Law*. Princeton, NJ: Princeton University Press. doi:10.2307/j.ctt7rmm6.
- Jakobsen, Janet R, and Ann Pellegrini. 2008. *Secularisms*. Edited by Janet R Jakobsen and Ann Pellegrini. Durham, NC: Duke University Press.
- Kuru, Ahmet T. 2009. *Secularism and State Policies Toward Religion: the United States, France, and Turkey*. Kindle Edition. New York, NY: Cambridge University Press.
- Lehning, J R. 2001. "To Be a Citizen: the Political Culture of the Early French Third Republic." *Cornell University Press*.
- Levey, Geoffrey Brahm, and Tariq Modood. 2009. *Secularism, Religion and Multicultural Citizenship*. Edited by Geoffrey Brahm Levey and Tariq Modood. Cambridge, UK: Cambridge University Press.
- Lewy, Guenter. 1974. *Religion and Revolution*. New York: Oxford University Press.
- Maclear, J F. 1995. *Church and State in the Modern Age*. Oxford University Press.
- Mann, Michael. 1986. *The Sources of Social Power: Volume 1, a History of Power From the Beginning to AD 1760*. Cambridge University Press.
- Matson, Robert W. 1979. "Church Wealth in Nineteenth-Century Mexico: a Review of Literature." *The Catholic Historical Review* 65 (4). Catholic University of America Press: 600–609. doi:10.2307/25020701.
- McAdam, Doug. 1999. *Political Process and the Development of Black Insurgency, 1930-1970*. 1st ed. University Of Chicago Press.
- Mische, Ann. 2009. *Partisan Publics*. Princeton, NJ: Princeton University Press. [http://books.google.com/books?id=BmRX4zVOohUC&printsec=frontcover&dq=ann+mische+partisan+publics&hl=&cd=1&source=gbs\\_api](http://books.google.com/books?id=BmRX4zVOohUC&printsec=frontcover&dq=ann+mische+partisan+publics&hl=&cd=1&source=gbs_api).
- Müderrisoğlu, Alptekin. 2007. *Yoksulların Zaferi*. Istanbul: Deniz Bank Yayınevi.
- Reyes, Alberto Patiño. 2010. "Religion and the Secular State in Mexico." *Interim National Reports Issued for the Occasion of the XVIIIth International Congress of Comparative Law*. Provo, Utah.
- Sargent, Thomas J, and Francois R Velde. 1995. "Macroeconomic Features of the French Revolution." *Journal of Political Economy* 103 (3). [Chicago]: University of Chicago Press, 1892-: 474–518.
- Sewell, William H, Jr. 1985. "Ideologies and Social Revolutions: Reflections on the French Case." *The Journal of Modern History* 57 (1): 57–85.



- Skocpol, Theda. 1979. *States and Social Revolutions: a Comparative Analysis of France, Russia and China*. Cambridge University Press.
- Smilde, David, and Matthew May. 2010. "The Emerging Strong Program in the Sociology of Religion." *SSRC Working Papers*, February. Brooklyn, NY. <http://blogs.ssrc.org/tif/wp-content/uploads/2010/02/Emerging-Strong-Program-TIF.pdf>.
- Smith, Christian. 2003a. *The Secular Revolution*. Edited by Christian Smith. Berkeley and Los Angeles, CA: University of California Press.
- Smith, Christian. 2003b. "Preface." In *The Secular Revolution*, edited by Christian Smith, vii–xii. Berkeley and Los Angeles, CA: University of California Press.
- T.C. Maliye Bakanlığı Bütçe ve Mali Kontrol Genel Müdürlüğü (BUMKO). 2015. "Bütçe Gider-Gelir Gerçekleşmeleri (1924-2012)." Retrieved April 1, 2015 (<http://www.bumko.gov.tr/TR,4461/butce-gider-gelir-gerceklesmeleri-1924-2012.html>)
- Vatan. 2011. "Laiklik Ateizm Değil, Korkmayın!" *Gazetevatan.com*. September 14, Retrieved April 1, 2015. (<http://www.gazetevatan.com/laiklik-ateizm-degil--korkmayin--399589-gundem/>)
- Yilmaz, Hale. 2013. *Becoming Turkish: Nationalist Reforms and Cultural Negotiations in Early Republican Turkey, 1923-1945*. Syracuse, NY: Syracuse University Press.

---

<sup>1</sup> The data presented on the Turkish case is based on the references as well as extensive archival research in the State Archives of the Prime Ministry of the Republic of Turkey in Ankara and the parliamentary proceedings archives available online in the official website of the Grand National Assembly of Turkey [<http://www.tbmm.gov.tr>]

## CONCLUSION

The articles presented in this dissertation reveal that while crises of sovereignty occur rarely, they are not random. Even though they might be perceived as unexpected and surprising by bystanders, systematic analysis finds that crises do not happen in isolation, on the contrary, they are patterned by the global developments.

Study of the trade networks reveals that diffusion of different types of crises across the world are significantly affected by the trade relationships that countries have with each other. The difficulty for identifying these patterns is due to the highly complex and dynamic structure of global trade. Methods implementing big data and machine learning used in articles 1 and 2 reveal that when used in complementary to the theories derived from the existing sociological literature, these methods can be highly beneficial in furthering our understanding of sociological phenomena. I find that there is a pattern to global diffusion of crises, but more importantly the two articles reveal that this pattern is not unique for a certain type of crises, but is seen across various types of unrelated crises. This is important for recognizing that countries do not randomly get affected by a wave of crises, and one can explain why certain countries stay afloat while others sink.

The third article studies the aftermath of crises in depth and finds patterns to how this global diffusion might be patterned. The findings show that secularization of a state is patterned across three major dimensions and the struggles between the religious authority and political authority across these dimensions determine the type of secularity that is enforced in a state. The findings of this paper motivate potential studies that might explain the recent developments that are experienced by present-day Turkey, as struggles between religious and secular authority still play a certain role in political and social crises.

When looking at a stable regime between secular and religious authorities, one should pay specific attention to (1) property rights of the religious authority, (2) civic rights and legal rights in relation to religious groups, and (3) the educational system. If significant changes are happening in any of these dimensions, it should be expected that the political struggles between the religious and secular authorities in the state will increase and will likely create instability and potential political and social crises in that state until the struggles across these dimensions are ended and a new status quo is reached.

Future studies should also focus on the implementation of machine learning and big data on the aftermath of crises. The recent developments in machine learning allows researchers to implement natural language processing and topic modeling on large corpus of data. Given the online archives provided by

states, it is possible to gather data on early parliamentary hearings following revolutions. Implementing topic modeling on this data should allow for researchers to be able to verify the patterns that are found in this research from a quantitative perspective. Using these methods one can even increase the amount of cases included in future studies. The machine learning techniques are not limited by the number of languages that a researcher can command; therefore, they allow for future research to compare the aftermaths of revolutions even when they result in entirely different forms of state structures.

It is no doubt that just a few years from now, the data used in this research will be perceived as relatively small data. Every year more granular and comprehensive data becomes available for the researchers. As documents are digitized and more data becomes available to researchers, it will be impossible for sociologists to ignore it. Yet, they will only add to the explanatory power of sociology. Separating valuable data from noise will only be possible if strong theories can be provided by researchers. Given the strong tradition and value of contributions provided by sociologists from the fields of revolutionary theory, social movements, and economic sociology, there is no doubt that the much-needed theorizing for big data will come from these fields.