

Rules over Real Estate:  
Trade, Territorial Conflict, and International Borders as Institution

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Abstract:

Territorial disputes between governments generate a significant amount of uncertainty for economic actors. Settled boundary agreements produce benefits to economic agents on both sides of the border. These qualities of borders are missed both by realists, who view territorial conflicts in overly zero-sum terms, and globalists, who claim borders are increasingly irrelevant. I argue that settled borders help to secure property rights, signal much greater jurisdictional and policy certainty, and thereby reduce the transactions costs associated with international economic transactions. The plausibility of this claim is examined by showing that territorial disputes involve significant economic opportunity costs in the form of foregone bilateral trade. Theories of territorial politics should take into account the possibility of such joint gains in their models of state dispute behavior.

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## Rules over Real Estate: Trade, Territorial Conflict, and Borders as Institutions

International understandings about national territorial jurisdiction are among the most important international institutions of the modern age. Agreements about jurisdiction – or rules about who has the authority to make, apply, and adjudicate rules within a particular territory – are central to the globalization of markets we have witnessed over the past few decades. International borders clarify property rights. When they are mutually accepted as legitimate, they further international economic integration.

Much of the international relations literature has a different take on international borders. One branch of that literature, well represented in Realist thought, has emphasized that borders are territorial divisions – the object of zero-sum state competition for power, prestige, lebensraum, or an imagined historical identity. On the other hand, the globalization literature continually reminds us that we live in a world in which territory matters less, and human capital matters more to national power. It also entreats us to believe that markets elide national boundaries; some commentators even suggest that our world is increasingly “borderless” (Ohmae 1990).

This paper argues for a reconceptualization of international borders as international institutions. Clear agreements over jurisdiction reduce risks to property rights and actually *encourage* transborder economic relations, producing benefits for economies on both sides of the border. As I will show, thinking about borders as mutually beneficial institutions is not only plausible; it also resolves a number of issues that, from the traditional realist and the globalization perspectives, are puzzling.

This study proceeds in three sections. The first section sets out the argument that mutually accepted international borders provide joint gains that are eroded or lost if the legitimacy of the

border is in dispute. The second section develops the methodology and describes the data used to support this claim in a very concrete fashion: by showing that there are significant opportunity costs to disputing the accuracy or legitimacy of a particular territorial division. The third section presents the evidence. Using a gravity model of trade, I show that the mere fact of disputing a border has a significant negative impact on contiguous countries' bilateral trade. This is true even when we control for the effects of the actual threat, or use, of force. In short, jurisdictional uncertainty reduces trade. The argument is that borders as *institutions* for organizing understandings about jurisdiction over territory are an important impetus to economic interdependence. The consequences for our understanding of international conflict and cooperation in this area are profound.

## I. Theoretical Approaches to International Borders in International Politics

### *Territory and Borders in Realist Thought*

International borders place physical limits on the exercise of state authority over territory, as well as provide the physical space available for the provision of national security. For these reasons, they are a primary concern of scholars in the realist tradition who view power and the search for security to be the central features of international relations. Hans Morgenthau, who was remarkably eclectic in this regard, placed geography and natural resources – elements closely associated with territory – right at the top of the list of elements of national power (Morgenthau 1985:127-136). Moreover, he emphasized territorial reallocation (essentially, an adjustment of the border between states) as a way to preserve the balance of power, a process he characterized as achievable by “diminishing the weight of the heavier scale or by increasing the weight of the lighter one” (Morgenthau 1985). Yet one ought not to portray his approach as unduly mechanistic. Morgenthau

was also willing to consider national character, national morale, and the problem of popular support as important determinants of national power. Each of these, of course, can be closely linked with the prospects of territorial loss or accretion.

Realist thinking overlapped with conceptions of the state and territoriality developed by early 20<sup>th</sup> century scholars of geopolitics (Mackinder 1904). Robert Gilpin's claim that "throughout history" states have had as a principal objective "the conquest of territory in order to advance economic, security, and other interests" (Gilpin 1981:23), is not radically different from classical 19<sup>th</sup> century scholars whose theories treated states as competitors vying for control over parts of the earth's surface (Murphy 2001).

For those who draw inspiration from realist theory, an international boundary is typically conceived of in zero-sum terms. Gary Goertz and Paul Diehl provide the clearest contemporary expression of this general assumption:

Because a territorial dispute is primarily zero-sum (usually only one entity can control a piece of land) it may appear surprising that the vast majority of all territorial changes over the last 165 years have been completed peacefully. (Goertz and Diehl 1992:51)

The assumption of zero-sum competition has informed a good deal of research that shows disputes over territory are much more prone to degenerate into violent interstate conflict than are disputes over other issues (Brecher 1993; Hensel 1999; Senese 1996). Disputes over territory have been linked to ongoing violent rivalries between states, as well as the frequency and intensity of war (Goertz and Diehl 1992; Holsti 1991; Huth 1996; Vasquez 1995). Studies that focus on the resolution of territorial disputes almost always focus on external security variables, though in light of

the literature on the “democratic peace” more attention has been given to domestic regime type and international norms (Huth 1996; Kacowicz 1994).

The realist approach to territorial issues has not quite figured out what to do with a few stubborn facts. The first concern is highlighted in the above quote by Goertz and Diehl. If control over territory is truly zero-sum and so closely connected to issues of national security, why has territory so often been transferred peacefully? Moreover, Paul Huth cites evidence that in all of the years since the Second World War, less than one-third of all international borders have been disputed (Huth 1996:8). Why are so many borders accepted as legitimate and uncontested? Even in the Middle East, usually perceived as a hotbed of territorial contention, by the early 1990s formal mutually accepted treaties existed for 80% of the region’s land boundaries (Blake 1992). Realists do not have a clear answer for why over the past half century so much of the world accepts their national borders as legitimate.

Moreover, it is difficult to articulate (and to my knowledge, no one has attempted) a realist account for the decline in the use of force in cases of territorial disputes. Yet there is an emerging scholarly consensus that disputes are less and less resolved through violence. One revealing statistic is that violent territorial change dropped from 33 percent before World War II to 16 percent afterwards (Goertz and Diehl 1992:52). Edward Morse attributed this development to the forces of modernization, including the rise of economic interdependence (Morse 1976). Mark Zacher has proposed a more normative explanation, arguing that growing acceptance of an “anti-territorial revisionism norm” discourages the use of violence in border disputes (Zacher 2001). My more instrumentalist explanation can be considered complementary to normative approaches: governments increasingly recognize disputing their borders is costly. Quite aside from the ugly consequences of escalation, some have begun to recognize the opportunity costs associated with the uncertainty conflicting territorial claims themselves engender.

*Theories of Globalization*

While realists are working out the hows and whys of boundary disputation and territorial transfer, the globalists are telling us that none of this should matter anymore. Though not all accounts go as far as Kenichi Ohmae, who asserts that the world is now “borderless,” (Ohmae 1990) it is rather commonly accepted that national borders are declining in economic significance (O'Brien 1992) as well as social-cultural (Appadurai 1996) and political significance (Blatter 2001). Richard Rosecrance has long argued that trade increasingly trumps territory as a source of national power (Rosecrance 1986). John Stopford and Susan Strange have argued that competition for world markets has replaced control of territorial resources as the “name of the game” between states (Stopford and Strange 1991). Geographers as well as political scientists have recently argued that control of networks of finance, information, and transportation are much more important than control over physical territory per se (Agnew and Knox 1994; Kobrin 1997; Ruggie 1993).

Admittedly, for some kinds of transactions borders may have practically no meaning. But where systematic research on tangible economic flows has been carried out, it has not been especially supportive of the irrelevance of international borders. Although internationalization in today's “global era” is no doubt real and significant, national boundaries continue to have significant influences on international economic relations. Globalists are at a loss to explain why international investment is not *more* globalized than it is: why is there such a “home bias” when it comes to investing (Bernanke and Rogoff 2001; Goldstein and Mussa 1993)? John McCallum's study of bilateral trade between the U.S. and Canada demonstrated empirically that trade between Canadian provinces was almost 22 times that of Canada-U.S. trade, all other factors being held equal (McCallum 1995:617). John Helliwell analyzed trade between all countries in the 1986-1996 period, and showed that border effects were an international phenomenon (Helliwell 1998:59). Departing

from McCallum and Helliwell's trade-centered analyses, Charles Engel and John Rogers confirmed the importance of borders using the "law of one price." They showed that even after holding all other factors equal, price divergences between cities in different countries are much greater than between cities in the same country (Engel and Rogers 1996). Borders, these studies indicate, are indeed still quite "wide."

### *International Borders as Institutions*

What is needed is a way to think about international boundaries that neither falls prey to claims that borders do not matter, nor is prisoner to realism's zero-sum assumptions. International boundaries involve "mixed motive games" which Schelling characterized as having elements of "mutual dependence, and conflict, of partnership and competition" (Schelling 1980:89). Realists have spelled out quite well the competitive elements drawing borders entails: territory may have symbolic, political, historical, or other kinds of significance that make it difficult for states to give it up. On the other hand – and this is rarely emphasized in the literature on territory and boundaries – well-accepted international border arrangements provide *mutual* benefits for states that may be very difficult for either to realize through unilateral policies.

Clearly accepted borders can be conceptualized as international institutions that produce joint gains (Keohane 1984). I use institutions in Douglas North's sense: as sets of rules, compliance procedures, and moral and ethical behavioral norms designed to constrain behavior (North 1981:201-202). Governments have a lot to gain by setting up jurisdictional institutions. Assuredly, they may want to maximize their territorial authority, but like players in a game of battle of the sexes, they may place a good deal of value on *capturing the value associated with agreeing on the line*. These benefits flow from the reduction in transaction costs associated with a normalization of relations regarding the border.



In this view, international border agreements are much more than lines in the sand. These agreements embody jurisdictional rules that are analogous to constitutional rules within a society. Borders are “designed to specify the basic structure of property rights and control of the state [in this context, *between states*].” (North 1981:203). International borders and the explicit demarcation of exclusive territorial sovereignty they imply are akin to a fundamental article of the “international constitution” of the modern state system. When they are mutually accepted, they drastically reduce external challenges to a government’s legitimate authority to create domestic institutions and policies within a clear physical domain.<sup>1</sup>

Understood in this way, international borders not only provide physical security and resources, they also order national and transnational economic and social life. When they are uncontested, they clarify and stabilize transnational actors’ property rights (Yarbrough and Yarbrough 2003). Obversely, territorial and border conflicts increase risks for private economic agents. Risks arise from two distinct but not mutually exclusive sources: *jurisdictional uncertainty* and *policy uncertainty*. Jurisdictional uncertainty flows from ambiguities over whose rules – and what legal protections – apply to a particular transaction.<sup>2</sup> Jurisdictional uncertainty discourages shipping traffic and fishing where waterways or harbors are under dispute;<sup>3</sup> discourages investment in economic facilities in regions claimed by two or more governments;<sup>4</sup> discourages the provision of services in disputed areas;<sup>5</sup> and discourages infrastructure development in contested areas.<sup>6</sup> The uncertainty investors and traders face when jurisdictional boundaries are disputed contribute to greater risks, higher transactions costs and, *ceteris paribus*, fewer cross border transactions.

The second kind of uncertainty economic agents face when governments dispute territory is *policy uncertainty*. Basically, I am referring to added sovereign risks businesses face when a territorial dispute is the root cause of abrupt policy change. Most obviously, a latent dispute could become active, involving trade sanctions or property destruction on a significant scale (Anderton and Carter

2001; Li and Sacko 2002); but see (Barbieri and Levy 2001). More subtly, disputing governments may periodically interfere with trade at the border (customs hassles) or develop explicit policies to reduce their dependence on an adversary out of suspicion of the other's motives and intentions stemming from the territorial dispute (Hirschman 1945). The ongoing dispute between Nicaragua and Colombia provides an example of an environment of uncertainty for transnational business relations. In December 1999, according to the United States Trade Representative, Nicaragua imposed a punitive 35 percent tariff on all goods from Honduras and Colombia as a retaliatory measure for Honduras' signing a maritime border delineation agreement with Colombia, which Nicaragua claims infringes on its territory.<sup>7</sup> Cases exist on every continent in which governments involved in territorial disputes have closed their borders – shutting down economic and human traffic – with a territorial adversary.<sup>8</sup> Even where disputed border regions have been nominally opened, a heavy hostile military or police presence around the border itself is unlikely to be very inviting to traders, investors, or tourists.<sup>9</sup>

In short, private economic agents face costs and risks of developing business linkages in countries with which their government has a dispute. Firms incur extra costs to avoid the uncertainty a bilateral dispute entails. Pacific Natural Gas incurs extra costs by exporting Bolivian gas via Peruvian rather than through Chilean ports. Despite Bolivia's proximity and massive resources Chile imports their natural gas largely from Argentina, with whom they have settled their territorial disputes.<sup>10</sup> The uncertainty private actors face when their governments are disputing territory can have massive cumulative consequences. The territorial dispute over the Kurile Islands, for example, has caused economic relations between Japan and Russia to stagnate, even while those between Russia and Korea have continued to expand (Akaha 1996; Linge 1995; Meyer 1998).<sup>11</sup> Japan's recent trade with Russia accounts for only about 0.7% of its global trade, and 3% of Russia's, making Japan Russia's 11<sup>th</sup> trade partner, despite their proximity. And while Japan accounts for over

22% of the foreign direct investment in the Far East region, it accounts for only 1.2% of the investment in Russia.<sup>12</sup> These figures are odd, given Japan's growing demand for oil and Russia's plentiful far eastern supply. Japanese firms are reportedly interested in a major offshore oil and gas project in Sakhalin, the large Russian island immediately to the north of Hokkaido. But even here Western oil companies, not Japanese, are playing a leading role.<sup>13</sup>

On the other hand, resolving territorial disputes frequently opens the way for mutually beneficial trade. Chile and Argentina resolved their territorial disputes in 1995; between 1996 and 1999 seven new liquid natural gas (LNG) pipelines were built to carry Argentine gas to the north, center, and southern regions of Chile.<sup>14</sup> In the case of the Saudi-Yemeni border dispute (settled by treaty, June 12, 2000), the expectation that the region was well-endowed with hydrocarbons drove attempts to negotiate a boundary settlement (Schofield 1997). Once that border was settled by treaty, the Saudis built a warehouse right near the border to service bilateral trade with Yemen. Between 2000 and 2001 bilateral trade between Saudi Arabia and Yemen jumped from SR580 million in 2000 to SR888 million in 2001.<sup>15</sup>

Why should official declarations of a territorial settlement matter so much to transnational businesses? *Formal* settlement is a costly signal from a government that it is willing to forego its full territorial claims in favor of establishing better bilateral relationships with its neighbor. It is costly because territorial concessions are almost certain to stimulate domestic opposition by some of the more extreme nationalist groups. Governments from Israel to Russia to Ecuador have found that holding out a territorial olive branch to an adversarial neighbor can undercut their support and ability to govern at home. The mere failure to enforce a latent claim does not clearly reveal a government's type the way an official settlement does. The lack of hostile activity to win a territorial dispute is ambiguous; it could mean that now is not a politically or militarily convenient time to press territorial claims. Latency amounts to ambiguous inaction; it may allow the government to

avoid international conflict without incurring much domestic cost, making it difficult for businesses to gauge true intentions. The completion of an official program of border negotiation and settlement sends a clear signal to economic actors that the transactions costs they face in trading with their neighbor are likely to be permanently reduced. Governments willing to settle have revealed their type by indicating their willingness to bear domestic political costs. We should be able to see clear evidence of economic agents' willingness to engage in transborder activities once a government has signaled its commitment to accept the border as a legitimate demarcation of its jurisdictional authority.

To summarize: international border arrangements can be fruitfully analyzed in institutionalist terms. Settled borders signal private economic agents that military conflict is less likely, that economic development is a higher value than territorial acquisition, that hostile harassment at the border is much less likely, and that property rights will not be subject to sudden policy shifts or jurisdictional controversies. Settling territorial disputes is a costly signal that a state has made the conversion from a territorial state to a trading state. There is no denying that such disputes can be costly in terms of human life, military expenditures, and lost trade when these conflicts become hot. But what I seek to show is that *even when controlling for the threat or use of force, merely disputing the border is a costly drag on bilateral trade*<sup>16</sup> These costs are documented using a gravity model, to which is added the presence of a territorial dispute. The results suggest that institutional arrangements that reduce uncertainty and transactions costs go a long way toward supporting the conditions under which bilateral trade may flourish.

## II. Data and Methodology

*Establishing a baseline for trade: Border effects using a gravity model of bilateral trade*

The central hypothesis is that disputed borders involve tremendous economic opportunity costs, which are conceptualized for purposes of empirical testing as bilateral trade foregone. The strategy of this section is to isolate the effects of a disputed border on the bilateral trade between two countries. The problem is how to estimate the size of this “lost opportunity”, controlling for other plausible determinants of trade.

I employ a gravity model of trade, which has been widely used to examine bilateral trade flows since it was pioneered in the 1960s (Linneman 1966; Tinbergen 1962). The basic gravity model is a very simple empirical model that explains bilateral trade between countries as proportional to their “mass” (usually captured by gross domestic product) and inversely proportional to the distance between countries. Some specifications also include a term for population (an indicator for the size of the domestic market), which is expected to reduce bilateral trade between countries. This simple baseline model has a remarkably consistent history of success as an empirical tool (see for example Pollins 1989). The response of bilateral trade to income and distance regularly produces large, correctly signed and statistically significant coefficients (Frankel, Stein, and Wei 1997; Helpman 1984; Leamer and Levinsohn 1995).

Gravity models of trade now have a clear and convincing link to international trade theory (Anderson 1979; Oguledo and MacPhee 1996). But since the relationships specified in the gravity equation are basically consistent with more than one theoretical tradition, scholars have emphasized that it is less useful for discriminating between theories of trade than in making empirical predictions about the volume of trade itself (Deardorff 1998). Change in the latter, in response to the initiation or resolution of a territorial dispute is precisely the purpose for which I employ it here. The question here is: how much does a border dispute detract from expected trade between two countries?

Gravity models of bilateral trade typically take the following form:<sup>17</sup>

$$T_{ab} = f(Y_{ab}, D_{ab}, R_{ab})$$

$T$  represents the trade flow between countries  $a$  and  $b$ ;  $Y$  represents the economic size of the two countries,  $D$  represents the physical distance from country  $a$  to  $b$ , and  $R$  represents other factors that may resist or encourage trade between  $a$  and  $b$ . Because we are interested in the effects of a settled, mutually accepted border on bilateral trade flows, we use the following specification of the gravity model:

$$\log(T_{ab}) = \beta_0 + \beta_1 \log(Y_a + Y_b) + \beta_2 \log(D_{ab}) + \beta_3 (BD) + \beta_4 (\text{controls})$$

The dependent variable  $\log(T_{ab})$  represents the logged total flow of dyadic trade expressed in millions of US dollars.<sup>18</sup>  $\log(Y_a + Y_b)$  represents the combined economic size of the two trading nations, measured as the logged gross domestic product. The expected coefficient is positive.  $\log(D_{ab})$  represents distance between capitals of the country dyad, but since the models I use here focus on change within a dyad in response to disputing, distance does not play a crucial role in what follows.  $BD$  represents the existence of a border dispute, coded as 1 if there is a dispute between the two countries, otherwise zero. The expected coefficient is negative; our central expectation is that disputes reduce bilateral trade.

#### *The Primary Explanatory Variable: Defining Territorial Disputes*

A crucial question is how one identifies a territorial dispute. Conceptually, we are interested in overlapping territorial claims that can be expected to instill uncertainty regarding jurisdictional authority or future policy, even in the absence of the overt use of military force. Paul Huth has developed useful criteria for selecting cases that fit our concern. He coded territorial disputes as

cases of governments' disagreement over the location of a border (whether or not a treaty has attempted to spell this out); when one country occupies the national territory of another and refuses to relinquish control or withdraw; when one government does not recognize the sovereignty of another over some portion of territory within the border of that country; or when a government does not recognize the independence and sovereignty of another country (or colonial territory), and seeks to annex some or all of its territory (Huth 1996:19-23).

In Huth's study, disputes are considered "resolved" when these conditions are reversed.<sup>19</sup> I favor Huth's rather stringent definition of resolution – involving governments' *formal acknowledgement* of the legitimacy of a particular border arrangement – because the argument turns precisely on institutions' role in reducing transactions costs flowing from uncertainty. Publicly articulated arrangements of a formal nature (Abbott and Snidal 2000; Lipson 1991) are more likely to produce the confidence in resolution upon which our theory turns; Huth's measure is therefore especially appropriate.

### *Controls*

I also include a set of control variables that could influence bilateral trade levels. First, it is useful to distinguish this argument about stable territorial institutions from arguments about the consequences of war or the threat of military force for commercial relations. My central claim is that countries need not actually brandish their military might or engage in armed conflict to incur the opportunity costs of disputing their borders. I use data on militarized interstate disputes to indicate any case in which a government engaged in the threat or use of military force against the other member of the pair (See data Appendix for all data sources and descriptions).

Second, trade may be driven by other foreign policies concerns. Trade may be discouraged if governments have basically incompatible or hostile foreign policy orientations. Foreign policy

comity should be associated with more extensive bilateral economic relations. Measuring underlying comity is difficult, but one approach is to control for similarity of positions on foreign policy issues. I use the similarity within each country pair on votes on the United Nations General Assembly to control for similarity in foreign policy orientation. While hardly a perfect measure, on average (and despite occasional strategic voting) it captures the underlying degree of “affinity” between country pairs on a range of issues in world politics (Gartzke and Jo). Conversely, a low or falling index should indicate the potential for underlying tensions within a country-dyad.

Movements in dyadic trade may also be influenced by security concerns that are not directly related to the border issue. Bilateral trade takes place in a broader strategic context in which two neighbors may face a common threat. Several scholars have shown that alliances can influence the pattern of trade (Gowa 1994). To control for this possibility, I include an indicator of the presence and intensity of alliances.<sup>20</sup> This is a measure of all formal alliances among states, from mutual defense pacts (coded 1), non-aggression treaties (coded 2), and ententes (coded 3) to no alliance relationship at all (coded 4). Note that this coding scheme leads us to expect a negative coefficient for alliances. Bilateral trade should increase with more far-reaching alliance guarantees, which are coded here as 1.

I also control for the general level of trade openness for the two countries in question. Certainly it is possible that each country’s general trade posture (its commitment to protection to enhance self-sufficiency, its overall development strategy) could be a central determinant of bilateral trade levels as well. I include total exports plus imports to and from the rest of the world as a proportion of GDP for each country (multiplied and logged) to control for general trade posture. The expectation is that bilateral trade is partially a function of two countries’ general trade policy. The more trade policy opens generally, the more positive the effect on bilateral trade.



A further possibility is that trade is influenced by the nature of the regimes constituting the pair. More democratic countries may simply tend to be more liberal economically and may very well have more intense bilateral trading relationships. Intensity of democracy for the pair is measured by adding their polity scores (which range from a low of -10 to a high of 10, for a combined scale of -20 to 20). The higher this combined score, the greater we would expect bilateral trade to be.

Since I am examining trade from 1950 to 1995 with annual data, it is important to control for trends and time dependence of observations. Bilateral trade may trend upwards over time for reasons having nothing to do with resolving disputes. To control for a potential time trend, I include a calendar year variable. The globalization of economic markets would lead us to expect a strong positive correlation of bilateral trade with the passage of time. Second, I control for the time dependence of bilateral trade by including a lagged dependent variable in one specification. Past trade levels should exert a strong inertial effect on bilateral trade.

### *Estimation Methods*

Time-series cross-sectional data are used for the years 1950-1995 for 557 contiguous country pairs (based on data availability). Contiguity is defined as direct land contiguity or separation by water of no more than 400 miles. This criterion creates a set of country-pairs that plausibly have the potential to dispute their boundaries. The data are analyzed using ordinary least squares and robust standard errors, clustered by dyad.<sup>21</sup>

In these models, country specific fixed effects are included. The main reason for country fixed effects is that the theoretical argument is primarily about the effect of initiating or resolving a dispute on a pair of country's bilateral trade. The tremendous heterogeneity in the global sample makes it impossible to show that territorial disputes explain the difference in bilateral trade between, for example China and Russia compared to Belgium and Netherlands. Theoretically, the focus is on

how institutional uncertainty affects perceived transactions costs in a particular trading context over time. “Bilateral trade foregone” is not especially meaningful in a cross-sectional context.

Country fixed effects function in this model as traditional control variables for a range of time-invariant conditions. Admittedly, there are many factors at the domestic level that are not specified in the model but which could in principle explain a country’s ability to import or to export with any partner. Those domestic factors that change little if at all over the forty-five years of this study (language, culture, religion, natural resource endowments) are accounted for by country-specific fixed effects.<sup>22</sup> Moreover, country dummies absorb many of the crucial aspects of geography (mountains, waterways, Amazonian jungle) that influence a country’s ability to import and export. These dummies are also likely to absorb other distortions of a domestic nature, such as those resulting from an insecure *domestic* property rights regime. In all of the specifications below, country dummies are included, and most are highly significant, but are not reported (available upon request).

### III. Findings

Table 1 reports the results of these tests. In both versions of the model – with and without a lagged dependent variable – our central expectations about bilateral trade are confirmed, in some cases quite strongly. The two primary elements of the gravity model – distance and size of economy – work in the anticipated directions. However, because of the inclusion of fixed effects, only GDP is statistically significant. The combined economic size of the trading partners is a major determinant of their bilateral trade. Since some specifications of the gravity model include population as a measure of the size of the internal market, I include it in both models, but excluding population has no substantial impact of the central results. As expected, the coefficient is negative, but it is not

statistically significant. The most important result for our purposes is that the existence of a territorial dispute certainly appears to put a serious drag on bilateral trading relations.

[TABLE 1 ABOUT HERE]

The impact of territorial disputing is surprisingly large. Consider the effect of a dispute on the mean level of bilateral trade in this dataset, \$3.17 million.<sup>23</sup> In the short term (e.g., in the first year of disputing) we would expect an average pair of countries to lose about 28% of their trade (which is calculated by  $1 - e^{-.325}$ ), according to model 2, for expected bilateral trade of only \$2.3 million. In the long run, we would expect average trade to fall from the mean to around \$1.17 million.<sup>24</sup> The model also predicts significant upside gains to dispute resolution: if a disputing pair initially trades at the mean, the model suggests a three-fold increase in bilateral trade within about 10 years of the dispute's resolution. The estimated effects of disputing (and resolving a dispute; model 2) are graphed in Figure 1.

[FIGURE 1 ABOUT HERE]

In order to get a clearer idea of the estimated impact of territorial disputes on trade for particular country pairs at particular points in time, Table 2 shows what effect Model 2 would expect a territorial dispute to have had on trade for select country pairs. Each country pair in this table had an unresolved dispute over territory during the period under observation. This table illustrates the estimated effect of not settling a dispute compared to the estimated (counterfactual) effect of not disputing.

[TABLE 2 ABOUT HERE]

The final column is especially telling: it estimates the cumulative reduction in bilateral trade attributable to disputing. This represents the model's estimate of the trade cost of the territorial dispute. The losses are significant. When we cumulate the effects of disputing territory between Argentina and Chile for the period under observation, for example, the total bilateral trade foregone (1950-1994) is estimated at almost \$33 billion. This is close to the total amount of money Argentina and over the amount Chile is estimated to have spent on their militaries between 1962 and 1994.<sup>25</sup> The cumulative total loss of bilateral trade due to their territorial dispute for Japan and Russia is estimated to be nearly \$535 billion dollars. This number is greater than Japan's total exports to the *entire world* in 2003 (about \$472 billion). It is also about half the total value of Russia's exports to the *entire world for the decade 1992-2002* (about \$1.10 trillion; *World Development Indicators*). The absolute numbers are of course much smaller for developing countries. Kenya and Ethiopia's seven year dispute (1963-1970) is estimated to have cost them over \$44 million in bilateral trade foregone. To put that dispute in perspective, this is more than 11 percent of Kenya's and about a 23 percent of Ethiopia's *total* overseas development assistance received during the same period, according to the World Bank's World Development Indicators.

Figure 2 takes a closer look at how the estimations of model 1 square with reality. It plots actual versus predicted bilateral trade for four country-pairs based on Model 1.

[FIGURE 2 ABOUT HERE]

No global model of bilateral trade can be expected to predict any given country-pair's bilateral trade with much precision, but these figures do give a sense of how the models' predictions compare to actual trade. The graphs chart actual trade, estimated trade based on the pair's actual

disputing behavior, and a counterfactual estimate of how trade might have looked in the absence of the dispute. Spain and Morocco trade much less than the model predicts, but it is clear that their dispute over the Western Sahara is estimated to have had a significant impact on their economic relations. In the case of Cyprus and Turkey, the model could not cope with the extreme volatility in trade over the last two decades, but it does illustrate the opportunity costs that these countries have paid since their dispute erupted in 1973. India and Pakistan trade far less than the model predicts, but the effect of their dispute becomes quite apparent from the mid-1980s. North and South Korea as well as Ethiopia and Kenya trade much less than predicted, but once again we can see a big difference between what the model predicts with and without their territorial disputes. Finally, the model does extremely well predicting the actual trade of Argentina and Chile. The 1990s have been a boom period for bilateral economic relations between these two erstwhile territorial competitors.

What is most fascinating about the effect of disputing territory is that it persists even when controlling for actual militarized disputes. Both models in Table 1 control for the active threat, show or use of force between the countries of a pair, which has had a consistent dampening impact on bilateral trade over the course of the last half century.<sup>26</sup> It is difficult to say which of these conditions – threats of the use of force or territorial disputes – has been the greater deterrent to trade. In model 1, without the lagged dependent variable, the coefficient for territorial disputes is larger than that for militarized disputes. This might be due to the fact that militarized disputes tend to be brief, while territorial disputes linger for years. In model 2, which controls for trade in the previous period, militarized interstate disputes have the larger coefficients. These results are extremely interesting for our theory of borders as institutions: beyond any damage done by the actual or eminent use of military force, the uncertainties surrounding border disputes continue to cumulate opportunity costs in terms of bilateral trade foregone. Whether or not foreign relations come to blows, trade is diminished by the exertion of contradictory sovereignty claims over the

territory of a neighbor. This brings us closer to isolating the effect of the *institution itself* on bilateral economic activity.

Most of the control variables in the models behave as anticipated. Bilateral trade is influenced by other foreign policy considerations, as one would imagine. Trade is enhanced by the presence and strength of alliances. Since the strongest alliance commitments are coded 1 and the weakest coded 4, the negative relationship accords with expectations. Trade is also much greater between countries that share a similar foreign policy orientation. The more highly correlated two neighbors' voting patterns in the General Assembly of the United Nations, the more they tend to trade with one another. Joint democracy – a condition we might have associated with economic liberalization – is also likely to impact bilateral trade, at least in the model with a lagged dependent variable. Trade appears likely to be larger and to grow faster between more democratic countries, but territorial disputes continue to exert an important independent influence on trade. The measure of general openness of the two countries (included to account for major changes in developmental strategies, for example), is strongly correlated with bilateral trade, but does not wash out the effect of a territorial dispute. The settlement of territorial disputes does seem to have an effect on bilateral trade *independent* of countries' broad trade orientation. Thus, controlling for other important influences on bilateral relationships – from militarized disputes to alliance commitments; from foreign policy orientation to developmental orientation; from political liberalization to economic liberalization – territorial disputes are still a drag on bilateral trade.

Are there further alternative explanations we should consider for the apparent link between territorial disputes and bilateral trade? Perhaps both are simply a function of the passage of time. “Globalization” for example could be driving both bilateral trade as well as the disposition of territorial disputes. But surprisingly, the time trend seems to be in the *opposite* direction: once we

control for countries' GDPs (itself likely to be correlated with time) and other variables, the passing of time per se seems to have a negative effect on bilateral trade. In any case, whether or not we include the time trend had practically no effect on the territorial dispute coefficients reported in Table 1. This raises our confidence that we are capturing the real effects of disputing and not simply time-related globalization trends. A further possibility is that the uncertainty this theoretical model is built on is really due to domestic institutions rather than the unsettled border itself. But recall that these specifications contain country fixed effects. To the extent that weak property rights protection has a domestic source, and assuming these institutions are not subject to significant over time fluctuations, the inclusion of country fixed effects go a long way toward controlling for domestic sources of institutional weakness that could generate uncertainty.

As is shown in Table 3, the region that most clearly accounts for the relationship between territorial disputes and bilateral trade is the Americas. Disputes in Europe and Asia produce a large negative coefficient, but it is hard to be as certain about this relationship. Still, the 85% confidence interval for Asia does not include the null hypothesis of no effect, signifying a reasonably strong result for this region. The effect of territorial disputes on bilateral trade within the Middle and East and Africa is probably minimal at most. This is hardly surprising, since bilateral trade in these regions is so small to begin with, for historical reasons having little to do with their borders.

Do territorial disputes have a constant effect on trade over time? One possibility is that as long as governments do not act *forcibly* to stake their claims, economic actors become adjusted to the ambient level of uncertainty and develop economic links to the best of their ability under the tenuous circumstances. Informal norms to "agree to disagree" may develop, effectively reducing the impact of the formal dispute on trade. If this is the case, we should see a trend upward in the coefficient for territorial disputes over time. Figure 3 displays the coefficients estimated separately for five-year periods using the specification in model 2.

[FIGURE 3 ABOUT HERE]

These five-year cross-sections produce somewhat volatile estimates of the effects of disputing, but *every* five-year period returns a negative coefficient on territorial disputes. Moreover, all are highly statistically significant with the exception of the period 1956-1965 and 1990-1995. There does seem to be a slight upward trend in the coefficients, however. Whether this should be interpreted as a reduction in uncertainty attached to border conflict, or the selective settlement of the worst disputes while many more benign disagreements lie quiescent should be the subject of future research.

#### IV. Conclusions

Border disputes have led to serious economic opportunity costs, even in cases where trade partners have never exchanged an explicit military threat. Notwithstanding a few excruciating exceptions, far from living in a “borderless” world, we live for the most part in a *well-bordered world*, one in which humans have accepted the boundaries of state jurisdiction and sovereignty and have gone on to trade, invest, travel and communicate across well-established political jurisdictions. The central claim of this paper is that we are able to do these things precisely once governments have accepted as settled the first order question of who is formally sovereign over what geographical space. The most permeable political boundaries in the world tend to be those that are taken for granted by both of the bordering political authorities, by other governments in the region, and by private economic agents. The Canadian-US border comes to mind, as do borders between the countries of Western Europe. The razor wire separating Israeli and Palestinian settlements provides a tragic contrary example.



Political boundaries are human institutions. Governments that want to benefit fully from cordial relations settle their territorial disputes and their economies go on to enjoy *joint gains* from the set of recognized rights that mutually accepted exclusive jurisdiction affords. I have framed these joint gains in terms of lost trading opportunities. But they include the economic joint gains of investment, travel, tourism, as well as a host of positive externalities associated with friendly bilateral diplomatic relations with a neighbor. Both jurisdictional uncertainty and policy uncertainty deter investment in economic linkages between jurisdictions under dispute. Of course, once territorial disputes turn violent the human suffering and the costs associated with the use of military force mount and potentially create humanitarian crises that far outweigh the economic considerations analyzed here. But I have been at pains to demonstrate that *even non-military disputes over territory* – by virtue of the uncertainty and ill-will they sow – entail costs that have rarely been explicitly considered.

A simple gravity model of bilateral trade shows these costs are likely to be significant. Japan and Russia have missed out on billions of dollars of bilateral trade, due to their ongoing dispute over the Kurile Islands/Northern Territories. The same can be said for Argentina and Chile with their multiple disputes over the Beagle Channel, Patagonia, and the Ice Fields. Case studies suggest that in negotiating a settlement leaders in some countries are indeed cognizant of these costs, and view them as one reason for hastening agreement over the legitimate location of the international border (Simmons forthcoming).

The theoretical implications of these findings are profound. Realist lenses have provided the focus for the mainstream study of territorial disputes and their resolution in the field of international relations. Territory is viewed in zero-sum terms, and theories about peace and conflict, disputation and resolution have revolved around traditional problems of dividing the territory, its strategic importance, its resource endowment, and other power considerations. Very few studies have

considered the possibility of joint gains, and none have considered joint gains beyond joint natural resource exploitation.

If we view settled international boundaries not merely as techniques for *dividing* but also ways of *generating* value, then we can understand some findings that from a realist perspective appear quite anomalous. Paul Huth's work has revealed that "when economic issues are predominantly at stake then compromise settlements are quite likely" (Huth 1996:153). (It is interesting to note, however, that Huth explains the propensity to settle where economic issues are at stake as flowing from the ease of *dividing*, rather than the institutional potential for *generating* economic benefits.) How can a realist, especially one concerned with relative gains (Grieco 1988; Mearsheimer 1994-95) explain such an outcome? It is easily explicable in institutionalist terms: without a settlement, these would have been economic gains largely forgone for lack of trade and investment – the result of uncertainty and transactions costs for private actors associated with governmental territorial disputing.

Institutionalist theory provides a natural way to think about political boundaries. When governments legitimate jurisdictional boundaries they help reduce economic actors' uncertainty, reduce transactions costs, and ameliorate other negative externalities that flow from contentious territorial claims. Such a paradigm shift should lead us to investigate the extent to which growing opportunity costs (alongside more traditional considerations) provide an impetus for governments to settle their disputes, contrary to realist expectations. This research suggests the potential economic benefits, in many cases, might be worth making some degree of territorial concession.

Table 1:  
The effect of territorial disputes on bilateral trade  
Result of a country fixed-effects gravity model  
Coefficients (robust standard errors, country pair clusters)

| <i>Explanatory Variables:</i>    | Model 1              | Model 2<br>(lagged d.v.) |
|----------------------------------|----------------------|--------------------------|
| Lagged log trade                 | --                   | .713***<br>(.015)        |
| Log of combined GDP              | 1.548***<br>(.260)   | .474***<br>(.087)        |
| Log of combined pop.             | -.341<br>(.4405)     | -.169<br>(.124)          |
| Log of distance between capitals | -.389<br>(.375)      | -.121<br>(.110)          |
| Territorial dispute              | -1.410***<br>(.4505) | -.314**<br>(.139)        |
| Military dispute                 | -1.045***<br>(.306)  | -.624***<br>(.138)       |
| Alliance                         | -.440***<br>(.111)   | -.106***<br>(.033)       |
| Policy Affinity                  | .816***<br>(.311)    | .174<br>(.115)           |
| Joint democracy                  | .021*<br>(.012)      | .006*<br>(.004)          |
| General trade openness           | .922***<br>(.105)    | .273***<br>(.041)        |
| Middle East                      | --                   | --                       |
| Africa                           | --                   | --                       |
| Asia                             | --                   | --                       |
| Americas                         | --                   | --                       |
| Year                             | -.111***<br>(.025)   | -.036***<br>(.008)       |
| Number of Obs.                   | 14,779               | 14,362                   |
| R-squared                        | .692                 | .856                     |

\*\*\*significant at .01 level

\*\*significant at .05 level

\*significant at .10 level

Figure 1:

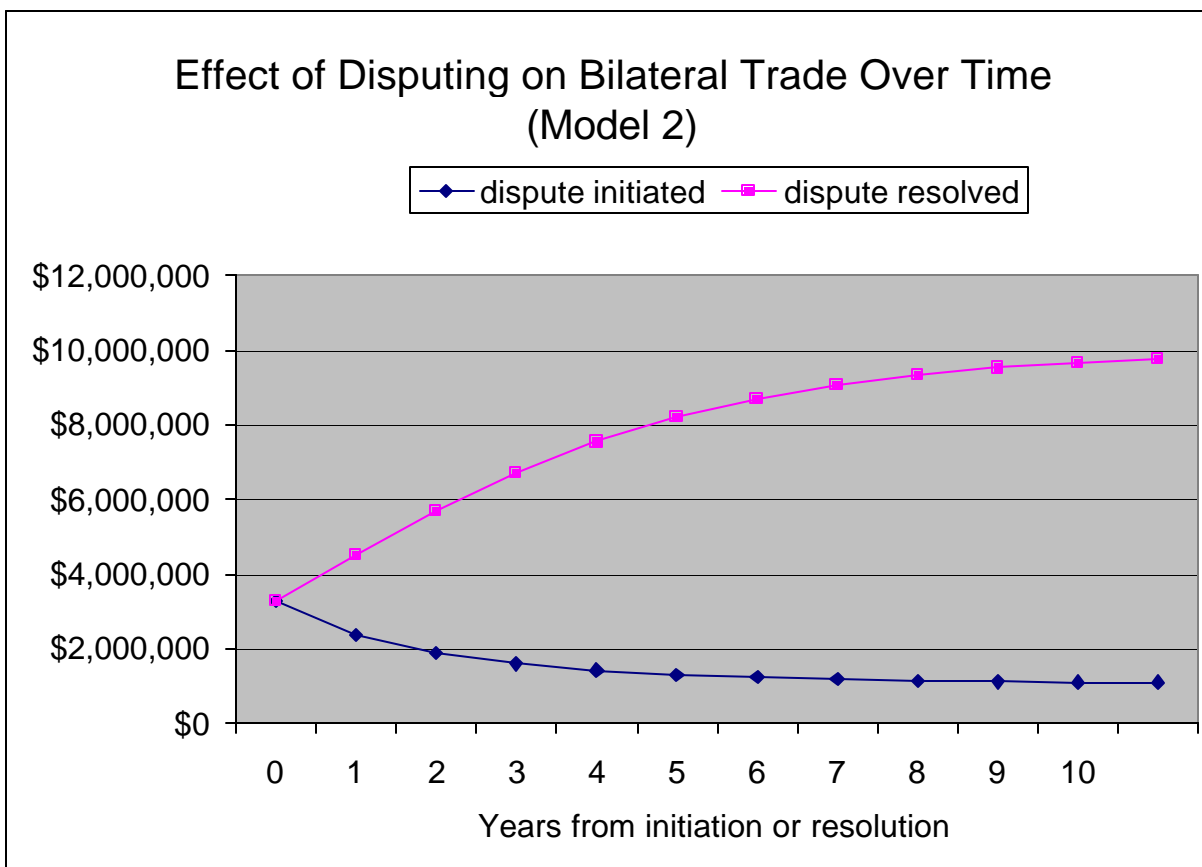


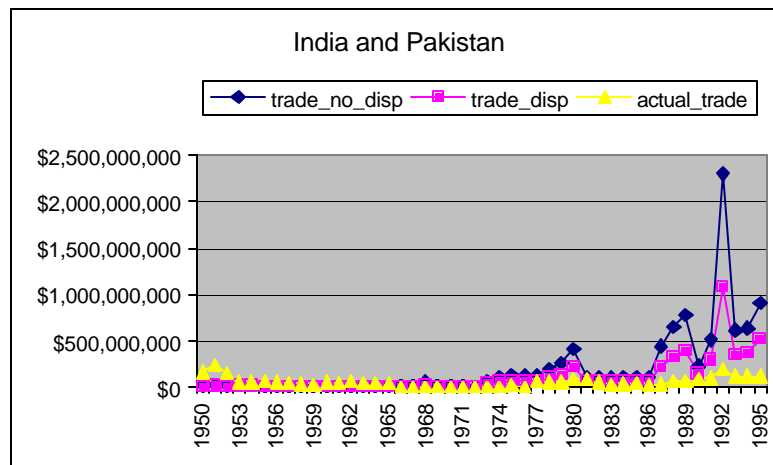
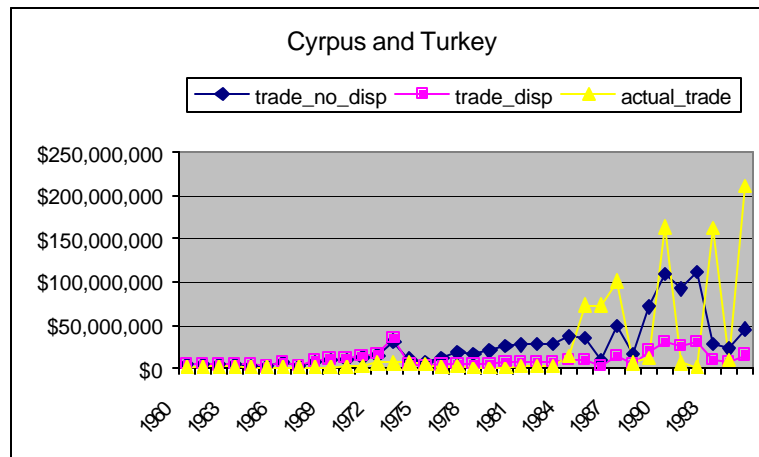
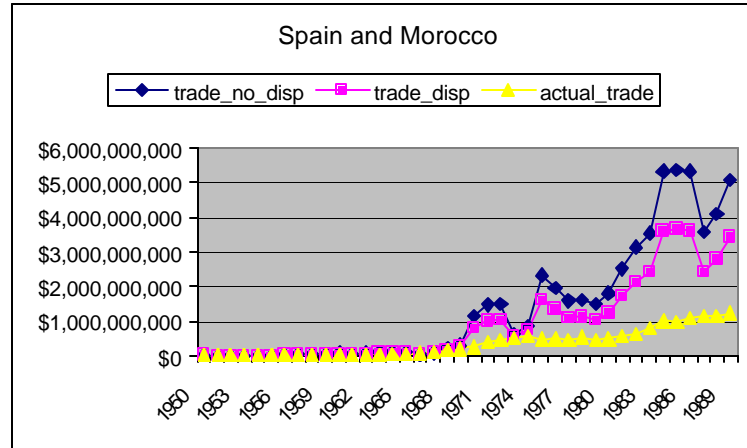
Table 2:

Estimated effects of territorial disputes on trade, 1950-1995<sup>#</sup>  
 (Yearly averages and cumulative totals, millions of US dollars)

| Country Pairs:       | Years of territorial dispute: | Estimated Average Yearly Trade During the Dispute |                              | Estimated Cumulative Impact of Disputing |
|----------------------|-------------------------------|---|------------------------------|--|
|                      |                               | Dispute:  | Counterfactual (No Dispute): |  |
| Argentina – Uruguay  | 1950-1973                     | 12.74   | 37.75                        | 981.06                                   |
| Chile – Argentina    | 1950-1995                     | 354.29  | 1085.33                      | 32896.89                                 |
| Cyprus – Turkey      | 1974-1995                     | 17.69   | 53.23                        | 781.93                                   |
| USSR – Japan         | 1952-1995                     | 6568.98   | 20283.8                      | 534878.50                                |
| Chad – Libya         | 1960-1994                     | 0.45  | 1.39                         | 31.80                                    |
| Ethiopia – Kenya     | 1963-1970                     | 1.67  | 4.10                         | 44.40                                    |
| China – Vietnam      | 1976-1995                     | 10.21   | 31.13                        | 397.37                                   |
| Malaysia – Indonesia | 1980-1995                     | 373.98  | 1093.43                      | 11511.13                                 |
| Iraq – Iran          | 1950-1995                     | 0.48  | 1.20                         | 52.36                                    |
| Egypt – Israel       | 1950-1988                     | 1.14  | 3.51                         | 102.61                                   |

<sup>#</sup> Millions of US dollars. Estimates calculated based on table 1, model 2.

Figure 2: Comparison of Estimated and Actual Bilateral Trade  
 Selected Country-Pairs  
 Predicted Values Generated From Table 1, Model 1



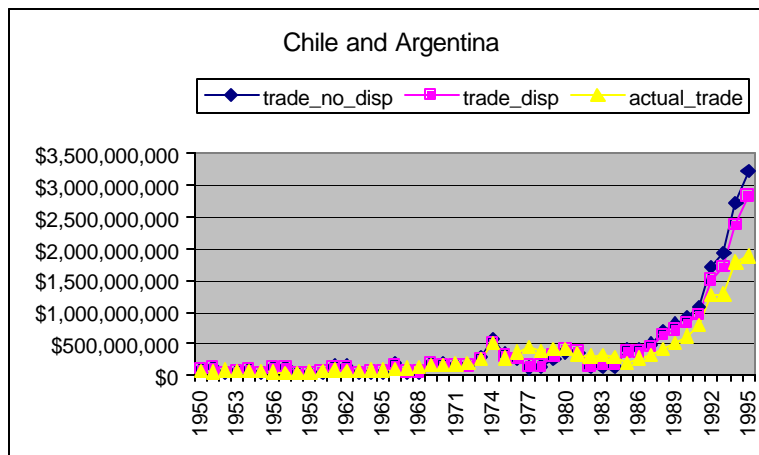
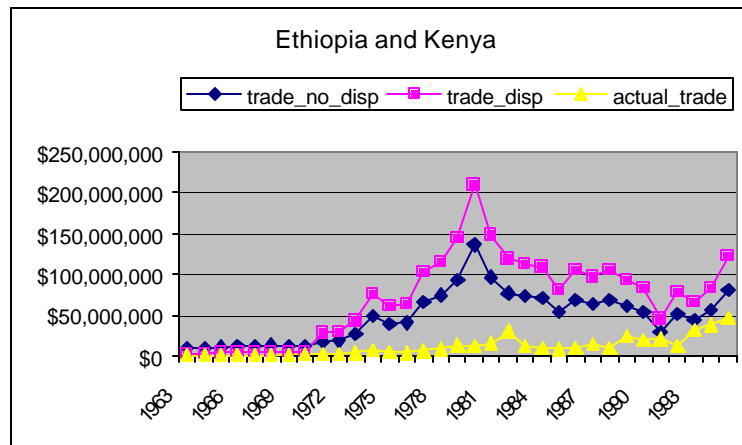
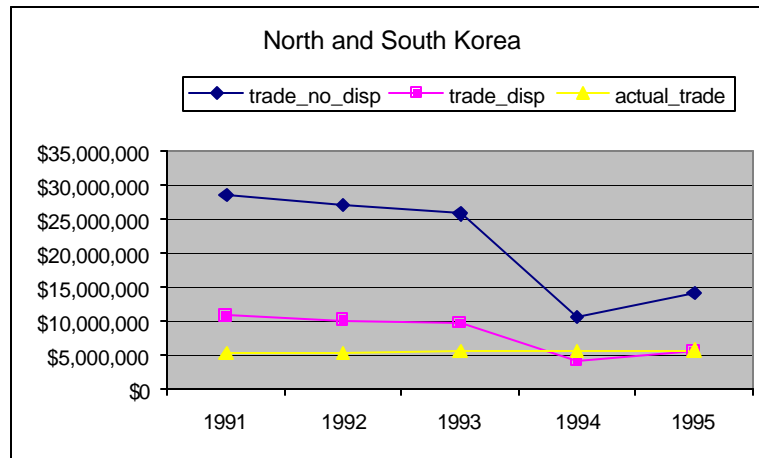


Table 3

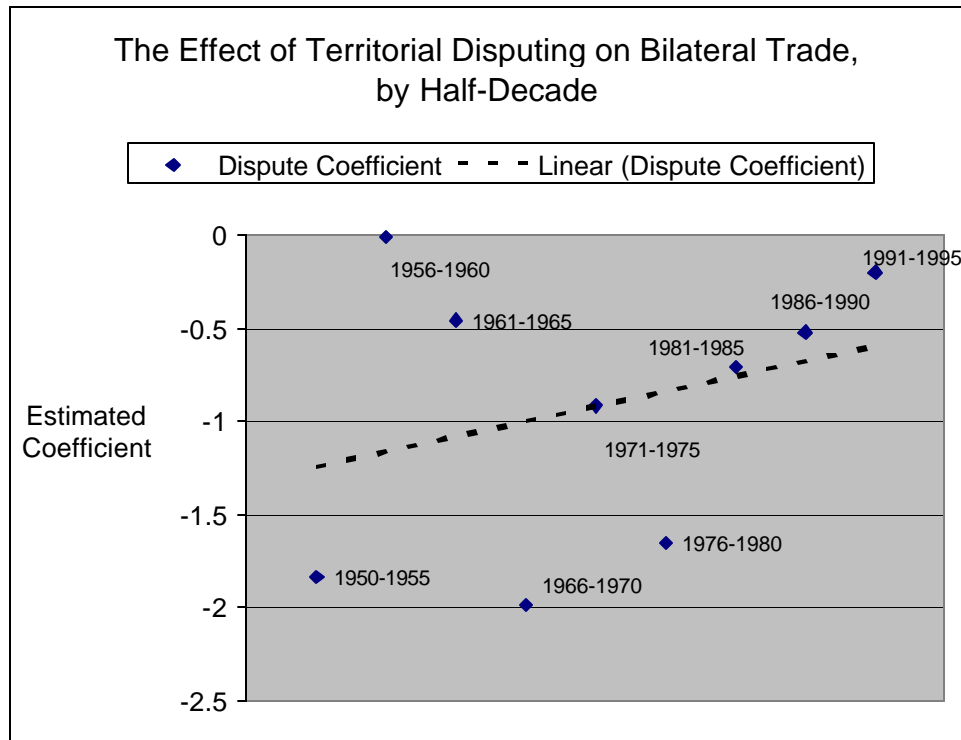
The Effects of Territorial Disputes on  
Bilateral Trade (Models 1 and 1)<sup>?</sup> by Region

|   | Europe | Middle East | Africa | Asia   | Americas |
|---|--------|-------------|--------|--------|----------|
| <i>Without lagged dependent variable:</i> |        |             |        |        |          |
| Territorial                               | -1.19  | -.471       | -.686  | -1.09  | -1.81*** |
| Dispute                                   | (.960) | (1.02)      | (.862) | (.796) | (.648)   |
| Obs.#                                     | 4138   | 2149        | 3583   | 1620   | 3289     |
| R <sup>2</sup>                            | .69    | .63         | .61    | .67    | .67      |
| <i>With lagged dependent variable:</i>    |        |             |        |        |          |
| Territorial                               | -.462  | .133        | -.141  | -.311  | -.639*   |
| Dispute                                   | (.420) | (.265)      | (.321) | (.219) | (.199)   |
| Obs.#                                     | 4020   | 2184        | 3471   | 1588   | 3199     |
| R <sup>2</sup>                            | .80    | .85         | .80    | .83    | .83      |

<sup>?</sup> These models contain all variables in Table 1 Models 1 and 2.



Figure 3



## Data Appendix

## Case Selection Variable:

*Contiguity.* Direct contiguity dataset from COW2 <http://cow2.la.psu.edu/>

Criterion for inclusion: contiguous on land or separated by no more than 400 miles of water.

## Dependent Variable:

*Bilateral trade.* The logged sum of imports into Country A originating from Country B plus the sum of imports into Country B originating from Country A, in millions of US dollars. Source: Kristian Gleditsch, Expanded Trade and GDP Data, <http://weber.ucsd.edu/~kgledits/exptradegdp.html>. For a full description, see (Gleditsch 2002).

## Explanatory Variables:

*Combined GDP.* The log of the sum of gross domestic product of country A and Country B, in millions of US dollars. Source: Kristian Gleditsch, Expanded Trade and GDP Data, <http://weber.ucsd.edu/~kgledits/exptradegdp.html>. For a full description, see (Gleditsch 2002).

*Combined Population.* The log of the sum of total population of country A and Country B. Source: Kristian Gleditsch, Expanded Trade and GDP Data, <http://weber.ucsd.edu/~kgledits/exptradegdp.html>. For a full description, see (Gleditsch 2002).

*Distance between Capitals.* The log of the distance in kilometers between capital cities. Source: <http://www.indo.com/distance/index.html>.

*Territorial Dispute.* Whether (1) or not (0) incompatible claims over territory are made by government officials. For a discussion of the criteria see text and footnote 62. Source: (Huth 1996).

*Military Dispute*. Whether (1) or not (0) either government of the disputing pair engaged in the threat or use of force against the other member of the pair (mean=.071, Standard deviation= .2565). Source: *Militarized interstate disputes (MIDs) dataset*, <http://cow2.la.psu.edu/>; (Ghosn, Palmer, and Bremer 2004; Jones, Bremer, and Singer 1996).

*Alliances*. 1=defense; 2=neutrality or non-aggression; 3=entente 4= no alliance agreement.  
(mean =2.757 standard deviation= 1.45); <http://cow2.la.psu.edu/>. (Gibler and Sarkees 2004).

*Affinity index*. Index of the cohesion for each country-pair year on UN General Assembly votes. The index ranges from a low of 0 to a high of 1. Erik Gartske and Dong-Joon Jo, “The Affinity of Nations Index, 1946-1996.”

<http://www.columbia.edu/~eg589/datasets.htm>.

*Joint Democracy*. Combined policy score. Range –20 (both countries completely autocratic) to 20 (both countries completely democratic). Source: *Polity IV dataset*.

<http://www.cidcm.umd.edu/inscr/polity/polreg.htm>. (Jagers and Gurr 1995).

*General Trade Openness*. Log of the product of Country A’s and Country B’s total imports and exports as a proportion of each country’s GDP (Gleditsch 2002; see above).

*Year*. Calendar year.

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## NOTES:

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<sup>1</sup> This idea is expressed in many international legal documents, but most clearly in Article 2(4) of the United Nations Charter: “All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state...” See <http://www.un.org/aboutun/charter/>.

<sup>2</sup> Jurisdiction implies authority – the authority to *establish* one’s national law, to *enforce* it, and to *adjudicate* it (Sloman 2000:207).

<sup>3</sup> Disputes between Iran and The United Arab Emirates, for example, has periodically disrupted fishing and shipping in the Persian Gulf, where these two countries have a dispute over the islands of Abu Musa and the Greater and Lesser Tunbs. See <http://www.washingtoninstitute.org/templateC05.php?CID=1757>

<sup>4</sup> In 2000 for example, Guyana suffered a direct economic loss when Beal Aerospace Technologies canceled its planned development project because of Venezuelan threats on Guyana were the project to go forward (Serbin 2001).

<sup>5</sup> For example, in 1986 Bahrain employed a Dutch firm to build a coast guard station at the contested Fasht Al Dibal reef. But Qatari helicopters seized the 29 workers of the Dutch firm, claiming they were on Qatari territory. See a report in the Gulf News (Dubai), March 16, 2001 at <http://www.gulf-news.com/Articles/news.asp?ArticleID=12080>.

<sup>6</sup> For example, currently there is only one fully paved highway connection linking the two capitals, Buenos Aires and Santiago despite the fact that almost a third of each countries’ population resides in or near these cities. See <http://www.louisberger.com/berger/services2/8link.php>.

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<sup>7</sup> See the USTR's report on this episode at:

[http://www.ustr.gov/html/2001\\_nicaragu.pdf](http://www.ustr.gov/html/2001_nicaragu.pdf).

<sup>8</sup> Examples abound. In 1969, when, under British direction, the Gibraltar promulgated a Constitutional Order stipulating that Gibraltar's sovereign status would not be changed without the consent of the people of Gibraltar, Spain retaliated by closing the border with Gibraltar and imposing flight path restrictions, effectively implementing an economic blockade which lasted until 1985. (See

<http://www.hydrographicsociety.org/Articles/journal/2000/95-2.htm>); In the 1970s

Venezuela intermittently closed its border with Guyana for reasons relating to their territorial dispute (see <http://reference.allrefer.com/country-guide-study/guyana/guyana131.html>);

Turkey's border with Armenia remains closed due to the conflict over Nagorno-Karabakh (see CIA information reported at

<http://www.faqs.org/docs/factbook/fields/2070.html>); in the late 1990s, pedestrian,

highway, rail and air traffic between Kyrgyzstan and Uzbekistan were interrupted in the Ferghana Valley region due to their territorial dispute in that region (see

<http://www.eurasianet.org/departments/insight/articles/eav120899.shtml>).

<sup>9</sup> The border between India and China has been closed since their 1962 border war, and only recently has been opened, though troop concentrations in the area remain high and trade minimal; see <http://www.spacewar.com/2005/050103140158.jr5utb6j.html>.

Tourists are regularly warned away from regions subject to territorial dispute. The border between Cameroon and Nigeria provides an example. Tour operators warn: "All travel to the border area with Nigeria is advised against (in the region of Bakassi Peninsula), since this area is still subject to a territorial dispute between the two countries

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and tensions are rife, with localised violent incidents often occurring with little warning.”

See <http://travel-guides.com/data/cmr/cmr090.asp>. On the inherent interest of many border regions to tourists, see (Timothy 1995).

<sup>10</sup> The Pacific Natural Gas Consortium would have preferred to export Bolivian natural gas via Chilean ports, but are considering the Peruvian port of Ilo due to a longstanding territorial dispute between Bolivia and Peru over borders that has left Bolivia landlocked. <http://www.depfe.unam.mx/p-cientifica/coloquio-erdal/22GEEdmardealmeidaLtt.pdf>, p. 8.

<sup>11</sup> See also The Russian Journal, “A Costly Territorial Dispute,” 9 September 2000, <http://www.therussiajournal.com/?obj=3512>. But see (Carlile 1994).

<sup>12</sup> Figures from Nobuaki Tanaka, Consul General of Japan, San Francisco; Keynote Address, <http://gsti.miis.edu/CEAS-PUB/200002Tanaka.pdf>.

<sup>13</sup> Christian Science Monitor, August 29, 2002; <http://www.csmonitor.com/2002/0829/p09s01-coop.html>.

<sup>14</sup> See <http://www.depfe.unam.mx/p-cientifica/coloquio-erdal/22GEEdmardealmeidaLtt.pdf>, page 8 of 23.

<sup>15</sup> See Saudi Arabia Information Resource, December 27, 2003 at <http://www.saudinf.com/main/y6530.htm>.

<sup>16</sup> The effect of a territorial dispute on a country’s *total trade* is not explicitly tested here. There is some possibility that disputes divert a portion of potential bilateral trade to third countries. Such diversion is not likely to absorb all of the potential trade between disputants, and in any case is not likely to be as efficient as trade between contiguous neighbors.

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<sup>17</sup> I include population in some of the specifications that follow but it is not statistically significant and does not affect findings regarding territorial disputes.

<sup>18</sup> When trade is zero, the value zero was kept instead of allowing it to fall out after the log function.

<sup>19</sup> Huth (1996 p. 23) defines the end of a dispute as:

1. “The occupation and assumption of control over disputed territory by the challenger is formally recognized by the target in a treaty, an international agreement, or in an official statement by the political leadership of the target.
2. The signing of a bilateral agreement with a target or an official statement by the challenger in which its territorial claims are either renounced or are satisfied with a compromise settlement.
3. The challenger agrees to abide by a ruling issued by the ICJ [International Court of Justice] or an international arbitration panel.”

<sup>20</sup> See <http://cow2.la.psu.edu/>.

<sup>21</sup> Robust to deviations from ordinary assumptions of independent, identically distributed errors. The purpose is to account for the fact that and recalculate standard errors for non-independent observations within country-pairs.

<sup>22</sup> For an example of a gravity model using individual country dummies (though their model involves selection on the decision to trade and directional dyads), see (Helpman, Melitz, and Rubinstein 2004). For a discussion of the use of fixed effects models, see (Green, Kim, and Yoon 2001).

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<sup>23</sup> This is the mean of the exponent of logged trade once negative logs have been eliminated from the dataset. It is therefore slightly higher than the actual level of bilateral trade.

<sup>24</sup> Territorial dispute coefficient/(1-lagged DV coefficient) =  $-.325 \times 3.472 = -1.11$ .  
 Mean trade 3.17 million = approximately  $e^{15}$ ;  $e^{15-1.11}$  (long run effect of disputing) = \$1.17 million

<sup>25</sup> This amount is estimated by taking 1.5% of GDP (the average for the period data are available (1988-1994) for the entire period in which GDP data are available (1962-1994). This method of estimation comes up with total military spending for these years of about \$37 billion. By the same method, Chile's military spending was \$22 billion for the same period. Figures are from the World Bank's *World Development Indicators* CD-rom.

<sup>26</sup> When militarized disputes are excluded from model 6, the coefficient on territorial disputes rises to  $-.42$  ( $p < .003$ ). When territorial disputes are included but MID's excluded, the MID's coefficients increases to  $-.697$  ( $p < .000$ ). There is a mild positive correlation between territorial disputes and military disputes of  $.296$  in this dataset.