Systemic Uncertainty and the Emergence of Border Disputes

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Abstract

Although an abundance of evidence shows that territorial disputes fundamentally shape relations among states, we know surprisingly little about when territorial claims are made. We use new data on the spatial distribution of historical borders and territorial claims across four centuries of European history to demonstrate that the majority of territorial claims are drawn following historical boundary precedents at times of high systemic uncertainty. For instance, 19th century claims, several of which contributed to subsequent wars, are clustered at 1848 and 1870–1871, years in which crises engulfed several of Europe’s great powers. Importantly, the claims that emerge at this time are not necessarily among states involved in the crises that generated uncertainty in the system, e.g., the Concert of Europe system. Moreover, the claims follow historical precedents that have no plausible relation to the revolutions of 1848, for example. Rather, states make claims in areas where well-established historical precedents, i.e., precedents that were actual borders for a long period, and make these claims when systemic uncertainty suggests that great powers are occupied with other crises and have lost the ability or will to effectively intervene in border disputes involving third parties.

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Introduction

The existence or absence of territorial disputes is central to whether relations between states are cooperative or conflictual. Conflictual relations and outright military conflict are much more likely between states with a territorial dispute. Relatedly, cooperative relations are undercut for states in boundary disputes, as bilateral trade relations suffer and the volume of foreign investment flowing into states in such disputes is significantly lower. Given the well-known and adverse characteristics of territorial disputes, much effort has been put into understanding their consequences and how they are resolved. Much less research has gone into where and why territorial disputes emergence, although there is some work on the topic (Huth, 1996; Abramson and Carter, 2016; Goemans and Schultz, 2016). No work to our knowledge sheds much light on the timing of territorial claims. Thus, the little existing work that explores dispute emergence focus primarily on why certain state pairs experience disputes (Huth, 1996; Goemans and Schultz, 2016) or why some geographic areas host more claims than others (Abramson and Carter, 2016). Given that leaders are very selective and careful in making territorial claims, claim timing is also carefully chosen. We argue that territorial claims are clustered at time periods when there is uncertainty over the management of the international system.

Leaders have incentive to make claims at times of increased uncertainty over the management of the international system. Many states have latent claims over neighboring territory, which are not yet explicitly made (Huth, 1996). For example, recent work on where territorial claims emerge shows that claims tend to be made where there are historical boundary precedents, i.e., now defunct political boundaries (Abramson and Carter, 2016). While this work provides a good basis for understanding the sources of most latent claims, the factors that influence when latent claims turn into active territorial claims remain unexplored. A key reason why latent claims often stay latent for long periods of time is that making territorial claims is costly. Claims not only bring with them a significantly increased risk of militarized conflict and war (Vasquez and Henehan, 2001) but also tend to depress trade and investment (Simmons, 2005; Schultz, 2015). A key mechanism behind why claims are thought to be costly is that interested third parties, e.g., great powers, are widely thought to impose costs on states for making claims, especially claims they view as illegitimate or unjustified (for a prominent example, see Huth, Croco and Appel (2011)). However, the idea that
powerful and interested third parties constrain states in making and pursuing territorial claims is largely theoretical or anecdotal. We argue that the constraining power of the influential “managers” of the international system is made clear by examining claim timing, as claim-making spikes around times of turmoil and uncertainty in the state system.

There is striking evidence of temporal clustering in the timing of territorial claims, both in Europe and globally. In Europe, if we examine all territorial claims made between 1816 and 2001, 140 out of the total 238 claims made in Europe emerged in 10 specific years. Thus, almost 60% of all European claims emerged in just over 5% of all years since the Congress of Vienna. The pattern is even more striking if we focus exclusively on the 19th century, as around 50% of all claims emerged in only 5 specific years. Examination of these specific years suggests the plausibility of our argument that systemic influences play an important role, as the five most influential years in the 19th century are 1866 (Austro-Prussian War), 1816 (Establishment of Concert of Europe), 1848-1849 (Revolutions of 1848), and 1870 (Franco-Prussian War). If we examine either Europe in particular or the entire world for the 19th and 20th centuries, the highest volume of claims is clustered before and after World War I. The temporal clustering of territorial claim emergence is striking and without explanation in the extant literature.

States with latent territorial claims take advantage of heightened opportunity when powerful actors ability to actively intervene to preserve the status quo is in question. For example, in 1848–1849, as the revolutions of 1848 generated considerable turmoil and uncertainty across Europe, the number of territorial claims being made increased dramatically. While there were only five claims made across Europe from 1831–1847, seven claims were made during 1848–1849. Moreover, most of the claims do not seem the product of the crisis that embroiled a number of illiberal regimes during this period. For example, the French claim on Savoy and Nice made against the Kingdom of Sardinia in March, 1848 claimed mostly areas where French was not spoken, and had no clear relation to the “banquet campaign” or the monarchy’s reaction to it. Similarly, if we look at 1870, another year that sees a sharp upward spike in claims, we see claims such as the Russian claim over Southern Bessarabia that have no direct connection to the Franco-Prussian War that rocked the European state system. We contend that in cases like these, leaders act on latent territorial claims at these specific times because crises and wars constrain the reactions of interested third
parties such as major powers. Great powers are known to have a status quo bias (Lemke, 2002), which leads states such as France or Great Britain to frequently intervene against territorial claims or actions seen as inconsistent with the existing order, e.g., the Crimean War.

We demonstrate that the factors that the known effects of historical boundary precedents on the emergence of territorial claims varies considerably across time. Using newly constructed dyadic data that measures the distribution of all historical boundaries from 1650–1789 within 50 kilometer buffers of all post-1815 dyadic boundaries, we demonstrate that the known tendency of states to contest borders along historical precedents is highly conditional on major shocks to the international system of states. Thus, the presence of competing historical boundary precedents, which is known to be a good indicator of latent claims, has strong influence when the system of states is in turmoil, e.g., 1919, but has a much more muted effect when the current system is without major crisis. The rest of the paper is structured as follows. In the next section, we develop a theory of claim timing that clarifies why we would expect states to make latent claims active when the system is rife with uncertainty. Next, we outline our empirical approach, explaining 1.) our focus on post-1815 Europe, 2.) how we measure and operationalize the presence of historical boundary precedents near contemporary boundaries, and 3.) the mixture models and hierarchical random effects models that we estimate to identify how system-level effects interact with dyadic-level spatial variables to influence the timing of territorial claims. Finally, we conclude with implications and discussion of some remaining issues in this research in need of attention.

The Timing of Territorial Claims

The clustering of territorial claims around times of crisis and uncertainty in the international system is puzzling, as territorial disputes are inherently dyadic. Territorial claims involve the leader of a state publicly and unambiguously making a claim over a piece of a neighboring state’s territory. Disputes over what territory constitutes the homeland have typically been viewed as mostly a product of domestic considerations. For example, in his seminal study on the onset and persistence of disputes, Huth (1996) focuses mostly on variables that measure the domestic context or on bilateral relations, such as the presence of cross-border ethnic kin or the military balance between
the two states. More recently, Goemans and Schultz (2016) argue that the onset of African claims is a function of the domestic political considerations of countries’ first post-colonial leaders. While these works help to clarify where disputes tend to arise, the fact that the majority of claims are made in the very small set of years where the international system was embroiled in turmoil and uncertainty suggests a need for more theoretical focus on claim timing.

The fact that most territorial disputes are between pairs of states is reflected in most theory. The focus of the small amount of work on the emergence of disputes is on what territorial characteristics push states to contest the location of its mutual border with a neighbor. However, the bulk of existing literature on territorial disputes explores the conditions under which disputes become militarized or peacefully settled. The anticipated actions of major powers play a rather limited role in extant theory and play almost no role in work that analyzes the emergence of territorial claims.\(^1\) Moreover, the focus of the work that does explore systemic factors is largely on variables that are viewed as peace-promoting, such as international law (Huth, Croco and Appel, 2011) or the proportion of democracies in the international system (Mitchell, 2002). Clearly, the spikes in territorial claims around times of systemic uncertainty, such as the twelve claims made in 1912–1913, are not associated with peaceful outcomes.

We outline two possibilities that might help explain the clustering in territorial claim timing noted in the introduction. First, it is possible that the spikes in claims in specific years are directly related to the systemic crises themselves. In other words, the increase in claims in 1866 would be mostly accounted for by Austria and Prussia, as they moved towards and started fighting a war. While this seems an obvious explanation, it does suggest that a small set of crises have persistent and long-term effects on international politics as they are responsible for the majority of territorial disputes, which are persistent and increase the prospect of violence. Examination of the claims data makes clear that this explanation is lacking though, as many of the claims are not actions directly related to the systemic crises made by the states affected by or participating in them. Second, it is possible that periods in which the system is in turmoil lead to more territorial claims because the constraints on state behavior imposed by the structure of the international system are less severe during times of uncertainty and crisis. The idea that the international system constrains

\(^1\)The only arguably systemic variables in Huth (1996), for example, are indicators of whether two states have common allies and whether the post-WWII norms against colonialism are relevant to a claim.
state behavior is consistent with what theorists such as Waltz (1979) have long claimed, but there is little evidence over how “systemic constraints” affect leaders’ behavior or when and why such constraints lessen.

There are two key questions in need of an answer for any theory of how systemic uncertainty relates to territorial claims. First, what underlies states’ interest in contesting territory in the first place? Specifically, unless we assume that states are always on the lookout for more territory because it aids them in maximizing power, e.g., Mearsheimer (2001), we need to know what incentive states have to try to add specific claimed lands to their territories. Second, how exactly does systemic uncertainty push states to make claims? Do the interests of states change, or does turmoil in the international system affect the costs of making a claim? In the following section, we outline an explanation that addresses these questions.

**Historical Boundary Precedents and Latent Territorial Claims**

Leaders make territorial claims when they see benefit to prospective integration of neighboring territory into their state. However, for any factor that might drive territorial claims, e.g., cross-border ethnic kin, the vast majority of the population of latent claims are never made. Thus, any explanation of why leaders make claims must account for the fact that regardless of how we define latent claims, the majority of potential claims are never made. The relative rarity of territorial claims and the highly selective way in which leaders draw them not only cast considerable doubt on conjectures that they are “cheap” or are made at every “opportunity”, but also suggest that the costs of claims are non-trivial. In what follows, we first outline factors that provide incentive to leaders to claim neighboring land, then outline the costs of territorial claims, explaining how these costs can vary across time.

**The Incentive to Make Territorial Claims**

While the origins and emergence of territorial disputes has received much less research than active disputes’ consequences and settlement, recent work suggests that the institutional theory of boundaries has a lot of explanatory power. The institutional theory explains dispute emergence
in settings as diverse as post-colonial Africa (Goemans and Schultz, 2016) and post-Congress of Vienna Europe (Abramson and Carter, 2016). The institutional theory of boundaries focuses on variation in how effective borders are in establishing states’ jurisdictions (Simmons, 2005) and coordinating individuals’ expectations and behavior (Carter and Goemans, 2011; Abramson and Carter, 2016). Simmons (2005) shows that disputed boundaries themselves generate uncertainty over jurisdiction, which discourages trade between neighbors sharing such a border. Carter and Goemans (2011) focus on variation in how recent borders are drawn influences their effectiveness as institutions, showing that borders’ institutional histories influence their function regardless of whether they are formally disputed (Carter and Goemans, 2014, 2015). Relatedly, when states redraw boundaries, these “new” borders are drawn along prior administrative boundaries in the vast majority of cases. Moreover, neighbors with new boundaries that follow precedent have lower risks of disputes and violence and enjoy more robust trade relations.

The theory suggests that the incentive to make territorial claims often derives from the fact that historical boundaries exist proximate to the current border that are both remembered and continue to coordinate behavior. For example, well-established boundaries fix tax and tariff rates, which has significant impact on economic decisions such as where firms locate, buy inputs from and where they sell their goods (Simmons, 2005; Wolf, 2005; Wolf, Schulze and Heinemeyer, 2011). Moreover, the coordination effects of well-established political boundaries do not dissipate instantaneously when borders are redrawn, as coordination around borders is persistent (Abramson and Carter, 2016). Rather, new boundaries take time to establish and existing patterns of political behavior and economic exchange take time to dissipate. Abramson and Carter (2016) develop the institutional theory along these lines by identifying how variation in old boundaries’ histories influences leaders’ propensities to draw territorial claims along them. In the African context, where there was not a long history of shifting state boundaries, Goemans and Schultz (2016) show that rivers and watersheds make especially effective borders, while undefined or provisional frontiers are ripe for dispute. Political boundaries are complex institutions in that they coordinate and regulate economic, political and social behavior across multiple dimensions.

Border changes between France and Spain codified in the Treaty of the Pyrenees (1660) provide a potent historical example of the persistent effects of well-established historical borders. The
agreement transferred a small portion of the region of Cerdanya with a new boundary that placed Roussillon in France. Thus, Cerdanya, historically a unified county controlled by the Castilian crown, was split between France and Spain. The presence of a well-established historical precedent that placed Roussillon in Cerdanya made this new jurisdictional line relatively ineffective and unstable for decades thereafter. Peter Sahlins notes that imposition of this new boundary led to a number of local disputes in the late 17th and early 18th centuries, as the 1660 boundary contradicted long-standing practice on many fronts including grazing rights, usufruct rights and the application of property taxes (Sahlins, 1989, 150–159). Local resistance to the 1660 boundary emerged even as late as 1790, when the revolutionary government in France attempted to create départements aimed in part at streamlining jurisdictional rules and facilitating taxation. At the French-Spanish boundary in Cerdanya, local citizens on the French side were especially resistant to the attempted imposition of customs along the frontier that disrupted long-standing patterns of economic exchange. Local resistance created great difficulty for the French government, and for some time after imposition of the customs frontier the French struggled with “contraband activity” (Sahlins, 1989, 168–171). Thus, while a new boundary was drawn that split Roussillon from the rest of Catalonian Cerdanya and Spain in 1660, the effects of the old border continued to coordinate a variety of facets of political and economic behavior well into the next century.

Well-established historical boundary precedents make attractive territorial claims because they are more attractive for leaders to prospectively integrate into their state. The fact that well-established historical boundaries are remembered and in many cases continue to be coordinated around economically and politically makes them much better prospects than slices of bordering territory without precedent. In areas with well-established historical boundary precedents and recently drawn or poorly institutionalized contemporary borders, claims along a precedent are quite attractive to leaders (Abramson and Carter, 2016). Transaction and adjustment costs to prospective integration are considerably lower if local actors and institutions have experience with an historical boundary, and are especially so if many are still coordinating around a precedent (Carter and Goemans, 2011). There is a diverse set of evidence supportive of these ideas. For example, Wolf, Schulze and Heinemeyer (2011) show that post-World War I treaties did not disrupt European trade all that much, arguing that this was because the new post-1918 borders in fact
largely followed prior administrative lines. Analyzing all inter-state territorial changes during the 20th century, demonstrate that territorial changes that follow precedent are much less disruptive to trade flows than transfers that create a truly new boundary. Moreover, Prorok and Huth (2015), Carter and Goemans (2011) and Carter and Goemans (2014) all show that territorial settlements that follow precedent result in significantly less costly conflict post-settlement. Of course, additional benefits to prospective integration can be the product of other valuable territorial characteristics, e.g., natural resources, enclosed by historical boundary precedents.

The idea that leaders’ incentives to make territorial claims is well-explained by the institutional view of boundaries is corroborated by recent research on where disputes tend to arise. Using new data on all European international boundaries from 1650–1789, Abramson and Carter (2016) demonstrate that post-1815 territorial claims are clustered in areas dense with well-established pre-1790 historical boundary precedents. In contrast, the presence of economically valuable resources, natural features of military-strategic significance and the distribution of ethnic groups are all found to be relatively poor predictors of where territorial claims are drawn. We follow Abramson and Carter (2016) in arguing that historical boundary precedents are central to understanding why leaders make the specific territorial claims that they do. That being said, we follow Abramson and Carter (2016) and also allow for prominent alternative possibilities. While the institutional theory of borders and its key implications do a nice job explaining where territorial disputes arise and why they overwhelmingly follow historical boundary precedents, as currently specified it does not identify why states very actively make claims at particular points in time but not others. We argue in what follows that temporal trends in claim making are best understand by thinking about the costs of converting latent claims into active territorial disputes.

The Costs of Territorial Claims

Many of the costs of territorial claims derive from a heightened risk of militarized conflict. One of the more robust findings in the literature is the connection between territorial disputes and military conflict (Holsti, 1991; Vasquez, 1993; Hensel, 2000; Senese and Vasquez, 2008). Given the

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2 A point that is corroborated by Carter and Goemans (2011).
3 See Carter (2016) for an explanation of why this is the case.
prospective costs, states with latent territorial claims often refrain from engaging a neighbor in a territorial dispute out of aversion to the anticipated military costs. This is likely why Syria has never formally made a claim over the Turkish province of Hatay, which was annexed by Turkey in the 1930s, despite it being common knowledge that the Syrians' continue to see this territory as part of Syria. Even if war itself is unlikely, the increased threat of armed conflict that comes with active claims against a neighbor’s territory leads to significantly higher levels of military spending (Gibler, 2012).

The heightened atmosphere of threat and security competition also leads to economic costs that are not the direct product of military spending. Neighbors with active territorial disputes trade less (Simmons, 2005; Schultz, 2015) and also enjoy less foreign investment (Lee and Mitchell, 2012; Carter, Wellhausen and Huth, 2016). For example, the long-standing territorial dispute between Ecuador and Peru that was finally settled in 1998 was known to be a drag on investment and bilateral trade relations. Energy sector analysts noted that trade in oil between Ecuador and Peru was well below potential in no small part because of their contentious dispute. An industry publication that highlighted the issue pointed out that “Ecuador has a lot of oil under the ground that can’t get out, and Peru has a pipeline that is half full.”

Interested third parties also impose costs on states in territorial disputes, a point that is made by recent research. Huth, Croco and Appel (2011) argue that the key mechanism behind the push for states to settle territorial disputes where international law unambiguously favors one side comes from powerful and interested third parties. Thus, actors such as powerful states with an interest in regional security or the international organizations they are members of take interest in peaceful resolution of outstanding disputes because they see them as an unwanted threat to regional security and stability (Mitchell and Hensel, 2007; Gent and Shannon, 2010; Huth, Croco and Appel, 2011). In the Ecuador-Peru dispute, the United States and the other guarantors of the 1942 Rio Protocol played a key role, pushing both sides to abide by the terms of the treaty. The costs imposed by outside powers range from direct intervention, such as the British and French intervention against Russia in the 1853 Crimean War, to economic sanctions, such as the array of sanctions imposed on Russia after the annexation of Crimea in 2014.

The costs imposed by third parties have also recently been highlighted by scholars interested in dispute emergence. Abramson and Carter (2016) note that leaders are strategic and selective in making territorial claims, as most prefer to not make claims that will lead regional powers to think they are a threat to stability. Accordingly, territorial claims are not only fairly rare but are also highly selective, as most leaders are eager to demonstrate that they have limited aims (Goemans and Schultz, 2014). The interest in credibly signaling limited aims is to avoid costly countermoves by powerful actors who fear for regional stability (Abramson and Carter, 2016). As Goemans and Schultz (2014) note, unlimited aims types, with Hitler being the prime example, are actually very rare historically, as most revisionist leaders from the 19th century onwards have specific and clearly bounded territorial aims. The importance of making credible territorial claims that are also viewed as having some legal or historical basis is no doubt a driving force in this process (Huth, Croco and Appel, 2011; Abramson and Carter, 2016).

The anticipated costs from powerful third parties often serve as a deterrent to making a claim. We argue that the way in which these anticipated costs from third parties vary across time helps explain the timing of territorial claims. Specifically, when powerful third parties with an interest in regional stability are embroiled in crises, states are significantly more likely to make their latent territorial claims active. This is because the costs of making a claim are temporarily low when powerful third parties, i.e., great powers, are embroiled in their own crises. Measures that powerful states might take to deter or punish potentially destabilizing territorial claims are more costly to make when they are directly embroiled in crises or wars themselves. Thus, the marginal costs of a military intervention or trade sanctions are higher for a great power if its troops are already committed in a war, e.g., France in 1870, or its treasury is already being strained to deal with revolutionary threats at home, e.g., the Revolutions of 1848.5 In other words, when the managers of the current international system are embroiled in crises, uncertainty over their ability to intervene in crises elsewhere in the region increases in a way that lowers the anticipated costs for states to make territorial claims.

We argue that leaders are especially likely to convert latent claims into active claims at times 5The idea that internal instability might be related to state behavior in territorial claims is also put forth by Frawel (2005), although his argument is quite different as he argues that China has made concessions in response to internal instability within its own borders.
of relatively high systemic uncertainty. Thus, when great powers are entangled in significant crises, whether internal or international, states with latent claims take advantage of how these bouts of systemic uncertainty briefly lower prospective costs. This argument leads to several empirical expectations. First, if periods of systemic uncertainty have great influence over leaders’ claim-making behavior we expect specific years or short-time periods to have significant effect on the likelihood of a claim being made in a model that includes key variables known to drive claim-making behavior. In other words, even in a well-specified model, year- or period-specific effects should be significant in years associated with systemic uncertainty.

Our argument that latent claims, or leaders’ incentives to contest territory, derive from the persistent effects of well-established historical boundary precedents provides clear and novel empirical expectations. Specifically, we expect that the effect of there being well-established historical boundary precedents near a current border will be especially great during periods of systemic uncertainty. In other words, if we allow variables that affect the probability a state makes a territorial claim to have effect that varies across time, we should find that the presence of historical boundary precedents has especially great effect in years of systemic crises, and much less effect in other years. The institutional theory of boundaries suggests that more conventional variables such as the presence of cross-border ethnic kin or valuable resources should not have such differential effect across time, as latent claims rarely derive from such factors (Carter, 2016; Abramson and Carter, 2016). Accordingly, we expect 1.) the timing of territorial claims to be greatly influenced by specific periods of systemic uncertainty and crisis and 2.) for the influence of these specific time periods to be a function of the briefly heightened importance of historical boundary precedents.

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6While it seems ideal to directly measure the crises that produce bouts of systemic uncertainty, we choose to estimate uncertainty with year-specific effects for two main reasons. First, it makes sense to generally identify whether there is empirical evidence for specific time periods having significant influence on claim-making behavior in a well-specified model. Second, and relatedly, the sources of systemic uncertainty are varied as a number of different kinds of crises disrupt management of the international system. For instance, systemic uncertainty can derive from internal instability and revolution in great powers, inter-state wars that involve great powers, or major financial crises and meltdowns that constrain the finances of great powers. Thus, rather than trying to ex ante measure all of the potential sources of systemic crisis, it makes more sense to initially model them with time-specific effects. This allows ex post evaluation of whether 1.) there are significant effects, and 2.) whether the time periods that matter empirically correspond to time of systemic uncertainty.
Data

We exploit two main sources of data in our analysis. First, to construct measures of historical border uncertainty - our main independent variable of interest - we use new data from (Abramson, 2016) who has constructed a dataset describing the history of European state boundaries between 1650 and 1789. Second, to measure when territorial claims emerge between states - our main dependent variable of interest - we use the Issues Correlates of War (ICOW) data (Hensel, 2001, 2013) which describes each territorial dispute arising after 1815.

Territorial Changes in Europe

Our main independent variable of interest captures variability of political boundaries after Westphalia and before the French Revolution. To measure this we use the data collected by Abramson (2016) which describe the existence, location, and boundaries of every European state before 1790. Here states are defined based upon a Weberian understanding of states as “quasi-monopolists of violence.” Formally this definitions requires three necessary criteria be met for a political unit to appear as a state in the data:

1. No Direct Military Occupation

   If a territorial unit is militarily occupied by a foreign power, according to this coding scheme it ceases to exist. Similarly, if a political unit successfully conquers a piece of territory, this newly occupied territory is treated as a part of the conquering state. For example, when the Ezzelino or Pallavicini families were able to effectively wield military control over several Italian city-states, they are thus coded as the amalgamation of these units into a single state.

2. The Capacity To Tax

   The power to expropriate resources, or the ability to take from another that which she has produced or owns, is the coercive authority central to statehood. Accordingly, the capacity to tax is used as evidence of the state’s monopoly over coercion. So, for example, when Worms (1184) or Lubeck (1226) ceased to pay imperial taxes and (demonstrably) gained rights to collect taxes and tolls within their boundaries, they are subsequently treated as independent
states. Moreover, this allows us to distinguish states from other forms of political organization such as Leagues that maintain a limited capacity to generate revenue. With this perspective it is apparent that the Holy Roman Empire was marked by substantial political fragmentation, capturing the proliferation of the political units that maintained “full jurisdiction... rights of legislation, privileges of coining money, levying tolls and (collecting) taxes (Bryce, 1920, ch. xiv).”

3. A Common Executive

An important feature of a unified territorial state is sharing a common executive. Many early-modern states were composites of, sometimes, geographically and institutionally disparate groups. That is, although they shared a common executive many sub-national groups maintained distinct parliaments and other sub-national institutions granting particular rights and prerogatives to certain regions or groups and not to others. For example, although they belonged to the Spanish state Castile, Aragon, Valencia, and Navarre maintained distinct parliamentary bodies each with separate and distinct political and economic rights. When there exist semi-autonomous groups like this that share a common executive we treat them as a single state, as long as they also satisfy the prior two criteria.

We use this definition of what political units are considered territorial states in post-Westphalia Europe to identify the relevant set of historical boundaries. The data describing international boundaries for all states in post-1650 Europe are measured in five-year panels and are taken from a number of sources. We use Geographic Information Systems (GIS) to measure the density and variability of international boundaries, as the location of boundaries is inherently spatial. Two of the main sources from which the GIS boundaries are constructed are the Centennia Historical Atlas (Reed, 2008) and the Euratlas Digital Atlas (Nussli, 2010). The Nussli data is measured in one-hundred year panels whereas the Reed atlas utilizes a much higher frequency approach, taking observations in tenths of years. The boundaries are used as defined by both datasets aligning them at every hundred year mark based upon the coding scheme defined above. The Nussli data matches the Reed data nearly perfectly at 100-year intervals. Because the Reed data is not geo-referenced, GIS compatible shape files are built by manually constructing the boundaries from re-projected images provided by the atlas and then referencing each observation using the European Alpers
Equal-Area projection system.

The Nussli data have been used in several prominent publications and are quite accurate (Stasavage, 2011a, b; Blaydes and Chaney, 2012). Nevertheless, even after combining the data from these digital sources there are still a number of imperfections, for example, units coded as independent states are absent from the reconstructed shape files. These tend to be small independent principalities, ecclesiastical units, and city-states that were not picked up by the historical geographers who created the digital reproductions from which the maps are constructed. In order to rectify these flaws and prevent the potential problems that could plague any statistical analysis based on the uncorrected data, a number of historical and contemporary primary source maps are used to create high frequency boundary changes for these missing units. From this combination of secondary and primary cartographic sources boundaries for all political units that are not present on the initial maps from the Nussli and Reed data are projected that meet the coding criteria. Using known pieces of physical geography, known political boundaries, and the location of cities and towns to properly reference these maps, shape files are created that, with a high degree of accuracy, reflect the geographic scale of each unit. For each of these units the history of their boundary changes is tracked, i.e., expansions and contractions, and the shape-files are adjusted accordingly.

Our units of observation are the post-1815 border dyads (e.g., the border defined by every contiguous state in Europe). Since most territorial claims made by a state are proximate to its current borders, we want to ensure that our results do not reflect historical boundary precedents that are actually far from borders and thus spuriously associated with territorial claims. To do this we create dyadic data defined by the 50 kilometer buffer zones around each post-1815 state’s border and limit our measurement of historical boundary precedents in these areas close to current borders. The units are depicted in Figure 1.

Using these data and the post-1815 European dyad as our unit of analysis we construct our primary measure of the presence of competing historical border precedents. We start by measuring the density of historical borders in each grid-square in five-year panels. We use this information to create two measures. First, we create Historical Border Density, which captures the mean density of historical borders from 1650 to 1789 on a given border area. Second, we create our primary measure of competing historical precedents, Historical Border Variability, which captures temporal
Note: 50 KM buffer areas around each dyadic border in Europe: 1815–2002
variation in the density of borders over the 140 years preceding the French Revolution. Thus, while the density measure identifies areas that have higher levels of average border density, the variability measure identifies areas that experience more variation in border density from 1650 to 1789.

We construct measures of border density and variability for each buffer as follows. Every five years between 1650 and 1789, for each grid-square $i$, we observe the length of borders within its bounds for each yielding a measure of border density for unit $i$ in period $t$, which we call $Historical\ Border\ Density_{it}$. We take the mean of the measure across all $t$ to produce our averaged measure $Historical\ Border\ Density_i$ for each unit $i$.

Given our measure of average $Historical\ Border\ Density_i$, we are able to construct a measure of the variability of border density across time. A measure of border variability allows us to assess whether areas near post-1815 international borders that experienced more border changes across time, and thus have multiple historical precedents, are especially prone to territorial claims. Border variability for each territorial unit $i$ is measured as follows:

$$Historical\ Border\ Variability_i = \sum_{t=1}^{T} \sqrt{(Density_{it} - \bar{Density}_i)^2}.$$  

Thus, $Historical\ Border\ Variability_i$ effectively captures how variable borders are across time for each grid-square. As noted above, variability is our most theoretically important measure, as it identifies whether there are multiple historical precedents. However, $Historical\ Border\ Density_i$ is an important control variable in all of our models, as it identifies the density of state boundaries in a given grid-square. Thus, inclusion of $Historical\ Border\ Density_i$ in our regression models ensures that our key measure of $Historical\ Border\ Variability_i$ does not just proxy for the density of states and borders in a given grid-square. To account for the fact that $Historical\ Border\ Density_i$ and $Historical\ Border\ Variability_i$ are right-skewed, we take the natural logarithm of both measures.

**Additional Covariates**

Throughout the subsequent analysis we condition on a number of “pre-treatment” covariates - measured before our main independent variables of interest - which might plausibly confound the

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$^7$Note that Density in the expression is shorthand for Historical Border Density.
relationship between border variability, uncertainty, and claim-making. Principally, we are concerned with potential bias that might result from features of economic and physical geography that could plausibly explain both past border changes and contemporary claim-making. For example, if the military or economic value of territory persists across time, it could explain both why borders changed in the past and why leaders make claims in the present. We account for this in the following ways.

To begin, it is possible that places of higher economic worth are more likely to be contested (Huth, 1996). To control for potential bias that might result from persistent economic value over time, we include three covariates measuring economic development. First, following convention in economic history we include the size of the urban population in the year 1600 living within a given unit as a proxy for its overall level of development. These data are taken from that of by Bairoch, Batou and Pierre (1988) which describe the population sizes of the about 2,200 towns which at some point had 5,000 or more inhabitants between 800 and 1800.

Second, we use data from R. Sprandel on the location of iron forges in pre-industrial Europe (Sprandel, 1968, p. 93-220) and take the count of iron production centers within a given unit. The production of iron was especially crucial in processes of industrialization and economic development and, moreover, has long been an important feature of military capabilities. For example, it was key to the production of weaponry and armaments during our period of inquiry (McNeill, 1984) and is a main component of the widely used Composite Index of National Capabilities (CINC) data (Singer, Bremer and Stuckey, 1972).

Third, since over the period of our study the European economy was largely agricultural, we account for agricultural economic potential by measuring the rain-fed suitability to generate agricultural output. This captures the ability of a given piece of territory to produce agricultural output absent of extensive irrigation and is derive from the FAO’s GAEZ combined land suitability dataset (FAO, 2000).

In addition to economic value, we account for features of natural geography that could plausibly make territory more attractive by conferring military and economic value. For example, rivers make make particularly attractive and defensible borders (e.g., Keegan (1994)). Strachan (1983, 11) finds

---

8On this see Acemoglu, Johnson and Robinson (2002) or Chanda and Putterman (2007).
that riverine waterways were of particular strategic importance during the 17th and 18th centuries, noting that they provided key defensible points for armies. Similarly, Goemans (2006) highlights the case of Philip the Fair of France who chose four rivers as France’s “natural boundaries” as early as the 14th century. Others like Strachan (1983) also underscore rivers’ crucial role in transport and communication, giving the control of rivers significant economic value. We account for the special value attached to territory with rivers by controlling for the length of rivers within a given territorial unit.

Moreover, since mountain ranges have been viewed as natural frontiers and especially defensible, they are particularly valuable in border areas (Hensel, 2001). We account for how mountainous an area with spatial data on terrain ruggedness collected by Shaver, Carter and Shawa (2016). These data are created by first dividing the globe into identical one kilometer by one kilometer grid-squares. Second, the absolute elevation change between each grid-square and all contiguous grid-squares is calculated. This yields a ruggedness measure for each 1 x 1 km grid-square. We then calculate the mean level of ruggedness in each of our border-dyads. This provides us with highly detailed and accurate data about the topographical features of territory that are widely thought to be important to military strategy and border formation.

Last, since our unit of analysis - the border dyad - is not uniformly sized (some borders and longer than others) it is possible that longer borders have a greater potential for generating disputes. We account for this possibility in two ways. First, we simply control for the size of each buffer-dyad, partialling out whatever potential confounding effect greater a greater border area has on claim making. Second, we control directly for the average historical border density in each border zone, estimating the effect of border variability holding fixed the density of past borders within a given contemporary unit.

Analysis

In this section we outline our empirical approach to understanding the interplay between the systemic and unit level factors which determine when and where territorial claims are made. Consistent with our theoretical approach, we find that our main measure of unit level uncertainty - the vari-
ability of borders before the Congress of Vienna - only has an impact on the probability a claim in years of great systemic uncertainty. To do this, we outline two related approaches. First we treat the probability of a claim between any pair of states as arising from two potential models, one in which historical border variability influences claim-making and another where it does not. Treating each temporal cross-section as being drawn from a mixture of these two models, we demonstrate that border variability impacts the probability of a claim only in years consistent with our qualitative understanding of systemic uncertainty. In our second approach we view the effect of border variability as varying year-to-year. Allowing the effect of border variability to vary across time, we again show that the only periods in which border variability achieves statistical significance are those of systemic upheaval.

Approach 1: Mixture Model

To begin, we want to estimate the probability that a territorial dispute arises between a given dyad $i$ in a given year $t$, as a function of both dyad-specific traits and systemic level shocks. To do this, we consider two potential statistical models:

$$\Pr(\text{Dispute}_{it} = 1|X) = \logit^{-1}(\alpha_0 + \alpha'X_i)$$ (1)

and

$$\Pr(\text{Dispute}_{it} = 1|X) = \logit^{-1}(\beta_0 + \beta_1 \text{BorderVariability} + \beta_2'X_i).$$ (2)

In Model 2 we treat the likelihood of a territorial dispute as a function of both historical border variability and a set of pre-treatment covariates. In contrast, in Model 1 we assume that historical border variability has no influence on the probability a dispute arises. To evaluate our expectation that the effect of border variability is conditional on the state system experiencing uncertainty, we estimate a finite mixture model of the following form:
Pr(Dispute_{it} = 1|X) = \pi_t \times \logit^{-1}(\beta_0 + \beta_1 \text{Border Variability} + \beta_2 \mathbf{X}_i) + (1 - \pi_t) \times \logit^{-1}(\alpha_0 + \alpha_1 \mathbf{X}_i)

(3)

We constrain each observation within a given cross-section $t$ to be drawn from the same model so $\pi_t$ reflects the probability the observations within a given year are generated by Model 2 and $1-\pi_t$ the probability they are generated by Model 1. Treating $\pi_t$ as missing data we exploit the Expectation-Maximization (EM) algorithm (Dempster, Laird, and Rubin 1997) to maximize the observed data likelihood implied by this mixture model and obtain estimates of the the parameters $\alpha$, $\beta$ and $\pi_t$.\(^9\) It is important to note that \textit{a priori} this approach does not assume that any given cross section will be “best” described by the model including our measure of historical boundary precedents. In fact, it does not assume that any positive weight will be placed on either model. Rather, we allow the data to select the optimal weighting of models, providing the estimate of $\pi$ that maximizes the observed data likelihood.

Parameter estimates from this model are presented in Table 1. In the first four columns we present standard estimates from a logistic regression where the outcome variable is whether or not a territorial dispute arises between a pair of contiguous post-1815 dyads and the independent variable of interest is the historical border variability (measured between 1650 and 1789) within a 50 kilometer buffer of the dyadic border.\(^10\) In the first column we present estimates from the full sample, including the set of potential “pre-treatment” confounders. In the second column, because it is plausible that areas with more historical borders both have a greater potential for changes across time and a greater potential for disputes, we include the density (the logged average total length in kilometer of borders) of post-Westphalian/ pre-1789 borders as an additional control. Furthermore, because many of the temporal clusters of claim-making involve conflicts with Germany/Prussia, in column 3 we exclude all German dyads.

\(^9\)On the use off finite mixture models like this for political science applications see Imai and Tingley (2012).

\(^10\)The results over the connection between historical border variability and dispute emergence are not sensitive to using 50km dyadic buffers. See Abramson and Carter (2016), especially the online appendix, for a large number of alternative specifications that yield similar results.
In an attempt to evaluate potential alternative mechanisms, in Column 4 we include several post-treatment covariates. First, since alliances and shared democracy are known to influence the likelihood of conflict and both might plausibly be influenced by events associated with past border variability, we include dummies for the existence of a defensive alliance and shared democracy.\textsuperscript{11} Next, since border changes frequently partition shared ethnic groups and because nationalist conceptions of statehood defined by a common ethnic background could affect claim making, we include an indicator of shared ethnicity for each dyad.\textsuperscript{12} Last, since it is plausible that our underlying measure of border variability is associated with claim making through an underlying propensity for military conflict between pairs of states, we condition on a state of war within each dyad. Across specification, the estimated relationship between border variability and the probability of a dispute arising is positive and statistically significant.

In these first models we are treating the relationship between border variability and claim making as constant across time. Next, we estimate the mixture model described above, allowing border variability influence the probability of a dispute in some periods and not others. Here we estimate both parameters describing the relationship between border variability and claim-making as well as that describing the probability that variability has an impact in any given cross-section. We successively replicate the specifications of from the standard logit estimates of Columns 1–4 in Columns 5–6 and again find that the relationship between border variability and the probability that a dispute arises within a given dyad is positive and statistically significant.

Although our measure of border variability is positive and statistically significant in both the mixture model and the standard logistic regressions, the magnitude of these effects varies substantially across models. Because the standard approach pools years in which border variability has no effect with years in which it does, it underestimates the magnitude of the relationship between border variability and the probability of a claim being made. To see this in Figure 2 we plot the predicted probabilities derived from the standard model and both components of the mixture model. We point out two comparisons. First, in Figure 2 we show that the marginal effect of border variability is much greater in the mixture model than in the standard logistic regression. Second, in the periods where it does matter, the predicted probability of a claim for the dyads

\textsuperscript{11}These are derived from the Gibler and Sarkees (2004) dataset and the Boix, Miller and Rosato (2012) dataset. 
\textsuperscript{12}The construction of this variable is similar to that developed by Huth (1996); Huth and Allee (2002).
with the lowest level of border variability is higher than the predicted probability of a claim from the mixture component when borders don’t matter. Examination of the lower left hand corner of Figure 2 makes this clear, as comparison of the black line (where border variability is at its lowest value) to the red line (which shows the prediction from the mixture component when historical boundary precedents do not matter) shows this stark difference.

To evaluate when past border variability impacts the making of claims, in Figure 3 we plot the predicted mixing probabilities, $\hat{\pi}_t$, for each cross section derived from the baseline model in Table 1 (the results are nearly identical for each of the other models). These values represent the estimated probability that the making of territorial disputes, in any particular year, is influenced by past border variability. Here, we see that these periods understood as liminal moments in the state system are also those where claims are driven by historical border variability: the period immediately following the Congress of Vienna, that surrounding the revolutionary waves of 1830 and 1848, the years surrounding the unification of Germany and Italy and the years immediately preceding and following the First and Second World Wars as well as the collapse of the Soviet Union are those where border variability influences claim making.

**Approach 2: Time Varying Slopes**

In our second empirical approach we evaluate the simultaneous effects of both unit and system level uncertainty by allowing the effect of border variability to vary year-to-year. In a mixed effects setting we estimate a varying slopes model of the following sort:

\[
\Pr(\text{Dispute}_{it} = 1|X) = \logit^{-1}(\beta_0 + \beta_{1,t}\text{BorderVariability} + \beta_2'X_i).
\]

(4)

We assume that $\beta_{1,t} \sim (0, \sigma^2)$. For each year $t$ we obtain a unique estimate of the relationship between border variability and claim-making, $\beta_{1,t}$. Again, in the baseline model we include the full set of pre-treatment controls described above and then reproduce the analogous specifications to our mixture-model approach, introducing controls for past border density, excluding German dyads, and including the same set of post-treatment covariates reflecting potential alternative mechanisms.
Note: This figure gives predicted probabilities derived from Column 1 and Column 5 in Table 1 across observed values of historical border variability. The blue line gives predictions derived from the standard logistic regression. The black line gives predictions from the mixture-model in periods when border variability is included. The red line gives predictions from the mixture model in periods when border variability is not included.
Classification of Periods Where Historical Border Variability Has an Impact on Claim-Making

Note: This figure gives predicted mixing probabilities derived from Column 5 in Table 1.
Table 1

The Relationship Between Historical Border Variability and Territorial Claims

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Model: Logit Logit Logit Logit Mixture Logit Mixture Logit Mixture Logit
Sample: Full Full No Germany Full Full Full No Germany Full

Note: The first four columns of this table present standard logit estimates. The last four present estimates from a finite mixture model where columns α give parameter estimates from the model excluding Historical Border Variability as a covariate and columns labeled β include it.
Figure 4

Note: This figure gives time varying parameter estimates describing the relationship between historical border variability and claim-making as derived from a mixed effects logistic regression. The full set of pre-treatment controls include: agricultural suitability+terrain ruggedness+river densities+urban population in the year 1500, iron production centers in the year 1500, longitude, latitude, and the log size (in km) of each buffer zone. Post-treatment controls include: dummies for a shared ethnicity, a defensive alliance, democracy, and war. Point estimates and 90% confidence intervals are plotted against time. Estimates that are statistically significant at this level are plotted in black.
Across all specifications, we obtain results similar to our those from our first empirical approach. In Figure 4 we plot the time-varying coefficients from each model specification. In general, they are slightly more conservative in assigning statistical significance to periods when past border variability influences the emergence of territorial disputes. Similar to our previous approach historical border variability influenced claim-making in years associated with the Revolutions of 1848, German and Italian Unification, and the First World War - periods of great systemic uncertainty. However, it excludes periods that our previous approach identified; for example, the Romantic Revolutions of 1830 and the period immediately following the Congress of Vienna. It should be noted, however, that the point estimates for these periods are substantially greater than most other years but our measures of uncertainty fail to allow us to reject a statistical difference from zero.

Conclusion

Although the literature on the consequences of territorial disputes is voluminous, little work explores the origins of these disputes and no work explains the when leaders choose to make territorial claims. The timing of territorial claims is clearly in need of theoretical attention given that territorial claims are systematically made at points of crisis for the international system. We demonstrate that the systemic effect is fairly robust across different modeling approaches and specifications and that the established effect of historical boundary precedents on claims varies across time. In fact, historical boundary precedents only have significant substantive effect on claim-making during the small set of years in which European powers are rocked by significant crises. This is quite striking as Abramson and Carter (2016) show historical boundary precedents to be the most consistent predictor of where claims emerge across post-1815 Europe.

The arguments and especially the findings in this paper suggest several needed areas of work. I highlight two here that are priorities for the paper moving forward. First, while the empirical findings presented are novel and also seem quite robust, the theoretical framework needs better specification. Specifically, our model of how the costs of territorial claims change across time and how this interacts with leaders’ incentives to contest specific slices of territory would benefit from full specification. Second and relatedly, while the general meaning of the empirical results is
quite clear (to us at least), we need more empirical work to disentangle the particular mechanisms that contribute to claim-making behavior during periods of systemic uncertainty. We do include several post-treatment variables in our mixture models to try to tease out the circumstances that are associated with claims being made during times of systemic turbulence, but do not find any support for these factors mattering. The idea that the costs of great power intervention are higher during times of systemic crises does not necessarily suggest that this dynamic will be equally present in all states with latent claims. Identifying additional variation among potential claim-makers during periods of systemic crisis should clarify what the precise mechanism is.

The current study focuses on European territorial claims, but we suspect that similar trends are exhibited in other regions as well. The data suggest that times of systemic uncertainty matter for non-European claims as well, as the highest volume years for such claims are the period immediately following World Wars I and II (e.g., 1920 and 1949), the periods following decolonization (e.g., 1960–1961, and 1971), and similar to Europe, the period right after the Congress of Vienna, 1816. While the crises that rock the powerful players in the international system differ across Europe and other regions, the basic dynamic in claim-timing seems to be quite similar. We leave it to future research to better specify the links between systemic crises and territorial claim timing outside of the European context.
Appendix

Mixture Model

Formally, let \( f_m(y|x, \theta_m) \) define a statistical model for theory \( m \in \{1, 2\} \) where \( y \) is the value of the outcome variable \( Y \), \( x \) is the vector of covariates in \( X \), and \( \theta_m \) is the vector of parameters associated with model \( m \). The outcome \( Y \) is generated from either model 1 or 2 but we do not know a priori which model is generating which set of observations. We introduce a latent (that is to say unobserved) \( Z_t \) which can either be 1 (reflecting model 1) and or 2 (reflecting model 2). This yields a data generating process \( Y_{it}|X_{it}, Z_t \sim f_{Z_t}(Y_{it}|X_{it}, Z_t) \). Note that the latent variable here \( Z_t \) is clustered by time period, \( t \).

Assuming independence across observations (conditional upon the covariates and the latent variable) this model specification yields the following observed-data likelihood function where the latent variable \( Z_t \) has been integrated out. This gives an observed data likelihood:

\[
L_{\text{obs}}(\Theta, \Pi|X_{it}, Y_{it}) = \prod_{t=1}^{T} \prod_{i=1}^{N} \left\{ \sum_{m=1}^{2} \pi_m f_m(y|x, \theta_m) \right\}
\]

Here, \( \pi_m = \Pr(Z_t = m) \) represents the population proportion of observations generated by theory \( m \) with \( \sum_{m=1}^{M} \pi_m = 1 \) and \( \pi_m > 0 \) for each \( m \). Let \( \Theta = \{\theta_m\}_{m=1}^{M} \) represent the set of all model parameters and \( \Pi = \{\pi_m\}_{m=1}^{M} \) the set of all model probabilities.

We estimate this via the Expectation-Maximizing (EM) algorithm of Dempster, Laird, and Rubin (1997). Given the complete data likelihood

\[
l_{\text{com}}(\Theta, \Pi|X_{it}, Y_{it}, Z_{it})
= \sum_{t=1}^{T} \sum_{i=1}^{N} \sum_{m=1}^{M} \log \pi_m \log \pi_m \ f(y|x, \theta_m)
\]

The E-step computes the conditional expectation of the latent variable \( Z_t \) given the observed data.
and the values of parameters at the previous iteration of the algorithm. This is given by

\[
Q(\Theta, \Pi|\Theta^{(q-1)}, \Pi^{(q-1)}, \{X_{it}, Y_{it}, Z_t\}_{i=1,t=1}^{N,T})
= \sum_{t=1}^{T} \sum_{i=1}^{N} \sum_{m=1}^{M} \zeta^{(q-1)}_m \{\log \pi_m \log_m f(Y_{it}|X_{it}, \theta_m)\}
\]

(7)

Where the conditional expectation is expressed as follows

\[
\zeta^{(q-1)}_m = \Pr(Z_t = m|\Theta, \Pi \{X_{it}, Y_{it}\}_{i=1,t=1}^{N,T})
= \frac{\pi^{(q-1)}_{t,m} f(Y_{it}|X_{it}, \theta_m)}{\sum_{m=1}^{2} \pi^{(q-1)}_{t,m} f(Y_{it}|X_{it}, \theta_m)}
\]

(8)

Following the E-step, the M-step maximizes the function defined in equation 6. The E and M steps are iterated until convergence.
References


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Stasavage, D. 2011b. “When Distance Mattered: Geographic Scale and the Development of European Representative Assemblies.” American Political Science Review.


