UNIVERSITÀ POLITECNICA DELLE MARCHE
Dipartimento di Scienze Economiche e Sociali

PhD thesis

Interstate soft conflicts, trade and FDI

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July, 2021

Abstract

This thesis contributes to the literature on the economic impact of interstate conflicts. The thesis contributes by focusing on the empirical analysis of effect of soft conflicts on bilateral trade and FDI. Interstate soft conflicts arising from the failure of diplomacy, when a military operation seems too radical, can act as a policy tool and have a negative impact on bilateral relations. And since nowadays countries tend to avoid violence and militarized intervention, interstate soft conflicts become explicitly interesting to study.

The empirical approach is based on the use of balanced panel data with annual observations and on a theory-consistent structural gravity framework augmented by a new measure of interstate soft conflict.

The results from standard gravity estimators show that interstate soft conflicts have a statistically significant and sustained negative impact on both bilateral trade and FDI stocks, regardless of the control for omitted variables (presence of regional trade agreements, different types of sanctions and militarized interstate disputes) and different model specifications.

The results demonstrate that the impact of different types of interstate soft conflicts – indirect, against the country in general and direct, against a specific organization or firm - is quite heterogeneous between trade and FDI. Both types of soft conflicts have a significant negative impact on trade, while in case of FDI, we found significance only for direct cases.

Keywords: Interstate soft conflict, Bilateral, Trade flows, FDI stocks, Structural gravity.

Contents

Chapter 1

Introduction

There are different types of bilateral resistance. This thesis focuses mainly on unconventional barriers to trade, related to incomplete information, cultural and institutional differences between countries, and in particular on the costs associated with different forms and levels of cross-border hostility, which is seen as friction-creating obstacles. These conflict-related costs increase the cost of building successful relationships across national borders.

Countries tend to interact and cooperate with each other in the same way that they have bilateral disagreements. The deterioration of relations between countries is a very common, and at present instability in relations is not associated with the extreme outcome of the war or militarized conflicts, as a result of which tense shifts of a lower level prevail.

Guided by the idea that such lower level disruptions can act as a policy tool and have the same negative impact as higher level militarized disputes, our main interest is in analysis of the transition from normal relations to tensions, which we define as an "interstate soft conflict".

By interstate soft conflict, we mean an outbreak of tension between two or more actors due to controversial attitudes or actions, usually associated with a desire for domination, revenge, punishment, change in policy or behavior, economic loss, simply beliefs or values that are not intended to lead to militarized disputes or violent conflicts, nor enforce sanctions or other official institutional acts but can be seen as an unconventional trade barrier which can drive two countries apart, hampering economic relations, thereby creating trade costs.

As far as we know, the current literature has not studied the impact of interstate soft conflicts on bilateral relations, which makes our work clearly interesting.

Our empirical analysis provides a new evidence on the role of the interstate soft conflicts on bilateral trade flows and bilateral FDI stocks using balanced panel data with annual observations and a theory-consistent structural gravity framework augmented by a new measure of interstate soft conflict. The results suggest that interstate soft conflicts have a statistically significant and sustained negative impact on both bilateral trade and FDI stocks regardless of the added control variables (presence of

regional trade agreements, different types of sanctions and militarized interstate disputes), different specifications and robustness checks.

The rest of this thesis is organized as follows: Chapter 2 presents two types of international trade costs and defines the measure of interstate soft conflict. Chapter 3 empirically analyzes the impact of interstate soft conflicts on bilateral trade flows. Chapter 5 empirically analyzes the impact of interstate soft conflicts on bilateral FDI stocks. Chapter 5 concludes.

Chapter 2

Trade costs

International trade costs are of different types. Bilateral resistance can arise due to conventional barriers such as tariffs or transportation costs, but also due to unconventional barriers such as differences in institutional quality, language, culture, religion, etc., or due to conflict-related costs associated with various forms and levels of hostility.

In an increasingly globalized and networked world, trade costs are an important policy issue for all countries, being a significant determinant of the volume of international trade and investment, they enable a country to position itself in global trade and production networks. While trade can play a powerful role in boosting productivity, growth, incomes, jobs and other important economic outcomes, high trade costs isolate countries from world markets, reduce their comparative advantage and gains from trade [Arvis et al., 2013].

Although accurate estimates of trade costs are very difficult to obtain due to their high variability across countries and commodities, limited data or the fact that some types of trade costs are not directly observable (such as cultural barriers, communication and information costs, etc.), according to [Anderson and Van Wincoop, 2004] a reasonable estimate for the trade costs faced by a representative developed country is around 170%[1] of the producer price of exported goods and includes all transport, border-related and local distribution costs from producer to final user.

In the economic literature "Trade costs, broadly defined, include all costs incurred in getting a good to a final user other than the cost of producing the good itself: transportation costs (both freight costs and time costs), policy barriers (tariffs and non-tariff measures), information costs, contract enforcement costs, costs associated

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[1]The total is made up of international trade costs of around 74% (this number breaks into 21% of transportation costs and 44% of border-related barriers) and domestic distribution costs of around 55%. Since trade costs are reported in terms of ad-valorem tax equivalent, trade costs are multiplicative not additive (1.7=1.74*1.55-1). A breakdown of the 44% ad valorem equivalent of border related trade barriers is following: 8% policy barrier, a 7% language barrier, a 14% currency barrier, a 6% information cost barrier, and a 3% security barrier. While 21% of transport cost splits into: 9% time costs and 10.7% U.S. average direct transport costs. All numbers are based on representative evidence for developed countries.

with the use of different currencies, legal and regulatory costs and local distribution costs (wholesale and retail)"[Anderson and Van Wincoop, 2004][p. 691].

Over the past few decades, international trade has grown significantly thanks to advances in transport, communications and technology, economic integration and the reduction of international trade costs to fairly low level. [Jacks et al., 2011] "find that in the forty years prior to World War I, the average level of the trade cost measure (expressed in tariff equivalent terms) fell by 33%. From 1921 to the beginning of World War II, the average level increased by 13%. Finally, the average trade cost measure has fallen by 16% in the years from 1950"[p. 186]. However, [Eaton and Kortum, 2002] argue that trade would be five times what is currently observed if trade were frictionless. This "mystery of missing trade" [Trefler, 1995] suggests that trade barriers are persistent and have remained important determinants of the volume and patterns of trade across countries.

2.1 Conventional trade costs

To explain trade costs, we have to look at the barriers that lead to these costs.

Barriers related to physical geography and economic policies have traditionally hampered trade between countries.

Despite the rise in international trade flows and the popular controversy over the so-called "death of distance" (e.g. [Friedman, 2005]), wide range of literature prove that geographic distance is still one of the most important determinants of trade. [Melitz, 2008] argues that distance can generate negative impact on international trade flows. [Disdier and Head, 2008] find that on average a 10% increase in distance lowers bilateral trade by about 9%. [Leamer, 2007] stressing that trade declines sharply with distance, states that the impact of distance on international trade described by gravity model is possibly "the only important finding that has fully withstood the scrutiny of time and the onslaught of econometric technique"[p. 110].

Thus the most obvious explanation for bilateral resistance to trade is geographic distance, which entails and increases transportation costs.

Transportation costs defined as all shipping expenses of internationally traded goods are one of the major components of trade costs along with tariffs and NTMs. However according to [Anderson and Van Wincoop, 2004] transportation related costs are estimated to be higher than tariffs.

High freight costs is determined by various factors. Distance and other geographical characteristics such as sharing a common border or being landlocked, quality of infrastructure and transportation related services, types of products traded and whether these goods are shipped by road, ocean or air freight all affect measured costs. [Limao and Venables, 2001] state that doubling distance increases overall freight rates, and that landlocked countries face higher transportation costs than economies sharing a common border, while improving infrastructure increases trade.

Although maritime shipping has traditionally been the main and cheapest mode of transport among countries without a common border, and land transportation has been widely used between countries sharing a common border, air freight has increased over time. The main reason for this is time savings in transit, as long delivery times increase costs and as a consequence acts as a barrier to trade, negatively affecting trade flows.

Overall high costs of transportation and time spent in transit, are obstacles to trade, making it difficult for the country to access other markets and reap the benefits of trade liberalization. According to [Martínez-Zarzoso et al., 2003] doubling transport costs leads to a reduction in import value of between three and five times, while [Skiba et al., 2007] find empirical evidence that transportation costs decline as trade flows increase. [Korinek and Sourdin, 2011] claim that increased shipping times reduce trade volume while [Hummels and Schaur, 2013] calculating ad-valorem tariff equivalent of consumers' willingness to pay more for a good to be delivered one day earlier, found that time cost of one day in transit is equivalent to an ad-valorem tariff rate of 0.6-2.1%

In addition to the barriers related to physical geography, discussed above, economic policies have traditionally impeded trade between countries.

As the most widely used policy tool to restrict trade, tariffs (a tax imposed by one country on goods and services imported from another country) have been steadily declined since the establishment of the General Agreement on Tariffs and Trade (GATT) in 1948 "from an average of some 20% to 30% to less than 4%"[WTO, 2007][p. xxxi]. Most of the tariff cuts have occurred since the formation of the European Union (EU) and the North American Free Trade Agreement (NAFTA), or due to the consequence of preferential trade agreements (in favor of developed, developing countries and least-developed countries).

While applied tariffs have been declining, governments started to use non-tariff measures (NTMs). [Niu et al., 2018] show that despite the fall in tariffs between 1997–2015, NTMs have become the dominant source of trade protection.

NTMs are generally defined as "policy measures other than ordinary customs tariffs that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both"[UNCTAD, 2010][p. 99]. NTMs can be very diverse, covering technical measures (sanitary and phytosanitary measures (SPS), technical barriers to trade (TBTs)), diverse traditionally used trade restricting instruments (quotas, subsidies, price control, rules of origin) and other behind-the-border measures (trade-related investment measures, government procurement or distribution restrictions).[2]

Regarding studies that examine how tariffs and NTMs affect trade, [Berden et al., 2009] argue that NTMs are more restrictive on U.S.-EU trade and investment than tariffs. [Hoekman and Nicita, 2008] find that on average trade decreases more if NTMs are implemented rather than tariffs. [Limão and Tovar, 2011] show that tariff obligations in trade agreements increase the likelihood and limiting capabilities of NTMs. [Nicita and Gourdon, 2013] results indicate that the use of NTMs is extensive and

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[2]For detailed information about NTMs classification see: [UNCTAD, 2019]

increasing, especially with regard to technical measures (SPS measures and TBTs). A large share (about 30%) of international trade is found to be affected by TBTs and about 15% by SPS measures. [Cadot and Gourdon, 2016] "show that deep-integration clauses in regional trade agreements, in particular the mutual recognition of conformity-assessment procedures, substantially reduce the price-raising effect of NTMs" [p. 227]. They find that NTMs raise trade unit values with an average price-raising effect of about 8% (3% for SPS measures and 5% for TBT ones).

2.2 Unconventional trade costs

Trade patterns, in addition to conventional trade barriers, rely heavily on unconventional trade barriers arising from incomplete information, cultural, linguistic, religious, institutional differences, etc., as well as conflicts arising from various forms and levels of hostility, which are considered as intangible friction-creating obstacles, similar to the well-studied traditional trade costs.

While traditional trade barriers have come down, unconventional trade barriers, which cannot be directly observed in terms of monetary or quantitative restrictions, play a very important role in explaining trade costs.

2.2.1 The cost of dissimilarity

To trade, people need to communicate, and communication is essential to facilitate the flow of information. The cost of obtaining information is similar to an intangible trade tax, which is influenced by various factors such as distance, language, cost and quality of communication channels, etc. [Fink et al., 2005] find that higher communication costs, measured as the average per minute bilateral calling price charged in the importer and exporter, have a negative effect on trade. The twentieth century was marked by advances in communications and technology what decreased communication costs and provided an effective channel to search, collect and exchange the information.

It is generally accepted that, in addition to advanced telecommunication technologies, the use of common language facilitates communication, reduces costs, positively affects trade relations and increases their intensity. [Melitz and Toubal, 2014] state that two countries that share the same official language tend to have higher level of trade than two similar countries that do not share a common language.

This is why language has been a key variable that literature has used as a proxy for information costs, as well as a variable that measures the ease of communication between countries. [Melitz, 2008] shows that the common language as a direct mode of communication has a significant impact on bilateral trade.

Apart from language, distance can be used as a proxy for information costs. [Portes and Rey, 2002] assert that the coefficient on bilateral distance is reduced from -0.55 to -0.23 after adding informational variables such as telephone call traffic and number of multi-

national bank branches along with distance in the benchmark trade flows equation.

Cultural factors are well-known determinants of trade. To represent trade costs, many studies have extended the basic gravity equation of trade with trade-facilitating factors such as common language and religion, colonial past, and found significant positive effects on the magnitude of bilateral trade flows (e.g. [Hutchinson, 2002]; [Melitz, 2008]). Cultural similarity can facilitate more efficient communication between countries in the sense that trading partners will know each other's culture, beliefs and values better, and therefore trade more easily. But, people are in general less informed about foreign markets and cultures. Cultural distance between countries, increasing with differences in language, religion, educational status, ideology, customs and values, lack of historical ties and high geographical distance, increase costs and reduce trade.

Since international trade involves multiple governance systems, the quality of domestic institutions in securing property rights and contracts is an important determinant of trade costs as well. [Anderson and Marcouiller, 2002] state that insecurity of property and contract enforcement imposes high costs on trade. "Corruption and imperfect contract enforcement dramatically reduce international trade. Contracts may not be enforceable across jurisdictional boundaries, bribes may be extorted by customs officials, and shipments may even be hijacked"[p. 342]. Conversely, if trade is supported by an effective rule of law and if government regulation is transparent, countries trade more. [Jansen and Nordås, 2004] claim that quality institutions increase openness and bilateral trade.

2.2.2 The cost of interstate conflicts

Among unconventional type of trade barriers, conflict related costs have been found to have a substantial impact on international trade.

Imagining what interstate conflict is, mostly we think about large scale disagreements among countries. However, in addition to violent disputes and wars, interstate conflict can be defined more broadly, taking different forms and levels of hostility. "Conflicts have different levels of intensity. Lower-intensity conflict (trade dispute, sanctions and threats of force); higher-intensity conflict (mobilization, use of armed force and full-blown war) and the escalatory and de-escalatory processes that move conflicts from one level to another"[Mansfield and Pollins, 2001][p. 852].

Significant amount of theoretical and empirical literature, in political science[3] and in the field of economics study the interrelationship between deteriorated relations and trade.

Perceiving from theory, that trading countries face a welfare gain, while conflicts deteriorate trade, [Polachek, 1980] was the first, who explained relationship between

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[3]Political scientists try to evaluate whether trade promotes peace (liberal school) or if increased asymmetries in existing relationships lead to a conflict between trading partners, affecting their economic relations (neo-Marxist school, realists). Even so, both theories agree that conflicts have a negative impact on trade [Barbieri and Levy, 1999].

trade and conflict, proving that higher level of bilateral trade and increased inter-dependence among partner countries, minimizes incentives for conflict due to high costs of the tension.[4] [Martin et al., 2008] show that countries with more bilateral trade have a lower probability of bilateral war, however, countries actively engaged in multilateral trade, while decreasing their degree of bilateral interdependence and minimizing their cost of bilateral conflict, have a higher probability of bilateral war. [Pollins, 1989] claims that in the long run, there is two way causality - while trade relations affect the level of conflict and cooperation among countries, political relations affect trade flows.

It seems obvious that ceteris paribus the effect of conflict must be troublesome for economic activities, which is likely to lead to a reduction in trade flows due to increased costs for traders. There is a wide range of literature that empirically validates this view, demonstrating that the wars and other forms of military disputes have a negative impact on trade flows. [Nitsch and Schumacher, 2004] likewise [Blomberg and Hess, 2006] find that terrorism and large scale-violance have a negative effect on international trade. [Glick and Taylor, 2010] observe persistent negative impact of both world wars on bilateral trade flows. [Jacks et al., 2011] show that during the war, trade was entirely driven by the increase in trade costs caused by the war, and therefore the importance of conflict on trade costs cannot be ignored. [Long, 2008] argues that expectations of armed conflict diminish trade as a result of increased transportation, transaction and production costs of trade. Yet some studies, e.g. [Barbieri and Levy, 1999], [Morrow et al., 1998] find that war among major economies does not have permanent long term effect on their trade relations.

Another stream of recent empirical literature while supporting the view that conflict diminishes trade also shows that trade promotes peace. [Hegre et al., 2010] while affirming that the presence of military conflicts negatively affects bilateral trade flows because violence is costly, they also support the idea that trade promotes peace and reduces the likelihood of conflict. Similarly [Oneal et al., 2003] find that trade has a significant effect in reducing dyadic militarized disputes, while militarized disputes reduce trade. [Keshk et al., 2004] state that conflict impedes trade, while they do not find significant results for the effect of dyadic interdependence on conflict. [McDonald, 2004] demonstrates that higher levels of trade reduce military conflict.

Nowadays, instability in relationships is not associated with the extreme outcome of the war. According to [Davis and Meunier, 2011], in most cases, political relations range from normal to tense and sometimes to risk of using force. Thus changes in political relations occur within less extreme range.

The political relationship that exists at the level of government consists in deciding whether to be at peace or in conflict with any other country. A number of papers examine the extent to which political relations in this mostly moderate range affect bilateral trade.

[Pollins, 1989] states that tense bilateral political relationship negatively affects eco-

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[4]See: [Mansfield and Pollins, 2009] for a review of the literature.

nomic exchange throughout decisions of government representatives, diplomatic or political climate. A number of studies have examined the extent to which political relations in the less extreme conditions affect bilateral trade. [Davis and Meunier, 2011] analyzing the trade patterns of U.S. and Japan, have not found the negative impact of political tensions on bilateral trade, while [Fuchs and Klann, 2013] using the reception of Dalai Lama as the measure of having political tensions with China, show that countries hosting the Dalai Lama (spiritual leader of Tibet who supports Tibet's sovereignty) at the highest political level experience a decline in export flows to China. While [Alesina and Dollar, 2000] argue that votes in the United Nations (UN) are a reliable indication of political alliances between countries, as the nature of votes in the UN is highly correlated with alliances and similarities of economical and geographic interests, [Mityakov et al., 2013] provide evidence that the deterioration in relations between the U.S. and its partner country, measured as changes in their voting patterns in the UN General Assembly, reduces U.S. imports from that country.

On the other hand friendly bilateral diplomatic ties can promote economic activity. [Rose, 2007] finds that the presence of foreign mission (embassies, consulates and the Foreign Service) is positively correlated with exports and that each additional consulate is associated with an increase of exports. [Lederman et al., 2010] state that rise in budget of export promotion agencies increase exports. [Nitsch, 2007] find that state and official visits increase bilateral exports for the USA, France and Germany. [Creusen and Lejour, 2011] state that the presence of Dutch support offices abroad and trade missions in destination countries promotes trade and rises export.

The impact of political tensions on trade flows can also arise at the individual level, as consumers tend to change their decisions as a result of deteriorating bilateral political relations. Consumers may be reluctant to consume products produced in a country with which the consumer's country of origin is experiencing tension. Consumer behavior studies claim that animosity increases consumers' desire to boycott, which leads to decrease in the demand for goods associated with the opposing country [Klein et al., 1998]. Boycott triggered by a tension can be seen as a tool to punish/change certain behavior of trading partners/companies. According to [Pollins, 1989], consumer boycotts represent commercial weapons that can be used instead of military force.

Consumer boycotts have become more prevalent in recent decades due to the use of the Internet as a fast and efficient way to communicate, organize protests and gather supporters simply by using hashtags on Twitter, Facebook posts or WhatsApp messages. Boycotts can be communicated to millions of consumers around the world in seconds. According to a new YouGov[5] study, about 21% of consumers have reportedly boycotted a brand due to a scandal or negative press release. Although [Koku, 2012], drawing attention to the financial implications of Internet-driven consumer boycotts, shows that the market is almost unresponsive to such boycotts.

Boycotts occur as expressions of protest, mainly for ethical, social, economic, political

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[5]`https://yougov.co.uk/topics/politics/articles-reports/2017/04/07/`
`one-five-consumers-have-boycotted-brand`

or environmental reasons,[6] regardless of their effective[7] or ineffective results[8] and are powerful public acts that can do real damage to a boycotted company, community or country as a whole [Lee, 2012].

There is a growing body of empirical evidence that consumers are changing their decisions as a result of strained political relations between countries, which negatively affects trade flows. [Heilmann, 2016] studies the impact of four different political tensions measured as politically motivated boycotts on trade and finds the negative impact of boycotts on trade flows, affecting mostly consumer goods. Empirical studies of U.S.-France dispute over Iraq War, analyzing sales of French wine in the U.S., present distinct results. [Vannerson, 2003] and [Ashenfelter et al., 2007] find no boycott effect on sales after inclusion of seasonal effects of holidays and time trend, while [Chavis and Leslie, 2006] do. Moreover [Pandya and Venkatesan, 2016] show that the market share of brands marketed as French, although not necessarily imported from France, has declined due to this tension. Analyzing the same political event, [Davis and Meunier, 2011] report no significant decline in U.S. imports of luxury goods associated with France. According to [Clerides et al., 2015] the rise in anti-American sentiment caused by the Iraq war generated statistically significant negative effect in sales of U.S. goods in several Arab countries. [Fouka and Voth, 2013] find that Greek consumers reduced purchases of German cars as a result of tense relations between governments during the debt crisis after 2010.

2.2.3   Interstate soft conflicts

In today's global economy, no country exists without interactions that range along a continuum from normal relationships to tense, trade disputes, paramilitary conflicts, and to the most extreme cases of war.

Motivated by the idea that the deterioration of relations between countries is not currently associated with the extreme outcome of violence or war and the extent to which lower level shifts can harm the economy, our main interest lies in the transition from normal relations to tense ones. We define this transition as an "interstate soft conflict".

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[6] The early boycotts were mostly triggered by high consumer prices or violation of labor/civil rights, while later shifted towards protection of animal rights, religious/ethnic/sexual minorities rights and environment.

[7] The most recent example of a successful boycott campaign stemmed from opposition to the Sultan of Brunei's decision to impose the death penalty on gay couples. To counter this, celebrities and Los Angeles officials have called for a boycott of the Sultan's hotels. As a result, the new criminal law in Brunei was abolished. https://www.ft.com/content/0ef1e636-6fa6-11e9-bf5c-6eeb837566c5.

[8] Even if boycotts do not lead to a change, they bring attention to a problem and can affect public opinion, like it happened in 1955, when a boycott arose from a tension over public buses in Montgomery, "marked the beginning of the modern civil rights movement in the United States" [Friedman, 2002][p. 97].

Definition

By interstate soft conflict, we mean bilateral disagreements arising due to controversial attitudes or actions, usually associated with a desire for domination, revenge, punishment, change in policy or behavior, economic loss, simply beliefs or values that are not intended to lead to militarized disputes or violent conflicts, nor enforce sanctions or other official institutional acts but can act as a policy tool and have the same negative impact on trade flows as after imposition of tariffs, embargoes or sanctions.

Interstate soft conflict does not cause conflict by itself, but allows different parties to exhibit contradictory, conflicting behavior if each of them tries to act unacceptably. While the causes of interstate soft conflict may be related to the causes of conflict and may precede conflict (if tension escalate enough), it is not always synonymous with conflict and is not always consistent with cooperation.

Interstate soft conflicts can:

- occur between two or more countries or opposing forces

- arise due to a variety of factors: political, social, economic, territorial, historical, racial, religious, cultural, environmental; be triggered by violation of consumers, workers, animals rights or be tied to individual beliefs, the mission of organization, or political goals of a government body, etc.

- be expressed in different ways: aggressive public speeches, provocative statements in the media and press, diplomatic spats such as recalling diplomats or ambassadors, closing an embassy or imposing restrictions on the movement of political leaders, renegotiating relationships, canceling meetings, protests or boycotts, etc.

- affect trade flows through three channels: at the level of country, organization or individual consumers. The state can use its power and trade as a tool to punish those countries[9] and companies[10] with which it has some kind of tension; organizational units such as companies, foundations or trade unions can express disagreement over the policies or activities of particular company[11] or country[12]; while consumers, both individually or jointly can stop buying

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[9]For example, China uses its economic power to punish states through trade. [Fuchs and Klann, 2013] show that countries hosting the Dalai Lama (spiritual leader of Tibet who supports Tibet's sovereignty) at the highest political level experience a decline in export flows to China.

[10]In his latest unsuccessful call for a protest, Trump said that Americans should avoid Apple Inc. until it unlocks the phone of one of the San Bernardino suspects for the FBI. Apple Inc. opposed the government's demand`https://www.businessinsider.com/donald-trump-boycott-list-apple-oreos-2016-2?IR=Tapple-1`.

[11]In the 1990s variety of networks, social movements and activists accused Nike for using a child labor[Solomon and Feit, 1998]. This campaign was the starting point for changes in corporate culture, leading to the protection of human rights and better working conditions.

[12]For example, international companies such as Veolia, Orange and CRH, which opposed Israel's complicity in the oppression of the Palestinians and violations of international law, have left the Israeli market`https://bdsmovement.net/economic-boycott`.

products which are somehow related to the disputed country[13] or company[14]

- result in pressure on the targeted entity, which can be a country in general or a specific company, in order to punish or try to modify their certain practices

- be long/medium/short term, but we are only interested in the outbreaks of soft conflicts.

Overall, we define interstate soft conflict as an outbreak of tension between two or more actors due to political disagreements, mutual distrust, historical tensions, human/animal rights violations, racial or religious hatred, etc., which can be expressed in different ways as diplomatic restrictions, renegotiation of relations, boycotts, etc. Acting on three levels (country, organization, individual), interstate soft conflict can target a country in general or a specific company in order to punish or try to force a target (country, company) to change undesirable behavior. And in the end interstate soft conflict neither leads to militarized disputes or violent conflicts, nor enforces sanctions or other official institutional acts, but can be seen as an unconventional trade barrier which can drive two countries apart, hampering economic relations, thereby creating trade costs.

Methodology

The data collection procedure is generally based on keyword searches using multiple search engines such as Google, Bing, Yahoo, Yandex, Swisscows, OneSearch, etc. Media reports and online journals, scholarly articles and working papers, books and other websites mentioning the words: boycott, tension, dispute, conflict in their texts and/or in the headlines are considered as an essential resource for identifying interstate soft conflicts.

Our search focused on the 2000-2018 period. We have chosen this period simply for reasons of convenience and coverage of the most recent data, but we have no reason to believe that this period is not typical for any other period.

After collecting and classifying the data, further analysis of the data was carried out mainly using descriptions based on logic and reasoning.

We found many cases that were narrowed down to those that took place at the interstate level. As a result, 20 cases matched a definition that generates 202 dyadic country-pairs that are part of these soft conflicts. Table (2.1) presents these twenty events highlighting the type of animosity, while Appendix (A) provides more detailed information on the cases.

Due to the fact that the target of interstate soft conflict can be a country in general or a specific company, we further divided the existing cases into two groups. For

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[13][Chavis and Leslie, 2006] show that U.S.-France tension over invasion of Iraq in 2003 generated negative effect in sales of French wine, demonstrating that deterioration in political relations between countries, may provoke citizens, affect their preferences and rise a possibility of boycott.

[14]Unhappy with Ivanka Trump's continued support for her father's campaign, Shannon Coulter, a brand and digital strategist, under the hashtag #GrabYourWallet urged people to boycott Ivanka's fashion line, which led to the company's closure https://www.thecut.com/2016/10/people-are-using-twitter-to-protest-ivanka-trumps-line.html.

simplicity, in what follows, they will be called indirect and direct interstate soft conflicts.

Table 2.1: List of interstate soft conflicts and classification

N	From	Towards	Year	Title	Reason
1[15]	UK	France	2000	L'Oreal still tests on animals	Animal Rights
2	UK	U.S.	2001	Stop Esso campaign	Environmental
3	U.S.	France	2002	Tension over Iraq War	Political
4	Arab world[16]	U.S.	2002	Tension over Iraq War	Political
5	Columbia	U.S.	2003	killer Coke	Human rights
6	Spain	China	2004	The Spaniards against 'Made in China'	Unfair competition / racism / immigration
7	Muslim Countries[17]	Denmark	2006	Muhammad Cartoon Crisis	Religious
8	Ireland	Japan	2007	Save the Whales	Environmental /Animal Rights
9	Canada	Saudi Arabia	2007	Canada - Saudi Arabia diplomatic spat	Political
10	Germany	Finland	2008	Germans boycott Nokia	Human rights
11	China	Norway	2010	Dispute over Nobel Peace Prize	Mutual trust
12	Greece	Germany	2010	Greek debt crisis and exposed memories	Political/Memories
13	China	Philippines	2010	Manila hostage crisis	Human rights
14	Cambodia	UK	2010	Cambodian blood sugar!	Human rights
15	Philippines	China	2011	Boycott 'Made in China' products	Territorial
16	China	Japan	2012	Senkaku / Diaoyu Island Conflict	Territorial
17	China	Maldives	2013	Cup noodles crisis	Cultural discrimination
18	China	Japan	2017	Opposition over Japanese official's visit to Taiwan	Political
19	Mexico	U.S.	2017	Water or beer?	Human rights
20	China	Italy	2018	Dolce & Gabbana under fire	Racism

Indirect interstate soft conflicts, which are mainly caused by events at the country level associated with political, military, economic or diplomatic events and various governmental decisions, in some sense unacceptable for another country or group of countries, for diverse organizations representing ethnic and racial minorities, environmental and animal protection groups, etc., and finally for a group of consumers, may lead to an increase in the wave of protest against that country as a whole. While direct soft conflicts caused by unacceptable policies or activities of a particu-

lar company opposed by senior government officials, as well as by diverse associations or trade unions defending human/animal/various minority rights, etc., and finally by consumers, both individually or jointly, may lead to an increase in the wave of protest against that company and result in the rejection to use a certain product or all products produced by that company.

As an example of indirect soft conflict can be used the German-Greek tension that emerged during the post-2010 Greek debt crisis, when budget deficit figures showed alarming situation, and as a result the German government pushed for harsh measures. This led to tensions between politicians, but beyond that, when Greek society revived the memory of how German troops committed massacres and destroyed entire villages during World War II, it provoked massive demonstrations and boycotts of Germany and all German products in general.

Another example of indirect interstate soft conflict might be the case arising from the active hunting of whales for consumption in Japan. This has prompted Irish environmental and animal rights organizations to organize campaigns in order to encourage public to protest.

As for the direct interstate soft conflict, we can note the tension against Nokia, which arose due to the violation of human rights. Shortly after Nokia announced it was closing its plant in Germany due to high costs and a shift to cheaper production in Romania, German unions sparked demonstrations.

Another example of direct interstate soft conflict can be the case of Dolce & Gabbana's advertising campaign for a fashion event in China, which was deemed racist, ignorant and provocative and caused the show's cancellation by the Chinese Ministry of Culture and Tourism and a boycott of the brand by its consumers. More examples can be found in Appendix (A).

Both indirect and direct type of interstate soft conflicts can lead to consumer boycotts, which is the tip of the iceberg that can be considered as an appeared result of a tension. Our measure of interstate soft conflicts may mimic boycotts, but when we see a boycott, there is already a tension, which means that examining the impact of our indicator of interstate soft conflicts may be considered more meaningful as it encompasses both the flare-up of tensions and the boycott. In addition, since an interstate soft conflict is the first step towards the deterioration of relations between countries and is a very frequent phenomenon these days, the importance of our measure increases twofold. Interstate soft conflict does not cause conflict by itself, but allows different parties to exhibit contradictory, conflicting behavior if each of them tries to act unacceptably. While the causes of interstate soft conflict may be related to the causes of conflict and may precede conflict (if tension escalate enough), it is not always synonymous with conflict and is not always consistent with cooperation.

To study the impact of interstate soft conflicts on bilateral trade flows/FDI stocks in the following chapters, we exploit the fact that for each interstate soft conflict, our datasets contain information about the partner countries that are affected or not, as well as the date of occurrence of soft conflicts between them. We list each case of interstate soft conflict twice, once with country i and j at time t and once with

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the countries reversed. We then use this information to construct three indicator variables, one of which is equal to one if an indirect type of interstate soft conflicts occurs between partner countries at time t and zero otherwise, one for a direct type of soft conflicts and the third one, for any types (indirect and direct) of interstate soft conflicts arising between partner countries at time t and zero otherwise. Third type of indicator variable which includes both indirect and direct cases of interstate soft conflicts is our main variable of interest.

Building a general approach to constructing an indicator of interstate soft conflict, we focus not only on political tensions, but also use cases that have arisen as a result of various (racial, social, religious, environmental, etc.) factors, in addition, we distinguish the impact of soft conflicts on two different targets, which can be a country as a whole or a specific company, and finally, we do not study the effect of politically motivated consumer boycotts on the sale of certain goods such as wine, cars, soft drinks or detergents, but we look for the effect on aggregate trade flows. In doing so, we fill in the gaps in the aforementioned literature assessing the unconventional cost of conflicts, political tensions or consumer boycotts of trade flows.

The main limitation of the study of interstate soft conflicts is that its coverage may be incomplete, since it is almost impossible to cover all existing cases. However, in order to control for the bias, we take our sample and restrict it to a specific window, focusing on a restricted time frame and on a control group of four other countries that have not experienced this particular tension, and perform estimations on each isolated episode (see Table 2.1) appeared between two partner countries against control group. Another limitation stems from limited data due to the fact that mostly soft conflicts tend to be national rather than international. However, we managed to find twenty cases, which is a good basis for studying the subject. The last limitation concerns the fact that it is difficult to get the exact date of the beginning of a soft conflict, since they are not always clear. Since we are working with annual data, even this issue can be considered not so trivial.

Appendix A

Brief description of cases

A.1 Indirect

This section presents the background of indirect interstate soft conflicts used in the study.

Tension over Iraq War

Deterioration of relations between the U.S. and France began in <u>2002</u>, when U.S. government tried to obtain United Nations (UN) Security Council mandate, in order to use military force against Iraq, what was opposed by French government. U.S. led Iraq invasion to displace Saddam Hussein in early 2003, affected public opinion and induced consumers to boycott French products. Relations between two countries deteriorated so much that in the three House office buildings cafeterias changed the name of "french fries" to "freedom fries," and "french toast" to "freedom toast" in their menus. This practice was repeated by several restaurants.[1] Existing empirical studies of U.S.-France dispute, analyze its effect on the sales of French wine in the U.S. ([Vannerson, 2003], [Ashenfelter et al., 2007], [Chavis and Leslie, 2006]) and market share of French - sounding brands ([Pandya and Venkatesan, 2016]).

Meanwhile [Clerides et al., 2015] study the rise in anti-American sentiment caused by the Iraq war in the group of 22 Arab states known as Arab world, Arab league etc.[2]. The work presented statistically significant negative effect in sales of U.S. soft drinks in seven Arab countries (Egypt, Jordan, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates) and of detergents in one country (Kuwait).

The Spaniards against 'Made in China'

Facing unfair competition from cheap Chinese imports and being concerned that Spanish "age-old social customs, employment norms, and labor relations" can be

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[1] https://edition.cnn.com/2003/ALLPOLITICS/03/11/sprj.irq.fries/
[2] http://worldpopulationreview.com/countries/arab-countries/

distorted, pushed society to demonstration.

In 2004, when Spanish shoe workers in Elche (once flourishing shoe-producing town) went to the streets, many thought that the incidents were motivated by anti-Chinese racism since placards scrawled phrases like, "No Chinese!" and "Stop immigration!" etc."[3] While others expressed that the incidents were caused solely by Asian competition.[4]

Muhammad Cartoon Crisis

Known as the "Muhammad crisis", the "Muhammad Cartoon Crisis", the "Jyllands-Posten Crisis" broke out after publication of 12 cartoons of Islamic prophet Muhammad in the largest Danish daily newspaper Jyllands-Posten[5] on September 30, 2005 and became an international tension in early 2006 after cartoons had been reprinted in several Arabic newspapers causing widespread demonstrations and consumer boycotts of Danish goods in many Middle East countries (Muslim nations). [Heilmann, 2016] studying the effect of Danish-Muslim boycott on Danish export, found that exports to the selected 34 Muslim countries disrupted by 18.8%.

Save the Whales

Japanese whaling, in terms of active hunting for consumption of whales has long-lasting history. These hunts are becoming a source of conflict over and over again in order to protect environment/animal rights since "whale populations about the world are facing a multitude of human impacts from plastic pollution to overfishing and entailments, the last thing the world's marine biodiversity needs is further over exploitation and abuse".[6] In 2007 Ireland's National Sea Life Center started to encourage Irish society to boycott Japanese products.[7]

Canada - Saudi Arabia diplomatic spat

The diplomatic tension between Canada and Saudi Arabia sparked in 2007 after an unsuccessful attempt by Saudi Arabia to publicly behead a Canadian citizen for his alleged role in killing an 18-year-old student in the city of Jeddah, Saudi Arabia.[8]

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[3] https://www.csmonitor.com/2004/1019/p06s01-woeu.html
[4] http://news.bbc.co.uk/2/hi/europe/3687602.stm
[5] https://www.brusselsjournal.com/node/698
[6] https://my.uplift.ie/petitions/stop-commercial-whaling-now-boycott-japanese-products-and-services-in-the
[7] https://www.irishexaminer.com/news/arid-30337507.html
[8] https://www.cbc.ca/news/world/canadian-sentenced-to-beheading-in-saudi-arabia-1.
733555

Dispute over Nobel Peace Prize

In 2010 Norwegian Nobel Committee awarded the Nobel Peace Prize to Chinese human rights activist Liu Xiaobo despite warnings from Chinese foreign ministry spokesman Ma Zhaoxu, asserting, that such action may harm Norway-China relations. Liu claimed that the decision to give a Nobel prize to the criminal, who violated Chinese law not only humiliates China, but also damages the reputation of the Peace Prize.[9] As a consequence Chinese government canceled meeting with the Norwegian fisheries minister.[10] It took six year before China and Norway announced about normalization of their damaged bilateral relations.[11]

Greek debt crisis and exposed memories

Greek-German political relations became tense during the Greek debt crisis after 2010, when budget deficit figures showed alarming financial situation of Greece. German government as a result insisted on harsh measures. Tension between politicians pushed society towards demonstrations and boycott of German products, especially in areas affected by German troops in World War II committing massacres and destroying entire villages. According to [Fouka and Voth, 2013] German car market share, especially in historically assaulted areas of Greece, fell by about 3.8%.

Tension between China and Philippines (2010/2011)

So-called Manila hostage crisis, officially known as the Rizal Park hostage-taking incident [12] happened on August 23, 2010 when previously dismissed Philippine National Police officer named Rolando Mendoza hijacked a Chinese tourist bus. Anger, demand from the Chinese government for relevant actions and late apologies raised level of animosity in Filipino society, while Hong Kong urged to cancel all travel to the Philippines.[13]

On the other hand, since 2011 Philippine governor called to boycott "Made in China" products amid the Spratly Islands long-lasting dispute and China's "bullying" tactics.[14]

One of the world's busiest waterways, rich with fishing grounds, potentially huge oil/gas reserves and economically important region is subject to several overlapping territorial disputes involving China, Taiwan, Malaysia, the Philippines, Vietnam and Brunei.[15]

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[9] http://en.people.cn/90001/90776/90883/7160053.html
[10] https://www.nytimes.com/2010/10/12/world/asia/12china.html
[11] https://www.nytimes.com/2016/12/19/world/europe/china-norway-nobel-liu-xiaobo.html
[12] https://www.officialgazette.gov.ph/2010/09/17/first-report-of-the-iirc-on-the-rizal-park-hostage-taking
[13] https://www.bbc.com/news/world-asia-pacific-11067310
[14] https://globalnation.inquirer.net/37179/albay-gov-renews-call-for-boycott-of-china-products
[15] https://www.peacepalacelibrary.nl/library-special/south-china-sea-territorial-disputes/

Sino-Japanese clash of power and nationalism (2012/2017)

Past conflicts (like: Japanese eight-year invasion by China during the World War II; sovereignty of a small group of eight tiny, uninhabited islands in the East China Sea etc.) tend to generate long-lasting memories that rises historical animosity/controversies, territorial disputes and complicates political relationship.

Tension between China and Japan over disputed islands arose in 2012 when Japanese government made a statement regarding purchase of the three Senkaku/Diaoyu Islands from their private Japanese owner[16],thus triggering anti-Japan demonstrations in some Chinese cities, accompanied by calls to boycott Japanese products.

[Heilmann, 2016] studying the 2012 episode of Chinese consumer boycott of Japanese products, especially automobiles, as a result of the Senkaku conflict, reports an average one-year trade disruption of 2.7% trade due to the event using difference-in-differences regressions and the synthetic control method. While when looking at specific industries, decline in trade of automobiles is about 30%.

In 2017, China expressed its disappointment over visit of a high-level Japanese official to Taiwan in order to attend an event promoting Japanese culture and tourism. This visit, being the first since severing diplomatic relations in 1972, boosted misunderstanding between China and Japan. Japan maintaining close economic and cultural relations with Taiwan, at the same time supports position of China considering Taiwan as its inherent part, based on the 1972 Sino-Japanese Joint Statement. "Japan should recognize its seriousness and stop being two-faced and not go further on the wrong path," said Foreign Ministry spokeswoman Hua Chunying at a daily news conference in Beijing.[17]

Cup noodles crisis

In 2013 a former Chinese employee of the luxury resort posted about his disappointment regarding hotel in the Maldives that proceeded the practice of removing kettles from the rooms of Chinese tourists only in order to prevent them from cooking instant noodles in their rooms instead of having a dinner in the hotel restaurant. Few days after the tale was re-posted almost 100,000 times on social media demanding to boycott Maldives.[18]

A.2   Direct

This section presents the background of direct interstate soft conflicts used in the study.

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[16]https://www.bbc.com/news/world-asia-19485565
[17]https://www.chinadaily.com.cn/china/2017-03/28/content_28700106.htm
[18]http://www.globaltimes.cn/content/767434.shtml

L'Oreal still tests on animals

"L'Oréal's continued use of "innovative" ingredients, tested on rabbits, mice and guinea pigs, led to Naturewatch announcing a boycott of L'Oréal in 2000. Since then Naturewatch has encouraged consumers not to buy L'Oréal products and the products of subsidiary companies."[19]

Stop Esso campaign

The UK "Stop Esso Campaign" was initiated in 2001 to claim against the biggest and most influential oil corporation Esso (known as ExxonMobil in the United States) for several issues[20], the main ones of which were: 1. damaging the environment and polluting the atmosphere 2. US decision to withdraw from Kyoto agreement[21]

killer Coke

In 2003 Colombian Food and Drink Workers' Union Sinaltrainal members launched a boycott of Coca-Cola products claiming that "company's locally owned bottlers in Colombia used illegal paramilitary groups to intimidate, threaten and kill its workers."[22]

Germans boycott Nokia

In 2008, soon after Nokia announced about closing of its manufacturing plant in Germany due to high expenses and move production to cheaper European site Romania, German unions called for a consumer boycott of Nokia products.[23]

Cambodian blood sugar!

Cambodian farmers who relied on agriculture have been illegally evicted from their lands for many years due to the cultivation of sugar plantations. A dispute over the land rights abuses draw international attention in 2010.[24]

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[19] http://naturewatch.org/campaign/the-body-shop-boycott/loreal-theyre-simply-not-worth-it

[20] https://storage.googleapis.com/gpuk-archive/blog/climate/the-case-against-esso.html

[21] "The Bush administration decided recently to reject the Kyoto Protocol because it sees its Kyoto obligations to cut emissions of greenhouse gases as detrimental to the American economy and unfair because of the lack of commitments from developing countries" https://www.euractiv.com/section/climate-environment/news/environmental-groups-start-exxonmobil-boycott/.

[22] https://www.theguardian.com/media/2003/jul/24/marketingandpr.colombia

[23] https://www.reuters.com/article/us-germany-nokia/german-unions-urge-nokia-boycott-over-plant-closure-id

[24] https://www.habitants.org/news/inhabitants_of_asia/cambodia_boycott_blood_sugar

Water or beer?

Since 2017, Mexicali Resiste has strongly opposed Constellation Brands factory, which gained access to drinking water in the region. The new Constellation brewery, which was supposed to consume 20 million cubic meters of water a year from the Mexicali Valley, when the region was already experiencing severe water shortages, faced a boycott by Mexicali residents.[25]

Dolce & Gabbana under fire

Dolce & Gabbana are facing tense circumstances repeatedly for making offensive comments on social media touching racial, sexual, religious, cultural stereotypes. The recent occasion became an advertising campaign for "The Great Show" of Dolce & Gabbana's runway event in China, which was considered as racist, ignorant, provocative and sexually offensive. Video, in which a Chinese woman is attempting to eat Italian food with chopsticks, caused huge controversies leading to cancellation of the show by China's Ministry of Culture and Tourism and boycott of the brand.[26]

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[25]https://www.ethicalconsumer.org/food-drink/boycott-constellation-brands

[26]https://www.bloomberg.com/news/articles/2018-11-21/dolce-gabbana-faces-china-boycott-calls-over-racist-

Appendix B

Share of Muslim population by country

Since the Muhammad comics crisis has sparked anger mainly among Muslim population and led to demonstrations and boycotts in many majority-Muslim countries, in order to compile a list of treated countries, we use Pew Research Center[1] data on the world's Muslim population for each country to compile the list of affected countries. We include 69 countries with a Muslim population of over 15% in our Danish-Muslim tension treatment group (See 1st part of the above presented table). We do not use other countries as we do not consider them important in our analysis.

Treated countries	Mauritania	100	Pakistan	96.5	Chad	58
	Tunisia	99.8	Senegal	96.1	Lebanon	57.7
	Somalia	99.8	Gambia	95.7	Bosnia and Herz.	50.7
	Afghanistan	99.6	Iraq	95.7	Nigeria	49.6
	Western Sahara	99.4	Mali	95	Guinea-Bissau	45.1
	Iran	99.4	Turkmenistan	93.3	Eritrea	43.8
	Turkey	99.2	Syria	93	Ivory Coast	42.9
	Yemen	99.1	Egypt	92.35	Tanzania	35.2
	Morocco	99	Bangladesh	90.4	Ethiopia	33.9
	Algeria	99	Guinea	89.1	Cameroon	30
	Maldives	98.4	Indonesia	87.2	Cyprus	28.2
	Comoros	98.3	Oman	85.9	Benin	27.7
	Niger	98.3	Kyrgyzstan	80	Liberia	20
	Palestine	97.5	Brunei	78.8	Togo	20
	Jordan	97.2	Sierra Leone	78.6	South Sudan	20
	Saudi Arabia	97.1	Qatar	77.5	Malawi	20
	Mayotte	97	UAE	76	Montenegro	19.1
	Djibouti	97	Kuwait	74.6	Israel	18
	Libya	97	Bahrain	73.7	Ghana	18
	Sudan	97	Kazakhstan	70.2	Mozambique	17.9
	Azerbaijan	96.9	Burkina Faso	61.5	Mauritius	17.3

[1] https://worldpopulationreview.com/country-rankings/muslim-population-by-country

Tajikistan	96.7	Malaysia	61.3	Central Africa	15
Uzbekistan	96.5	Albania	58.8	Singapore	14.7

Non-treated countries

India	14.2	Canada	3.2	Moldova	0.4
Uganda	14	Serbia	3.1	Portugal	0.4
Suriname	13.9	Sao Tome and Prin.	3	Venezuela	0.4
Russia	13.5	Luxembourg	3	Brazil	0.4
Bulgaria	13.4	New Caledonia	2.8	St. Kitts and Nevis	0.3
Kenya	11.2	Finland	2.7	Antigua and Barbuda	0.3
Georgia	10.7	Andorra	2.6	Grenada	0.3
Swaziland	10	Malta	2.6	Honduras	0.3
Equatorial Guin.	10	Australia	2.6	Taiwan	0.3
Gabon	10	Spain	2.6	Angola	0.3
Burundi	10	Cape Verde	2	St. Pierre and Miq.	0.2
Madagascar	10	Rep. of Congo	2	Cayman Islands	0.2
DR Congo	10	Cambodia	1.9	Dominica	0.2
Sri Lanka	9.7	South Africa	1.9	Isle of Man	0.2
France	8.8	China	1.7	Iceland	0.2
Sweden	8.1	St. Vincent	1.7	Martinique	0.2
Austria	8	Ukraine	1.7	Belize	0.2
Philippines	8	Barbados	1.5	Bhutan	0.2
Belgium	7.6	Croatia	1.5	Jamaica	0.2
Guyana	7.3	Ireland	1.4	Colombia	0.2
Fiji	6.3	British Virgin Isl.	1.2	Latvia	0.2
United Kingdom	6.3	Seychelles	1.1	Slovakia	0.2
Trin. and Tob.	5.8	United States	1.1	Czech Rep.	0.2
Norway	5.7	Bermuda	1	Montserrat	0.1
Greece	5.7	Zambia	1	Tuvalu	0.1
Germany	5.7	French Guiana	0.9	US Virgin Islands	0.1
Liechtenstein	5.4	New Zealand	0.9	St. Lucia	0.1
Denmark	5.4	Argentina	0.9	Bahamas	0.1
Switzerland	5.2	Monaco	0.8	Macau	0.1
Netherlands	5.1	Belarus	0.8	Lesotho	0.1
Mongolia	5	North. Mariana Isl.	0.7	Lithuania	0.1
Rwanda	4.8	Panama	0.7	Armenia	0.1
Italy	4.8	Zimbabwe	0.7	Cuba	0.1
Myanmar	4.3	Romania	0.7	North Korea	0.1
Thailand	4.3	Anguilla	0.6	South Korea	0.1
Reunion	4.2	Hungary	0.5	Vietnam	0.1
Nepal	4.2	Aruba	0.4	Japan	0.1
Hong Kong	4.1	Guadeloupe	0.4	Poland	0.02
Gibraltar	4	Botswana	0.4	Mexico	0.01
Slovenia	3.6	Namibia	0.4		

Chapter 3

The impact of interstate soft conflicts on bilateral trade flows using structural gravity model

3.1 Introduction

International trade is important to the economic growth of countries, so it is important to understand the factors that can affect bilateral trade flows.

Trade patterns to a considerable degree depend on conventional, such as tariffs of transportation costs and on unconventional barriers to trade, such as incomplete information, cultural and institutional differences between countries, and costs resulting from different forms and levels of cross-border hostility, which is seen as friction-creating obstacles. These type of trade costs increase the cost of building successful relationships across national borders.

In today's global economy, no country exists without interactions that range along a continuum from normal relationships to tense, trade disputes, paramilitary conflicts, and to the most extreme cases of war.

Guided by the idea that the deterioration of relations between countries is not currently associated with the extreme outcome of violence or war and the extent to which lower level shifts can harm the economy, our main interest is in analysis of the transition from normal relations to tension, which we define as an "interstate soft conflict".

By interstate soft conflict, we mean an outbreak of disagreement between two or more actors due to political disagreements, mutual distrust, historical tensions, human/animal rights violations, racial or religious hatred, etc., which can be expressed in different ways as diplomatic restrictions, renegotiation of relations, boycotts, etc. Acting on three levels (country, organization, individual), interstate soft conflict can target a country in general or a specific company in order to punish or try to force a target (country, company) to change undesirable behavior. And in the end in-

terstate soft conflict neither leads to militarized disputes or violent conflicts, nor enforces sanctions or other official institutional act, but can act as a policy tool and have the same negative impact on trade flows as after imposition of tariffs, embargoes or sanctions. More detailed information on interstate soft conflict can be found in subsection 2.2.3.

There is a growing body of literature studying how conflicts affect international trade (discussed in subsection 2.2.2). The contributions that set our work apart from previous studies is wide.

Foremost, our analysis is related to literature devoted to study the interrelation between trade and high-intensity conflicts [Polachek, 1980], [Pollins, 1989], [Oneal et al., 2003], [McDonald, 2004], [Nitsch and Schumacher, 2004], [Blomberg and Hess, 2006], [Martin et al., 2008], [Glick and Taylor, 2010], [Hegre et al., 2010], [Jacks et al., 2011] etc. Although our analysis is related to this stream of literature, it is different since interstate soft conflicts do not escalate into violent actions. Interstate soft conflict does not cause conflict by itself, but allows different parties to exhibit contradictory, conflicting behavior if each of them tries to act unacceptably. While the causes of interstate soft conflict may be related to the causes of conflict and may precede conflict (if tension escalate enough), it is not always synonymous with conflict and is not always consistent with cooperation.

Secondly, while being linked to the recent literature examining the relationship between low-intensity political conflicts and trade [Davis and Meunier, 2011], [Fuchs and Klann, 2013], [Mityakov et al., 2013] our work is broader. We focus not only on political tensions, but also use those that have originated as a result of various (racial, social, religious, environmental, etc.) factors.

And lastly, since the trade-deteriorating effect of tense relations can operate through consumer behavior, while boycotts triggered by such tensions can be seen as an instrument to punish or change certain behaviors of trading partners or companies, our work is related to literature examining the impact of political conflicts from the perspective of consumer boycotts. Previous literature (i.e. [Vannerson, 2003], [Chavis and Leslie, 2006], [Heilmann, 2016], [Fouka and Voth, 2013], [Clerides et al., 2015] etc. mainly focus on interstate soft conflicts arising from disagreement with a country's activities leading to a protest against that country as a whole and a boycott of the use of any of its goods, while we take a step forward by further considering soft conflicts arising from disagreement with a company activities, leading to a protest against this company and refusal to use a certain product or all products that it produces. In addition, these articles examine the impact of politically motivated consumer boycotts on the sale of specific products, such as wine, automobiles, soft drinks or detergents, while in our baseline model we look for the impact on aggregate trade flows.

In this study, we argue that, like interstate wars or large-scale military conflicts, interstate soft conflicts can worsen trade relations. And since, as far as we know, not enough attention is paid to studying the impact of interstate soft conflicts on bilateral trade, we intend to fill this gap.

Our objective is to assess quantitatively the relationship between interstate soft con-

flicts and bilateral trade flows using balanced panel data with annual observations for 168 countries over 2000-2018 period using a theory-consistent structural gravity framework augmented by a new measure of interstate soft conflict, which comprises 20 cases of outbreaks of interstate disputes (Table 2.1).

Our results show that interstate soft conflicts have a statistically significant and sustained negative impact on bilateral trade regardless of the added control variables (presence of regional trade agreements, different types of sanctions and militarized interstate disputes), different specifications and robustness checks.

The rest of this chapter is structured as follows: Section 3.2 presents theoretical framework of the structural gravity model. Section 3.3 introduces the empirical strategy employed in the paper, discusses the data and presents the estimation results. Section 3.4 concludes.

3.2 Theoretical background: the structural gravity model of trade

Basic gravity model, in analogy with the Newton's law of universal gravitation,[1] explaining the relationship between bilateral trade flows, economic size of two countries, and geographic distance, is easy to interpret: the larger is the size of economies and the smaller is the distance between them, the stronger is their trade relations [Tinbergen, 1962]. Since the intuitive gravity model was not theoretically grounded, its early empirical application was heavily criticized until [Anderson, 1979] derived the first theoretical micro-economic foundation for the empirical gravity equation[2] and introduced so-called "structural" form of the gravity model, which was further upgraded by [Anderson and Van Wincoop, 2003]. Through steps of transformation (see Appendix (C)), Equation (3.1) represent structural definition of gravity.

$$X_{ij,t} \quad = \quad \frac{Y_{i,t}E_{j,t}}{Y_w} \left(\frac{t_{ij,t}}{\Pi_{i,t}P_{j,t}} \right)^{1-\sigma} \tag{3.1}$$

Here, at each point of time t, $X_{ij,t}$ is the trade flows from exporter i to importer j; $Y_{i,t}$ is the value of total production in exporter country; $E_{j,t}$ is the value of total expenditure in importer country and Y_w is the value of world output. $t_{ij,t}$ is bilateral trade costs, which is normally proxied by observable determinants of trade flows commonly used in the literature like distance, common language or shared border, but also by trade barriers or conflicts; key structural terms $\Pi_{i,t}$ outward and $P_{j,t}$ inward multilateral resistance variables, reflecting the average openness to trade of each trading partner; $\sigma > 1$ is the elasticity of substitution between all goods from different countries.

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[1] The Newton's Law of Universal Gravitation from 1687 states that the mass of an object causes a force of attraction which diminishes with increasing distance; this force is called gravity.

[2] Other early gravity theories include: [Krugman, 1979], [Krugman, 1980], [Bergstrand, 1985], [Bergstrand, 1989], [Bergstrand, 1990], [Helpman and Krugman, 1985], [Deardorff, 1998]. Gravity model has been derived from many alternative theoretical foundations, for an overview of the theoretical gravity literature see: [Anderson, 2011].

The structural gravity model of [Anderson and Van Wincoop, 2003], expressed by equation (3.1), shows how the market clearing conditions can be used to explain the relationship between bilateral trade flows, market size and trade frictions: bilateral trade costs and aggregated measures of the bilateral trade frictions for each importer and exporter, so-called outward and inward multilateral resistance terms (MRTs), interpreted as the relative trade costs to all other countries.

MRTs introduce relative price terms into the gravity equation in the form of relative price and are a key factors in transforming the results of partial equilibrium between two countries into general equilibrium effects for trade.[3] These variables include third country effects to the estimation. When relative prices in a third country change, this affects the relative prices of bilateral trading partners. An estimation that does not take into account this kind of information is considered as theoretically biased[Anderson and Van Wincoop, 2004].

3.3 Empirical analysis

3.3.1 Methodology

In order to estimate the impact of interstate soft conflicts on bilateral trade flows and to obtain partial equilibrium estimates, we employ a theoretically grounded gravity model that corresponds to the structural gravity equation (3.1) and reflects all proposed recommendations for proper estimation.[4] Following this theory-consistent framework, our econometric gravity model is:

$$X_{ij,t} = exp[\beta_1 SOFTconflict_{ij,t} + \beta_2 GRAV_{ij} + y_{i,t} + e_{j,t} + \mu_{ij}] + \epsilon_{ij} \qquad (3.2)$$

To capture bilateral relationships between countries, we use both time-invariant and time-varying factors. As defined above, $X_{ij,t}$ denotes nominal trade flows from exporter i to importer j at time t in thousand USD. $SOFTconflict_{ij,t}$ is an indicator variable that takes the main place in our analysis, which equals one if there is an outbreak of interstate soft conflict between partner countries at time t and zero otherwise. To study the impact of interstate soft conflicts across various targets the variable is coded in three different ways. First $SOFTconflict_{ij,t}$ is constructed as a single indicator variable that equals one if there is any type of interstate soft conflict between partner countries at time t and zero otherwise. Second includes only indirect interstate soft conflicts in an indicator variable $INDIRECT_{ij,t}$ and third - only direct interstate soft conflicts in an indicator variable $DIRECT_{ij,t}$.

To proxy unobservable bilateral trade costs $t_{ij,t}$ formulated in the structural gravity equation (3.1), besides our measure of soft conflicts we use series of observable variables that determine trade costs. $GRAV_{ij}$ is a vector of observable variables,

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[3]See [Larch and Yotov, 2016] for details and analysis of the MRTs, their importance in the structural gravity system and their relevance for general equilibrium analysis.

[4]For studies of the empirical gravity literature offering information on data, econometric challenges and solutions with gravity estimations, see: [Baldwin and Taglioni, 2006], [Silva and Tenreyro, 2006], [Head and Mayer, 2014], [Piermartini and Yotov, 2016]

that includes all standard time-invariant country-specific dyadic gravity covariates like logarithm of weighted bilateral distance and indicator variables capturing the presence of contiguous borders, common language and colonial ties.

Following the [Baldwin and Taglioni, 2006] guidelines, in our specification we include full set of fixed effects commonly used in the economic literature to get reliable results. $y_{i,t}$ denotes the vector of exporter-time fixed effect, which will control for the unobservable outward (MRTs). $e_{j,t}$ denotes the vector of importer-time fixed effect, which will control for the unobservable inward MRTs. Moreover both sets of time-varying exporter and importer-country dummies absorb the size variables: exporter's value of output - $Y_{i,t}$ and importer's expenditure - $E_{j,t}$ along with any other observable and unobservable exporter and importer specific time-varying factors that may affect bilateral trade. μ_{ij} is a vector of country-pair fixed effects which absorb all time-invariant observable and unobservable determinants of trade costs and as demonstrated by [Baier and Bergstrand, 2007] absorb linkages between the potentially endogenous trade policy variables and our last error term ϵ_{ij}, clustered at the country-pair level.

As additional control variables of bilateral relationship between the country of origin and destination, we use such indicator variables as: $RTA_{ij,t}$ for presence of regional trade agreements (RTAs), $SANCT_{ij,t}$ for different types of economic sanctions: arms, military assistance, trade, financial, travel and other sanctions and $MID_{ij,t}$ for militarized interstate disputes (MIDs) coded into display of force, use of force and war.

Appendix (D) presents complete list of all the variables employed in the analysis along with their definitions and sources.

Taking into consideration the multiplicative form of the structural gravity equation (3.1) our baseline model could be presented in log-linear form with and additive error term, however following [Silva and Tenreyro, 2006], all our regressors enter exponentially to avoid inconsistency. Based on the fact that trade flows mainly reveal correlation between covariates and the error term (heteroscedasticity), their study suggests using Poisson pseudo-maximum likelihood (PPML) estimator instead of applying the standard log-linear OLS approach, under assumption that variance of the error term is constant across observations (homoskedasticity). In addition to this, the PPML estimator treats all missing trade flows as zeros and assumes that there are statistical zeros, i.e. that the zeros occur randomly [Head and Mayer, 2014], thus allowing to use the information contained in zero trade flows that would otherwise be excluded from the estimation if the OLS estimator is used, creating a selection bias problem.[5]

To estimate our model and select the most appropriate estimator we follow the [Silva and Tenreyro, 2006] and [Head and Mayer, 2014] econometric approach. First we employ various panel data estimation techniques such as OLS and Pseudo-Maximum Likelihood estimators like Poisson (PPML) and Gamma (GPML) to demonstrate the robustness of our approach and then we compare the findings, since there exists no

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[5]In the trade data we observe zero and missing trade flows which can occur either because two countries do not trade with each other or because trade flows are not correctly reporter and thus are missing.

econometric estimator that strictly dominates all the others. Although according to [Weidner and Zylkin, 2019] the use of GPML estimator with a three-way gravity specification with exporter-time, importer-time and country-pair FEs is considered as inconsistent, and in fact, PPML is the only estimator that can give consistent estimates of the specification that we are trying to estimate without imposing strong assumptions on the variance of the error term. GPML would be consistent if we could safely assume that the conditional variance is proportional to the square of the conditional mean, but in that case, we should just use OLS instead, because it would be more efficient.

3.3.2 Data

The sample used for the empirical analysis combines data from different sources for the period 2000-2018. Balanced database aggregates all information by country-pair and year. Appendix (E) provides a complete list of countries used in the analysis.

Aggregated (country-level) bilateral export flows data (in thousands of current US$) is obtained from the World Integrated Trade Solution (WITS) software, which provides trade statistics from the United Nations Commodity Trade Statistics database (UN COMTRADE).

Domestic trade data is extracted from International Trade and Production Database for Estimation (ITPD-E) [Borchert et al., 2021], where domestic trade flows are constructed as the difference between gross production and total exports.

Data for the variable of interest is based on media reports and online journals, scholarly articles and working papers, books and other websites mentioning the words: boycott, tension, dispute, conflict in their texts and/or in the headlines. Appendix (A) offers review of each case used in our estimation.

All standard time-invariant dyadic gravity variables like bilateral distance, contiguity, common language and colonial ties are from the Centre d'Études Prospectives et d'Informations Internationales (CEPII) dyadic GeoDist data [Mayer and Zignago, 2011].

As mentioned above, apart from standard gravity variables, we use time-varying control variables like RTAs, economic sanctions and MIDs.

Data on RTAs is retrieved from Mario Larch's Regional Trade Agreements Database [Egger and Larch, 2008].

The information on bilateral sanctions covering trade, financial activity, arms, military assistance, travel and other sanctions is from The Global Sanctions Database (GSDB) [Felbermayr et al., 2020].

Data on militarized interstate conflicts stems from MIDs dyadic database, compiled by the Correlates of War Project [Maoz et al., 2019]. By keeping the data only for outbreaks of disputes (most conflicts tend to last for many years, which is beyond the scope of our analysis) and dropping duplicated observations, MIDs sample covers interstate armed conflicts coded into display of force, use of force and war.

3.3.3 Estimation results

Selection of the estimator

We begin our analysis with the most commonly used log-linearized OLS estimation considered as a starting point for other estimators. This omits about 40% of the sample. Estimation results reported in Column (1) of Table (3.1) show that model fits the data well, explaining about 65% of the variation in bilateral trade flows. All traditional gravity covariates are statistically significant and have the expected signs. While estimated coefficients of traditional gravity variables are intuitive, highlighting that trade increases with the size of economy and when countries are sharing the border, speak the common language or have ever been in colonial relationship and decreases with the distance - our variable of interest, is significant but has no intended sign. We expect β_1 to be negative, to support hypothesis that interstate soft conflicts reduce bilateral trade.

Table 3.1: Estimation results

	(1) OLSnoFEs	(2) OLS	(3) OLSFEs	(4) PPMLnoFEs	(5) PPML	(6) PPMLFEs
SOFTconflict	0.313	-0.409	-0.217	0.551	-0.261	-0.098
	(0.151)**	(0.140)***	(0.065)***	(0.093)***	(0.097)***	(0.015)***
(Log) distance	-1.277	-1.827		-0.361	-0.904	
	(0.017)***	(0.020)***		(0.041)***	(0.029)***	
Contiguity	1.495	0.809		0.683	0.443	
	(0.092)***	(0.101)***		(0.123)***	(0.064)***	
Common language	1.149	0.793		0.420	0.196	
	(0.040)***	(0.041)***		(0.093)***	(0.070)***	
Colonial ties	1.068	0.908		0.100	0.075	
	(0.089)***	(0.099)***		(0.102)	(0.098)	
(Log) output	1.153			0.939		
	(0.006)***			(0.023)***		
(Log) expenditure	0.936			0.948		
	(0.006)***			(0.026)***		
N	318489	318489	318489	458415	458415	410404
r2	0.647	0.752	0.899	0.632	0.887	0.995
Exporter-time FEs	No	Yes	Yes	No	Yes	Yes
Importer-time FEs	No	Yes	Yes	No	Yes	Yes
Country-pair FEs	No	No	Yes	No	No	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral trade flows using OLS and PPML estimation methods. All estimates are obtained with balanced panel data for 2000-2018 period. The dependent variable is trade in logs in the first three columns and in levels in all the rest. Columns (1)-(3) use the OLS estimator. Column (1) does not control for the multilateral resistances. Column (2) uses exporter-time and importer-time fixed effects. Column (3) additionally uses country-pair fixed effects. Columns (4)-(6) use the PPML estimator. Column (4) does not control for the multilateral resistances. Column (5) uses exporter-time and importer-time fixed effects. Column (6) uses all fixed effects. Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

The influential works of [Anderson and Van Wincoop, 2003] and [Baldwin and Taglioni, 2006]

highlighting the importance of proper control for MRTs, prompted researchers to move towards fixed effects estimation techniques accounting for MRTs to obtain reliable estimates.

After adding the exporter-time and importer-time FEs, that absorb all observable and unobservable time-varying country-specific determinants of trade and properly treats multilateral resistance, the fit of estimated equation improves and the coefficient of soft conflict dummy variable becomes significant and negative, as expected. Estimate on the effect of bilateral distance is larger, while for the rest of variables is smaller, which means that due to the omission of MRTs, interpreted as 'Gold Medal Mistake' by [Baldwin and Taglioni, 2006], Column (1) may contain biased and inconsistent estimates.

Additional inclusion of country-pair FEs, that absorb all observable and unobservable time-invariant bilateral determinants of trade costs and controls for potential endogeneity concerns, improves the fit of estimated equation and lowers the standard error and produces negative, statistically significant result in Column (3) for our main variable of interest.

To a large extent, results obtained using the log-linearized equation estimated by OLS method with or without FEs is not encouraging despite the fact that coefficient of the variable of interest is negative and highly significant after adoption of FEs in Columns (2) and (3). In the absence of any doubt, we apply the recommended PPML estimation method, where the dependent variable is represented in levels instead of logs as in OLS.

PPML estimates for all traditional gravity covariates reported in Column (4) reveal significant differences compared to OLS estimation results. The magnitude of coefficients is much lower, therefore they are closer to the values shown in Table (5) of [Silva and Tenreyro, 2006] and in Table (7) of [Head and Mayer, 2014], although the samples used are different. However, as with the OLS in Column (1), coefficient for the variable of interest is positive and becomes negative only after accounting for MRTs with an appropriate set of FEs in Column (5), re-emphasizing the importance of proper control for MRTs.

After inclusion of country-pair fixed effects, coefficient for the soft conflict variable tabulated in Column (6) changed considerably. We obtain negative and highly significant result, almost twice lower in magnitude in comparison to coefficient estimated only with country and time specific fixed effects and with much lower standard error.

Although [Silva and Tenreyro, 2006] state that PPML is the best substitute for the standard linear OLS estimator for the multiplicative gravity model, they also take GPML into account. While [Head and Mayer, 2014] suggest that "rather than selecting the Poisson PML as the single "workhorse" estimator of gravity equations, it should be used as part of a robustness-exploring ensemble that also includes OLS and Gamma PML"[p. 17]. Although we applied the GPML estimator for our dataset, we were unable to achieve convergence. This can be caused by lots of zeroes in our sample. [Correia et al., 2019b] recommend to be careful when using GPML estimator in this case, as there is no straightforward way to detect or resolve separation

issues in the GPML model. However, a more important consideration here is the use of GPML estimator with a three-way gravity specification with the full set of FEs, since, according to [Weidner and Zylkin, 2019] it tends to be inconsistent and PPML is the only estimator that can give consistent estimates to such a specification without imposing strong assumptions on the variance of the error term.

The evidence so far suggests that the PPML estimation method is more appropriate for our dataset. Thus, we will rely on PPML estimator with exporter-time, importer-time and country-pair FEs for further analysis. It is estimated in Stata using the command "ppmlhdfe" [Correia et al., 2019a].

Baseline results

Our baseline estimates of the effect of interstate soft conflicts on bilateral trade flows across various targets are reported in Table (3.2). Estimated result for our main variable of interest that captures the impact of outbreaks of both indirect and direct type of interstate soft conflicts between partner countries is tabulated in Column (1). The result implies that, on average, interstate soft conflicts reduce bilateral trade flows by about 9.34% (that is $[e^{-0.098} - 1] * 100$). The separation of indirect and direct cases of interstate soft conflicts shows that tensions against the country in general due to its unacceptable actions have a greater effect. Estimated results presented in Column (2) suggests that, indirect type of soft conflicts reduce bilateral trade flows by about 11.22% on average, while direct types reduce bilateral trade flows by about 6.67% in Column (3).

Table 3.2: Baseline results

	(1)	(2)	(3)	(4)
SOFTconflict	-0.098			
	(0.015)***			
INDIRECT		-0.119		-0.118
		(0.018)***		(0.018)***
DIRECT			-0.069	-0.066
			(0.024)***	(0.025)***
N	410404	410404	410404	410404
r2	0.995	0.995	0.995	0.995
Exporter-time FEs	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral trade flows, across various targets, using PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data for 2000-2018 period. The dependent variable is trade in levels. Column (1) covers all obtained interstate soft conflict cases. Column (2) considers only indirect cases. Column (3) includes only direct cases. Column (4) includes indirect and direct cases. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

The estimation results indicate that the interstate soft conflict have an immediate negative impact on bilateral trade flows. However it is possible that such tensions

can affect country's trade flows not only immediately, but also for a longer time period.

Moreover, it is argued that conflicts can be a reaction to changes in trade flows, that is, countries that have close trade relations with their larger trading partners are less likely to enter into conflict. To reduce the reverse causality issue between bilateral trade and interstate soft conflicts, we introduce lagged interstate soft conflict variable. Thus, we will test the impact of interstate soft conflicts in the last year and are more likely to demonstrate the impact of interstate soft conflicts on trade flows than vice versa.

The results presented in Table (3.3) prove that interstate soft conflicts can negatively affect bilateral trade flows for a longer time period. The interstate soft conflict from the last year can decrease bilateral trade flows by about 11.84%, and the result is highly significant at 1% level in Column (1). The estimated results do not differ significantly from the results given in table (3.2), the only difference is in the higher magnitude of the coefficients.

Table 3.3: Baseline results

	(1)	(2)	(3)	(4)
L.SOFTconflict	-0.126			
	(0.020)***			
L.INDIRECT		-0.160		-0.159
		(0.021)***		(0.021)***
L.DIRECT			-0.069	-0.065
			(0.032)**	(0.032)**
N	390412	390412	390412	390412
r2	0.993	0.993	0.993	0.993
Exporter-time FEs	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral trade flows, across various targets, using PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data for 2000-2018 period. The dependent variable is trade in levels. Column (1) covers all obtained interstate soft conflict cases from the last year. Column (2) considers only indirect cases from the last year. Column (3) includes only direct cases from the last year. Column (4) includes indirect and direct cases from the last year. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Since it is rather difficult to achieve an immediate downturn in trade after the emergence of soft conflict, and in general it takes time to get the effect, from now on we will use the lagged version of our interstate soft conflict variable.

Inclusion of domestic trade flows

Meanwhile before moving on to robustness checks, following the recommendations of [Piermartini and Yotov, 2016], [Yotov et al., 2021] regarding the inclusion of intra-

national trade data in structural gravity estimations, we additionally take into account domestic trade flows for theoretically consistent estimation.

Although domestic trade flows are featured in all theoretical gravity models, this has been avoided in the empirical literature due to data limitations and insufficient coverage compared to bilateral trade flows.

To fill this gap, we use the newly available International Trade and Production Database for Estimation (ITPD-E)[6] by [Borchert et al., 2021], which contains consistent data on bilateral and domestic trade flows suitable for estimation. The ITPD-E covers 243 countries, 170 industries and 17 years from 2000 to 2016. Domestic trade flows are constructed as the difference between gross production and total exports.

For empirical analysis, we construct two balanced panel datasets, one of which only covers observations of bilateral trade, and the other additionally includes observations of internal trade from the ITPD-E database for 168 country pairs over the period 2000-2016.

We re-estimate our baseline gravity specification by applying the PPML estimator with full set of FEs to smaller sample (2000-2016), first with international trade only, and then adding domestic trade data.

Table 3.4: Estimation results

	(1)	(2)	(3)	(4)
	Bilateral trade flows		Bilateral+Domestic trade flows	
	2000-2016		2000-2016	
SOFTconflict	-0.074		-0.073	
	(0.020)***		(0.019)***	
L.SOFTconflict		-0.106		-0.104
		(0.023)***		(0.022)***
N	365150	345201	389135	364864
r2	0.994	0.994	0.994	0.994
Exporter-time FEs	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes
Domestic trade	No	No	Yes	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral and domestic trade flows, using PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data for 2000-2016 period. The dependent variable is trade in levels. Column (1) and Column (2) use data on bilateral trade flows only. Column (3) and Column (4) adds domestic trade observations. Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

As reported in Column (3) of Table (3.4), the estimate of the interstate soft conflicts based on the sample with international and domestic trade are statistically not different from the corresponding estimated parameters based on the sample with bilateral trade only presented in Column (1) of Table (3.4). Coefficients for variable of

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[6]https://www.usitc.gov/data/gravity/itpde_guide/

interest in both cases are negative and highly significant. The impact of soft tensions is only slightly larger (by almost 0.1%) for a specification that takes into account only bilateral trade data, suggesting that, all else equal, soft conflicts lead to an average reduction in bilateral trade of about 7.13% while the inclusion of domestic trade data leads to an average reduction in bilateral trade of about 7.04%.

The same situation appears when using the lagged variable of interstate soft conflict. Coefficients for the variable of interest in both cases (with and without domestic trade flows) are negative and highly significant. Column (2) of Table (3.4) suggests that the impact of interstate soft conflicts in the last year could lead to a reduction in trade between countries by about 10.06% for a specification that takes into account only bilateral trade data, and by about 9.88% including both international and domestic trade flows.

Due to the fact that our estimates in both cases (with and without domestic trade flows) are almost similar, and our baseline dataset with only bilateral trade covers a longer time interval (2000-2018), not excluding our cases of soft conflicts, and since estimations performed using only bilateral trade flows can provide reliable results, we will not consider internal trade flows in the following analysis.

Robustness checks

Because of the rich structure of FEs, we can only get results for time-varying two-tailed variables. Thus to further test the reliability of our estimates, we employ time-varying control variables like RTAs, different types of sanctions and MIDs.

To perform a robustness checks for each type of interstate soft conflicts, we include our control variables one by one, due to the limited data availability on our control variables. In case of RTAs we run the estimation on full sample, but to control for sanctions and militarized interstate disputes we restrict our sample for 2000-2016 and 2000-2010 periods respectively. As we restrict our sample to robustness tests, in addition we repeat our baseline estimation including RTAs indicator variable for the specific sub-samples.

Estimated result for our main variable of interest that captures the impact of outbreaks of both indirect and direct type of interstate soft conflicts between partner countries is tabulated in Table (3.4). Regardless of the added control variables and sample size, the coefficient of interstate soft conflicts variable remains negative and significant in all cases. Similarly to the overall effect of interstate soft conflicts, independent of the added control variables and size of the sample, the coefficient of indirect soft conflict variable is stable and remains negative and significant in all cases in Table (3.5). In case of direct soft conflicts, although the coefficient remains negative in all cases, statistical significance disappears after restricting the sample in Table (3.6), what can be explained by the fact that the most prominent cases occurred after 2016.

This findings suggest that interstate soft conflicts do not operate through an increase of sanctions or militarized disputes. Our estimates are robust and interstate soft conflicts have negative and significant impact on bilateral trade. Estimates of specific

Table 3.5: Robustness checks - interstate soft conflicts

	(1)	(2)	(3)	(4)	(5)
	RTAs	SOFT	Sanctions	SOFT	MIDs
	2000-2018	2000-2016		2000-2010	
L.SOFTconflict	-0.124	-0.105	-0.105	-0.093	-0.094
	(0.020)***	(0.023)***	(0.023)***	(0.022)***	(0.022)***
RTA	0.104	0.089	0.089	0.074	0.076
	(0.023)***	(0.025)***	(0.025)***	(0.026)***	(0.026)***
ARMS_sanction			-0.084		0.115
			(0.075)		(0.080)
MILITARY_sanction			0.034		0.007
			(0.046)		(0.028)
TRADE_sanction			-0.169		-0.075
			(0.082)**		(0.151)
FINANCIAL_sanction			0.082		0.185
			(0.071)		(0.138)
TRAVEL_sanction			0.246		0.065
			(0.173)		(0.111)
OTHER_sanction			-0.034		-0.025
			(0.098)		(0.081)
DISPLAY of force					-0.029
					(0.014)**
USE of force					-0.017
					(0.033)
Interstate WAR					0.169
					(0.365)
N	390412	345201	345201	203805	203805
r2	0.993	0.993	0.994	0.995	0.995
Exporter-time FEs	Yes	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes	Yes

This table reports estimates of the effects of interstate soft conflicts on bilateral trade flows and robustness checks by including additional control variables to the baseline model. All estimates are obtained with balanced panel data for different periods due to data availability using PPML estimator and exporter-time, importer-time and country-pair FEs. The dependent variable is trade in levels. Column (1) controls for RTAs. Column (2) repeats baseline estimation for 2000-2016 sub-sample. Column (3) controls for different types of sanctions. Column (4) repeats baseline estimation for 2000-2010 sub-sample. Column (5) additionally uses MIDs. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table 3.6: Robustness checks - indirect interstate soft conflicts

	(1)	(2)	(3)	(4)	(5)
	RTAs	SOFT	Sanctions	SOFT	MIDs
	2000-2018	2000-2016		2000-2010	
L.INDIRECT	-0.156	-0.131	-0.131	-0.148	-0.149
	(0.021)***	(0.025)***	(0.025)***	(0.025)***	(0.026)***
RTA	0.104	0.089	0.089	0.074	0.076
	(0.023)***	(0.025)***	(0.025)***	(0.026)***	(0.026)***
ARMS_sanction			-0.083		0.116
			(0.075)		(0.080)
MILITARY_sanction			0.033		0.006
			(0.046)		(0.029)
TRADE_sanction			-0.168		-0.077
			(0.082)**		(0.150)
FINANCIAL_sanction			0.082		0.186
			(0.071)		(0.138)
TRAVEL_sanction			0.247		0.065
			(0.173)		(0.111)
OTHER_sanction			-0.034		-0.026
			(0.099)		(0.081)
DISPLAY of force					-0.029
					(0.014)**
USE of force					-0.017
					(0.033)
Interstate WAR					0.201
					(0.359)
N	390412	345201	345201	203805	203805
r2	0.993	0.993	0.994	0.995	0.995
Exporter-time FEs	Yes	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes	Yes

This table reports estimates of the effects of indirect type of interstate soft conflicts on bilateral trade flows and robustness checks by including additional control variables to the modified version of the baseline model. All estimates are obtained with balanced panel data for different periods due to data availability using PPML estimator and exporter-time, importer-time and country-pair FEs. The dependent variable is trade in levels. Column (1) controls for RTAs. Column (2) repeats baseline estimation for 2000-2016 sub-sample. Column (3) controls for different types of sanctions. Column (4) repeats baseline estimation for 2000-2010 sub-sample. Column (5) additionally uses MIDs. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table 3.7: Robustness checks - direct interstate soft conflicts

	(1) RTAs 2000-2018	(2) SOFT	(3) Sanctions	(4) SOFT	(5) MIDs
		2000-2016		2000-2010	
L.DIRECT	-0.070	-0.040	-0.043	-0.060	-0.060
	(0.032)**	(0.040)	(0.041)	(0.030)*	(0.030)**
RTA	0.105	0.089	0.089	0.074	0.076
	(0.023)***	(0.025)***	(0.025)***	(0.026)***	(0.026)***
ARMS_sanction			-0.083		0.115
			(0.075)		(0.080)
MILITARY_sanction			0.035		0.006
			(0.046)		(0.028)
TRADE_sanction			-0.169		-0.072
			(0.082)**		(0.152)
FINANCIAL_sanction			0.081		0.184
			(0.072)		(0.139)
TRAVEL_sanction			0.245		0.066
			(0.172)		(0.112)
OTHER_sanction			-0.033		-0.023
			(0.098)		(0.082)
DISPLAY of Force					-0.029
					(0.014)**
USE of Force					-0.018
					(0.033)
Interstate WAR					0.113
					(0.377)
N	390412	345201	345201	203805	203805
r2	0.993	0.993	0.994	0.995	0.995
Exporter-time FEs	Yes	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes	Yes

This table reports estimates of the effects of indirect type of interstate soft conflicts on bilateral trade flows and robustness checks by including additional control variables to the modified version of the baseline model. All estimates are obtained with balanced panel data for different periods due to data availability using PPML estimator and exporter-time, importer-time and country-pair FEs. The dependent variable is trade in levels. Column (1) controls for RTAs. Column (2) repeats baseline estimation for 2000-2016 sub-sample. Column (3) controls for different types of sanctions. Column (4) repeats baseline estimation for 2000-2010 sub-sample. Column (5) additionally uses MIDs. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

types of soft conflicts yields plausible results. Depending on whether interstate soft conflicts lead to indirect or direct tensions, we find that, results appear to be mainly driven by indirect type of soft conflicts even after robustness checks.

However to be sure that we are not capturing the effect of sanctions in our interstate soft conflict estimate in Column (3) of Table (3.4), we perform further robustness checks. After including all the sanctions imposed between two countries for a year in our baseline specification, the coefficient of the interstate soft conflict variable presented in Column (1) of Table (3.7) remains almost at the same level. Furthermore, in order to see what happens after excluding the pair of countries being affected by any type of sanctions across all the period we obtain result proving that the impact of interstate soft conflicts is not driven by the effect of sanctions Column (2) of Table (3.7). Repeating the same for militarized interstate disputes, we can conclude that interstate soft conflicts do not operate neither through an increase of sanctions nor militarized disputes. In addition to overcome the suspicion that our estimation results are affected by the China effect, we exclude China from our baseline specification as an exporter, importer, and both. The results presented in Table (3.7) proves that our estimated coefficient is independent of China effect.

Table 3.8: Robustness checks - sanctions / MIDs / China effect

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	includes	excludes	includes	excludes	excludes China as:		
	All sanctions		All MIDs		exporter	importer	exp & imp
L.SOFTconflict	-0.126	-0.125	-0.118	-0.096	-0.117	-0.119	-0.096
	(0.020)***	(0.023)***	(0.018)***	(0.025)***	(0.028)***	(0.020)***	(0.025)***
ALL_sanctions	0.020						
	(0.025)						
ALL_MIDs			0.065				
			(0.025)				
N	390412	341868	390412	386487	387406	387816	384810
r2	0.993	0.993	0.993	0.993	0.993	0.993	0.993
Exporter-time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral trade flows using PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data for 2000-2018 period. The dependent variable is trade in levels. Column (1) controls weather there was an impact of sanction between two countries in the year. Column (2) excludes the pair of countries affected by any type of sanctions across all the period. Column (3) controls weather there was an impact of MIDs between two countries in the year. Column (4) excludes the pair of countries affected by any type of MIDs across all the period. Column (5) excludes China as an exporter. Column (6) excludes China as an importer. Column (7) excludes China as an exporter and an importer. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Since our dataset includes the period of the global financial crisis, in order to exclude the possibility of capturing the effect of the financial crisis we restrict our sample in three different ways. First we restrict the full sample for 2000-2008 period, thus including starting year of the crisis into the estimation, second we restrict the sample for 2009-2018 period, what controls for the following years of the crisis and last we drop 2008, 2009 and 2010 year from the full sample. Obtaining similar results in

Column (1) and Column (2) of Table (3.8) states that crisis had no effect on interstate soft conflicts, what is further proved in Column (3) where 2008, 2009 and 2010 years were not considered in the estimation.

Table 3.9: Robustness checks - financial crisis

	(1) 2000-2008	(2) 2009-2018	(3) excludes 2008-9-10 years
L.SOFTconflict	-0.090	-0.076	-0.122
	(0.019)***	(0.018)***	(0.019)***
N	157185	213842	296422
r2	0.996	0.995	0.993
Exporter-time FEs	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral trade flows using PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data. The dependent variable is trade in levels. Column (1) covers 2000-2008 sub-sample. Column (2) Column covers 2009-2018 sub-sample. (3) excludes 2008, 2009 and 2010 years from the full sample. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

While being interested in the timing of the effect of interstate soft conflicts we assess our baseline model using lagged effects of the interstate soft conflict variable (up to 5 years). By doing so, we can test the impact of soft conflicts over time. The results reported in the Table (3.9) show that the effect of interstate soft conflicts disappears in 5 year period. Thus interstate soft conflicts can negatively affect bilateral trade flows for a longer time period.

Column (1) concludes that if there was a soft conflict last year, the effect is even greater in comparison to the impact obtained in the current year, and this makes sense since the conflict could have arisen in the middle of the year. So interstate soft conflict from the last year can decrease bilateral trade flows by about 11.84%, and the result is highly significant at 1% level. While if a soft conflict appeared two years ago, then the effect become smaller and for the fourth year it loses its significance.

To further check robustness of our results we add to our baseline specification, lag of the bilateral trade variable to control for initial trade, and then we interact this lag with the interstate soft conflict variable. Estimation results presented in Table (3.10) Columns (1-2) show that interstate soft conflicts continue to have a statistically significant and robust negative impact on bilateral trade flows in both cases.

And lastly, we control for distance in preferences. We introduce Linder variable into our baseline specification, which is expressed as an absolute difference between the two countries' GDP's per capita.

$$Linder = |GDP_{pc}^j - GDP_{pc}^i| \qquad (3.3)$$

According to Linder's hypothesis, the distance in GDP per capita can be used to measure the similarity of tastes, the more the similarity of the economic structures

Table 3.10: Robustness checks - lagged variables

	(1)	(2)	(3)	(4)	(5)
L.SOFTconflict	-0.126				
	(0.020)***				
L2.SOFTconflict		-0.080			
		(0.021)***			
L3.SOFTconflict			-0.069		
			(0.022)***		
L4.SOFTconflict				-0.035	
				(0.024)	
L5.SOFTconflict					-0.023
					(0.030)
N	390412	369541	347659	325605	303450
r2	0.995	0.995	0.995	0.995	0.995
Exporter-time FEs	Yes	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral trade flows using PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data. The dependent variable is trade in levels. Columns (1-5) allows for phasing in effects of interstate soft conflicts using various lags (up to 5 years). All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

of countries (smaller Linder variables), the higher the likelihood of their mutual trade [Linder, 1961].

In our estimation results Table (3.10) Column (3), the coefficient of the Linder variable is negative as predicted by the Linder hypothesis, but the size of the coefficient equals zero and is statistically not different from zero, indicating that countries do not prefer to trade with countries with a similar level of economic development and preference structures or tastes.

In addition, we include logarithm of the Linder variable Table (3.10) Column (4). The coefficient of the Linder variable turned out to be positive, highlighting that there are large differences between the characteristics of demand in countries, therefore, the validity of the Linder hypothesis cannot not be confirmed in our case.

Overall the results suggest that interstate soft conflicts have a statistically significant and robust negative impact on bilateral trade flows across different specifications.

Product level analysis

Having found an aggregate impact of interstate soft conflicts on bilateral trade flows it is interesting to test whether there is an impact across product categories. To do

Table 3.11: Robustness checks - initial trade / distance in preferences

	(1)	(2)	(3)	(4)
	Initial trade		Distance in preferences	
L.SOFTconflict	-0.131	-0.118	-0.126	-0.126
	(0.020)***	(0.029)***	(0.020)***	(0.020)***
L.trade	0.000			
	(0.000)*			
SOFTconflict*L.trade		-0.000		
		(0.000)		
Linder			-0.000	
			(0.000)	
(Log) Linder				0.012
				(0.004)***
N	390412	390412	390412	390382
r2	0.993	0.993	0.993	0.993
Exporter-time FEs	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral trade flows using PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data. The dependent variable is trade in levels. Column (1) introduces lagged dependent variable as a control. Column (2) presents interaction between lag of trade and soft conflicts as a control variable. Column (3) introduces linder variables as a control for distance in preferences. Column (4) brings into logarithm of Linder variable. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

so we employ the structural definition of gravity model[7] using disaggregated (product category-level) bilateral export flows data obtained from the World Integrated Trade Solution (WITS) software, which provides trade statistics from the United Nations Commodity Trade Statistics database (UN COMTRADE). Thus unbalanced database for the 2000-2018 period aggregates the information by country-pair, product type according 2-digit Harmonized System (HS) classification (99 product categories) and year.

Since interstate soft conflicts are not always directed against a specific product or product category and since such disputes can affect more than one product or product categories, we need to use something general. For this reason we employ Revealed

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[7]Nevertheless, the basic definition of gravity only account for aggregated and not for sectoral or product specific trade, structural definition of gravity makes it possible to explain bilateral trade at the sector or product level. Equation presented by [Anderson and Van Wincoop, 2004] delivers familiar sectoral gravity model, similar to equation (3.1). The only difference between the two gravity equations is the addition of a subscript k in the sectoral model.

$$X_{ij,t}^k = \frac{Y_{i,t}^k E_{j,t}^k}{Y_w^k} \left(\frac{t_{ij,t}^k}{\Pi_{i,t}^k P_{j,t}^k} \right)^{1-\sigma_k} \tag{3.4}$$

Here, for a given set of country-level production $Y_{i,t}^k$ and expenditure $E_{j,t}^k$ values, k identifies class of sector or product. While bilateral trade costs $t_{ij,t}^k$ and multilateral resistances $Pi_{i,t}^k$ and $P_{j,t}^k$ are sector specific.

Comparative Advantage (RCA) index into our analysis, which is a useful way to analyze a country's comparative advantage, based on its export performance.

We calculate standard Balassa's RCA index by:

$$RCA_{i,t}^k \quad = \quad \frac{X_{i,t}^k/X_{i,t}}{X_{w,t}^k/X_{w,t}} \qquad (3.5)$$

where, $RCA_{i,t}^k$ is a revealed comparative advantage of country i for product k at time t. $X_{i,t}^k$ denotes exports of country i of product k at time t and $X_{i,t}$ - total exports of country i at time t, $X_{w,t}^k$ is total world exports of product k at time t and $X_{w,t}$ is total world exports at time t. When the value of $RCA_{i,t}^k$ is greater than one, the country i has a relative comparative advantage in the export of product k at time t, and vice versa.

In order to test whether the effect of interstate soft conflicts is general or caused by specific product category we use PPML estimator and to eliminate as many contradictory factors as possible to account for the actual trade cost effect, we include exporter-time, importer-time, pair-country and exporter-product, importer-product FEs.

Since we would like to see how interstate soft conflicts affect product categories with comparative advantage, we do not take into account country-product-time FEs that would absorb changes in productivity which are country-product specific and vary over time.

We expect that product categories with comparative advantages (with higher values of RCA) are more likely to be affected by interstate soft conflicts.

Due to the fact that RCA index is asymmetric [Vollrath, 1991] suggests to use the logarithm of RCA as the solution. So we interact our interstate soft conflict variable with the log of RCA index. Estimation results tabulated in Column (1) of Table (3.11) claim that bilateral trade is higher in product categories with a comparative advantage, lower by about 7.9% if interstate soft conflicts appear, and lower by about 6.8% if soft conflicts hit product categories having a comparative advantage.

While being interested in how estimates change depending on the type of interstate soft conflicts, we additionally run estimations for indirect and direct soft conflicts Columns (2-3). In product-level assessments, the indirect type of soft conflicts gives a negative and statistically significant results both in general and product level specific results, while the direct type of soft conflicts has a negative and statistically significant effect on bilateral trade only in general case.

In addition, [Laursen, 2015] suggests to use a symmetric index expressed as:

$$SymmetricRCA_{i,t}^k \quad = \quad \frac{RCA_{i,t}^k - 1}{RCA_{i,t}^k + 1} \qquad (3.6)$$

This index has similar properties to the logarithm solution, but can be defined in the case of zero exports from the sector. So we introduce another continues variable, converting $RCA_{i,t}^k$ into a symmetric version that ranges from -1 to 1 and interact

Table 3.12: Product category level analysis

	(1)	(2)	(3)	(4)	(5)	(6)
	Log RCA			Symmetric RCA		
SOFTconflict	-0.080			-0.088		
	(0.023)***			(0.036)***		
soft*(Log)RCA	-0.071					
	(0.035)**					
(Log) RCA	0.945	0.945	0.945			
	(0.016)***	(0.016)***	(0.016)***			
INDIRECT		-0.095			-0.092	
		(0.020)***			(0.023)***	
indirect*(Log)RCA		-0.051				
		(0.048)*				
DIRECT			-0.076			-0.072
			(0.025)***			(0.025)***
direct*(Log)RCA			0.082			
			(0.027)			
soft*SymmRCA				-0.178		
				(0.084)**		
indirect*SymmRCA					-0.124	
					(0.130)*	
direct*SymmRCA						0.147
						(0.063)
Symmetric RCA				2.334	2.334	2.334
				(0.040)***	(0.040)***	(0.040)***
N	24458297	24458297	24458297	24991545	24991545	24991545
r2	0.969	0.969	0.969	0.969	0.969	0.969
Exporter-time FEs	Yes	Yes	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes	Yes	Yes
Exporter-product FEs	Yes	Yes	Yes	Yes	Yes	Yes
Importer-product FEs	Yes	Yes	Yes	Yes	Yes	Yes

This table reports estimates of the effects of interstate soft conflicts on the disaggregated (product category-level) bilateral flows and robustness checks using continues interaction variables. All estimates are obtained with panel data for 2000-2018 period using PPML estimator with exporter-time, importer-time, country-pair and exporter-product, importer-product FEs. The dependent variable is trade in levels. Column (1) presents estimates of the effects of interstate soft conflicts and their interaction with the Log of RCA. Column (2) presents estimates of the effects of indirect type interstate soft conflicts and their interaction with the Log of RCA. Column (3) presents estimates of the effects of direct type interstate soft conflicts and their interaction with the Log of RCA. Column (4) presents estimates of the effects of interstate soft conflicts and their interaction with the symmetric RCA variable. Column (5) presents estimates of the effects of indirect type interstate soft conflicts and their interaction with the symmetric RCA variable. Column (6) presents estimates of the effects of direct type interstate soft conflicts and their interaction with the symmetric RCA variable. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

it with our interstate soft conflicts variables. Estimation results on the effect of interstate soft conflicts in general presented in Columns (4 to 6) of Table (3.11) are very similar to the results obtained using Log RCA, while the estimates for the effect of interstate soft conflicts across specific product categories are significantly higher

in magnitude.

Ultimately, it can be concluded that the overall impact of interstate soft conflicts on bilateral trade flows, even when analyzed at the disaggregated product category level, is consistently negative and significant, while product categories with comparative advantages (with higher values of RCA) tend to suffer more from interstate soft conflicts as expected.

3.4   Conclusion

This chapter assesses the cost of interstate soft conflicts arising from trade disruption, arguing that interstate soft conflicts can act as a policy tool to punish or try to change certain behavior of trading partners or companies, rather than using military force, sanctions or other official institutional acts.

Using theory-consistent structural gravity model on trade and PPML estimator with exporter-time, importer-time and country-pair FEs we conclude that on average interstate soft conflicts have the potential to reduce trade between countries by about 9.34%. After introducing a lagged variable for interstate soft conflict to test the impact of soft conflicts in the last year, we find that last year's interstate soft conflicts could reduce bilateral trade flows by about 11.84%. Since it is rather difficult to achieve an immediate downturn in trade after the emergence of soft conflict, and in general it takes time to get the effect, in the further analysis we used the lagged version of our interstate soft conflict variable.

Our results show that interstate soft conflicts have a statistically significant and sustained negative impact on bilateral trade regardless of the added control variables (presence of regional trade agreements, different types of sanctions and militarized interstate disputes), different specifications and robustness checks. The impact remains negative not only in the current period, but may also affect trade flows over a longer period of time.

In addition, after reevaluating the model by expanding the sample to include data on domestic trade flows in addition to bilateral trade flows, the estimate of interstate soft conflicts based on a sample of international and domestic trade was not statistically different from the corresponding estimates based on a sample of only bilateral trade, leading to an average reduction in trade of about 7.04% and 7.13% respectfully. The same situation appears when using the lagged variable of interstate soft conflict. Coefficients for the variable of interest in both cases (with and without domestic trade flows) are negative and highly significant, leading to a reduction in trade by about 9.88% and 10.06% respectfully. Therefore, we decided not to consider domestic trade flows in the following analysis, firstly, because our baseline dataset with only bilateral trade covers a longer time interval (2000-2018), not excluding our cases of soft conflicts, and secondly as estimations performed using only bilateral trade flows can provide reliable results.

To test whether the effect of interstate soft conflicts is general or caused by a specific product category we perform product level analysis using the same structural grav-

ity framework and PPML estimator but with different set of FEs: importer-time, exporter-time, pair-country and exporter-product, importer-product.

The results show that bilateral trade is higher in product categories with a comparative advantage, lower if interstate soft conflicts appear, and about twice lower if soft conflicts hit product categories having a comparative advantage, reducing bilateral trade flows by about 4.40% and 9.61%, respectively. Zooming in on the effects of interstate soft conflicts by types, the indirect type of soft conflicts gives a negative and statistically significant result when interacting with RCA indicator variable, while the direct type of soft conflicts has a negative and statistically significant effect on bilateral trade in general.

Our findings support the main message of our study, showing a negative relationship between interstate soft conflicts and bilateral trade, even when analyzed with and without domestic trade flows and at the level of disaggregated product categories, claiming that product categories with comparative advantage (with higher values of RCA) tend to suffer more from interstate soft conflicts. The overall results are consistent and may have policy implications, as it is clear that soft conflicts have damaging and far-reaching economic consequences. Policymakers facing these types of conflicts need to address their root causes and try to mitigate their negative impacts through appropriate policies.

We believe that our analysis reflects the significant progress in the area of measuring trade costs. At the same time, from an applied and policy perspective, there may be scope for future research and additional contributions such as expending analysis to include more cases, analyzing the impact of interstate soft conflicts on trade on a case-by-case basis, or examining the threshold at which interstate soft conflicts start to damage economic relations.

Appendix C

Simplified derivation of the structural gravity model

[Van Bergeijk and Brakman, 2010] presents a six-step simplified derivation of the Anderson and van Wincoop model based on [Baldwin and Taglioni, 2006], who following the theory concept of [Anderson and Van Wincoop, 2003] adjusted it for the possible application to panel data, as their theory was applicable only to cross section data.

Step 1: First, supply and demand equations are formed, which are set to equilibrium, meaning that total supply equals total demand. Thus value of trade flows from country i to j ($p_{ij}x_{ij}$) must equal the expenditure of $j's$ income on goods from country i ($s_{ij}E_j$).

$$p_{ij}x_{ij} \quad = \quad s_{ij}E_j. \tag{C.1}$$

where, x_{ij} is the amount of bilateral exports of a single good from country i to j, p_{ij} is the price of these exports faced by consumers inside the importing nation, s_{ij} is the share of $j's$ expenditure used on goods from country i, E_j is $j's$ total expenditure.

Step 2: Adopting the CES demand function and assuming that all goods are traded, the imported good's share in total expenditure is only related to its relative prices, thus:

$$s_{ij} = \left(\frac{p_{ij}}{P_j}\right)^{1-\sigma}, \text{where } P_j = \left(\sum_{i=1...N} n_i(p_{ij})^{1-\sigma}\right)^{\frac{1}{1-\sigma}} \tag{C.2}$$

is a country $j's$ CES price index; N is the number of countries from which j buys goods; n_i denotes the number varieties produced and exported by a country i and they are summed up over all countries; $\sigma > 1$ is the elasticity of substitution between different varieties, assumed to be symmetric for simplicity (assuming monopolistic competition allows to ignore a variety index).

Step 3: Trade costs are added:

$$p_{ij} = p_i t_{ij}, \qquad (C.3)$$

thus price of country $i's$ goods delivered to country $j's$ consumers is the exporter's supply price of a variety in country i (varieties are still defined symmetrically) with the trade costs (t_{ij}). This assumption implies that in case of frictionless trade $t = 1$. Altered with the monopolistic competition assumption, that every country produces and exports at least slightly different products, prices apart form transportation costs do not necessarily need to be evaluated for each product variety.

Step 4: As the gravity equation describes total bilateral trade flows, it must be aggregated over all varieties. By multiplying expenditure share function $s_{ij}E_j$ by the number of symmetric varieties (n_i) we obtain total bilateral trade flows X_{ij}:

$$X_{ij} = n_i s_{ij} E_j, \text{using equations (4) and (5)} \; X_{ij} = n_i (p_i t_{ij})^{1-\sigma} \frac{E_j}{P_j^{1-\sigma}}. \qquad (C.4)$$

Step 5: Since all goods are traded, total output (e.g. total sales) of country i must be equal to total consumption of $i's$ goods across all countries including itself. To obtain total output Y_i of country i we have to sum up equation (6) as it presents $i's$ sales to each market.

$$Y_i = \sum_{j=1...N} T_{ij}, \qquad (C.5)$$

Relating X_{ij} with (6), the market clearing condition (general equilibrium model) for country i becomes:

$$Y_i = n_i p_i^{1-\sigma} \sum_{j=1...N} \frac{t_{ij}^{1-\sigma} E_j}{P_j^{1-\sigma}}. \qquad (C.6)$$

Solving (8) for $n_i p_i^{1-\sigma}$ we obtain:

$$n_i p_i^{1-\sigma} = \frac{Y_i}{\Pi_i^{1-\sigma}}, \text{where } \Pi_i = \left(\sum_{j=1...N} (t_{ij}^{1-\sigma} \frac{E_j}{P_j^{1-\sigma}}) \right)^{\frac{1}{1-\sigma}}. \qquad (C.7)$$

Step 6: Inserting equation (9) into (6) we obtain final equation (11) similar to [Anderson and Van Wincoop, 2003] with one difference, [Anderson and Van Wincoop, 2003] use income shares for definition of Π_i as well for X_{ij}.

$$X_{ij} = Y_i E_j \left(\frac{t_{ij}}{\Pi_i P_j} \right)^{1-\sigma}. \qquad (C.8)$$

Thus, [Anderson and Van Wincoop, 2003] model which become one of the most applied framework, delivers the following structural gravity system:

$$X_{ij} = \frac{Y_i E_j}{Y_w} \left(\frac{t_{ij}}{\Pi_i P_j} \right)^{1-\sigma}, \tag{C.9}$$

$$\Pi_i^{1-\sigma} = \sum_j \left(\frac{t_{ij}}{P_j} \right)^{1-\sigma} \frac{E_j}{Y_w}, \tag{C.10}$$

$$P_j^{1-\sigma} = \sum_i \left(\frac{t_{ij}}{\Pi_i} \right)^{1-\sigma} \frac{Y_i}{Y_w}. \tag{C.11}$$

where X_{ij} denotes bilateral trade flows (nominal value of exports) from exporter i to importer j; Y_i is the value of total production in exporter i (supply capacity); E_j is the total expenditure in importer j (nominal income of each country, generally proxied by its GDP); Y_w is the value of world output (world nominal income $Y_w = \sum_j Y_j$); t_{ij} is bilateral trade barriers; $\sigma > 1$ is the elasticity of substitution between all goods from different countries; key structural terms Π_i outward and P_j inward multilateral resistance variables which are endogenous price indices, represent exporter's and importer's easy of market access as the function of their average resistance to trade between a country and its trading partners in terms of trade barriers, expressed as equation (13) and (14).

Appendix D

Data description

Variable	Description	Source
Aggregated (country-level) bilateral trade flows		
$X_{ij,t}$	Value of the bilateral export flows from country i to j at time t (thousands of current US$)	United Nations COM-TRADE via WITS `http://wits.worldbank.org` for **2000-2018** period
Domestic trade	Constructed as the difference between gross production and total exports at time t (millions of current US$)	International Trade and Production Database for Estimation `https://www.usitc.gov/data/gravity/itpde_guide/` for **2000-2016** period
SOFTconflict *INDIRECT* *DIRECT*	Indicator variable equal to 1 if: - any type of interstate soft conflict - indirect interstate soft conflict - direct interstate soft conflict occurred between countries i and j at time t	Media reports and online journals, scholarly articles and working papers, books and other websites mentioning the words: boycott, tension, dispute, conflict in their texts and/or in the headlines obtained from keyword search using several search engines Google, Bing, Yahoo, Yandex, Swisscows, OneSearch
(Log) distance *Contiguity* *Common language* *Colonial ties*	Time-invariant gravity variables: - logarithm of weighted distance (pop-wt, km) - Indicator equal to 1 when countries i and j share a common border - Indicator equal to 1 if a language is spoken by at least 9% of the population in countries i and j - Indicator equal to 1 for pairs ever in colonial relationship	Centre d'Études Prospectives et d'Informations Internationales (CEPII) `http://www.cepii.fr`

Variable	Description	Source
RTA	Indicator variable equal to 1 when countries i and j are members of same RTA at time t	Mario Larch's Regional Trade Agreements Database `https://www.ewf.uni-bayreuth.de/en/research/RTA-data/index.html` for **1950-2018** period
$Sanctions$	Vector of indicator variables equal to 1 if arms, military assistance, trade, financial, travel or other sanctions occurred between countries i and j at time t	Global Sanctions Data Base (GSDB) `https://www.globalsanctionsdatabase.com/` for **1950-2016** period
$MIDs$	Vector of indicator variables equal to 1 if display of force, use of force or war occurred between countries i and j at time t	Correlates of War Project `http://cow.dss.ucdavis.edu/data-sets/MIDs` for **1816-2010** period
Disaggregated (product category-level) bilateral trade flows		
$X_{ij,t}^k$	- Value of the bilateral export flows at the 2-digit HS level (1996 version) from country i to j at time t (thousands of current US$)	United Nations COM-TRADE via WITS `http://wits.worldbank.org` for **2000-2018** period
$(log)RCA$	Logarithm of Balassa revealed comparative advantage Index $RCA_{i,t}^k$	Index is defined as the ratio of the export of a specific product of a country to its total export volume, divided by the world share of the same product in total world export.
$soft*(log)RCA$ $indirect*(log)RCA$ $direct*(log)RCA$	Continuous interaction variable between: - any type of interstate soft conflict and Log of $RCA_{i,t}^k$ - indirect intestate soft conflict and Log of $RCA_{i,t}^k$ - direct intestate soft conflict and Log of $RCA_{i,t}^k$	
$SymmetricRCA$	Symmetric $RCA_{i,t}^k$ index that ranges from -1 to 1	
$soft*symmRCA$ $indirect*symmRCA$ $direct*symmRCA$	Continuous interaction variable between: - any type of interstate soft conflict and symmetric $RCA_{i,t}^k$ - indirect intestate soft conflict and symmetric $RCA_{i,t}^k$ - direct intestate soft conflict and symmetric $RCA_{i,t}^k$	

Appendix E

List of countries

Afghanistan	Germany	Kyrgyzstan	Papua New Guinea
Angola	Djibouti	Cambodia	Poland
Albania	Dominica	Korea, Dem. Rep.	Portugal
Andorra	Denmark	Kuwait	Paraguay
United Arab Emirates	Dominican Rep.	Lao PDR	Qatar
Argentina	Algeria	Lebanon	Romania
Armenia	Ecuador	Libya	Russia
Antigua and Barbuda	Egypt	St. Lucia	Rwanda
Australia	Eritrea	Sri Lanka	Saudi Arabia
Austria	Spain	Lesotho	Senegal
Azerbaijan	Estonia	Lithuania	Singapore
Burundi	Ethiopia	Luxembourg	Solomon Islands
Belgium	Finland	Latvia	Sierra Leone
Benin	Fiji	Morocco	El Salvador
Burkina Faso	France	Moldova	Suriname
Bangladesh	Gabon	Madagascar	Slovak Rep.
Bulgaria	United kingdom	Maldives	Slovenia
Bahrain	Georgia	Mexico	Sweden
Bosnia and Herz.	Ghana	Macedonia	Swaziland
Belarus	Guinea	Mali	Seychelles
Belize	Gambia	Malta	Syrian Arab Rep.
Bolivia	Guinea-Bissau	Myanmar	Togo
Brazil	Greece	Mongolia	Thailand
Barbados	Grenada	Mozambique	Tajikistan
Brunei	Guatemala	Mauritania	Turkmenistan
Bhutan	Guyana	Mauritius	Trinidad and Tobago
Botswana	Honduras	Malawi	Tunisia
Central African Rep.	Croatia	Malaysia	Turkey
Canada	Hungary	Namibia	Tanzania
Switzerland	Indonesia	Niger	Uganda
Chile	India	Nigeria	Ukraine
China	Ireland	Nicaragua	Uruguay
Cote d'Ivoire	Iran	Netherlands	United States
Cameroon	Iraq	Norway	Uzbekistan
Congo, Rep.	Iceland	Nepal	St. Vincent
Colombia	Israel	New Zealand	Venezuela
Comoros	Italy	Oman	Vietnam
Cape Verde	Jamaica	Pakistan	Samoa
Costa Rica	Jordan	Panama	Yemen
Cuba	Japan	Peru	South Africa
Cyprus	Kazakhstan	Philippines	Zambia
Czech Rep.	Kenya	Palau	Zimbabwe

Chapter 4

The impact of interstate soft conflicts on bilateral FDI stocks using structural gravity model

4.1 Introduction

Foreign direct investment (FDI) is one of the key features of the modern globalized world, an integral part of the international economic system and a major accelerator for development, integration, technological progress, productivity improvements and growth.

According to [UNCTAD, 2007] "Foreign direct investment (FDI) is defined as an investment involving a long-term relationship and reflecting a lasting interest and control by a resident entity in one economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of the foreign direct investor (FDI enterprise or affiliate enterprise or foreign affiliate). FDI implies that the investor exerts a significant degree of influence on the management of the enterprise resident in the other economy. Such investment involves both the initial transaction between the two entities and all subsequent transactions between them and among foreign affiliates, both incorporated and unincorporated. FDI may be undertaken by individuals as well as business entities."[p. 245].

It is recognized in the literature that FDI is beneficial to both origin and host countries, while conflicts disrupt economic activities, and if at least one country becomes involved in a conflict, investment will decrease. Since FDI is not as flexible as trade, the losses from interstate conflict can be long-term and therefore very costly. Thus, in order to protect gains from FDI, both countries will try to maintain peaceful relations. According to [Oneal and Russett, 2001] countries involved in the exchange of goods and capital, do not have an intention to come into conflict with each other.

The assertion that economic integration and close relations between countries reduces the likelihood of conflict is largely based on the effects of international trade,

but a similar principle can be applied to economic interdependence in the form of international investment. [Gartzke et al., 2001] argue that countries with larger FDI flows are engaging in fewer militarized interstate disputes. [Polachek et al., 2005] state that FDI can reduce interstate conflicts as it provides additional benefits to the host country.

On the other hand, [Bussmann, 2010] points out that while inflows and stocks of FDI reduce the likelihood of violent disputes, militarized conflicts deter FDI. [Li and Vashchilko, 2010] show that while security alliances increase FDI, military conflicts due to terrorism has the likelihood of discouraging bilateral investments.

Conventional wisdom suggests that armed conflicts, violent acts and other indicators of instability disrupt economic interaction. [Busse and Hefeker, 2007] show that government stability, internal and external conflicts, corruption and democratic accountability, religious/ethnic tensions, law and order, and the bureaucratic quality are important determinants of foreign investment flows.

Research has shown that FDI is vulnerable to various types of disturbances. [Blomberg and Mody, 2005] find that violence in the form of terrorism, revolutions, and wars is harmful to international investment. [Powers and Choi, 2012] observe a negative impact of terrorism on FDI inflows. [Ezeoha and Ugwu, 2015] point out that violence, internal and external conflicts has a significant negative effect on FDI. [Li, 2006] argues that an unexpected interstate war makes the country less attractive as an investment destination, but has little impact on FDI inflows. [Daniele and Marani, 2011] show that organized crime committed by mafia organizations in Italy is negatively and significantly correlated with FDI even in the presence of investment incentives. Similar study of [Ashby and Ramos, 2013] confirm that organized crime is an obstacle for investment. [Kolstad and Tøndel, 2002] show that FDI flows are affected by ethnic tension, internal conflict, and democracy, but not by government stability, bureaucracy, external conflict, law and order, and the military politics.

Despite the fact that a large amount of literature is devoted to studying the impact of various economic and political barriers to investment, limited attention has been paid to studying the impact of higher-intensity interstate conflicts (mobilization, use of armed force and full-blown war) and especially of the Lower-intensity interstate conflicts (trade dispute, sanctions and threats of force) on FDI. Due to the fact that gravity analysis has to be based on bilateral flows, while data on FDI is limited and mostly provide inflows or outflows from/to the rest of the world, not many gravity analyses have been applied to FDI flows [Anderson et al., 2019] [Anderson et al., 2020].

In today's global economy, no country exists without interactions that range along a continuum from normal relationships to tense, trade disputes, paramilitary conflicts, and to the most extreme cases of war.

Guided by the idea that the deterioration of relations between countries is not currently associated with the extreme outcome of violence or war and the extent to which lower level shifts can harm the economy, our main interest is in analysis of the transition from normal relations to tension, which we define as an "interstate soft conflict".

By interstate soft conflict, we mean an outbreak of disagreement between two or more actors due to political disagreements, mutual distrust, historical tensions, human/animal rights violations, racial or religious hatred, etc., which can be expressed in different ways as diplomatic restrictions, renegotiation of relations, boycotts, etc. Acting on three levels (country, organization, individual), interstate soft conflict can target a country in general or a specific company in order to punish or try to force a target (country, company) to change undesirable behavior. And in the end interstate soft conflict neither leads to militarized disputes or violent conflicts, nor enforces sanctions or other official, but can act as a policy tool and have the same negative impact on FDI as after imposition of tariffs, embargoes or sanctions. More detailed information on interstate soft conflict can be found in subsection 2.2.3.

In this study, we argue that, like interstate wars or large-scale military conflicts, interstate soft conflicts can have devastating consequences for FDI. And since, as far as we know, not enough attention is paid to studying the impact of interstate soft conflicts on FDI stocks, we intend to fill this gap.

Our objective is to analyze the relationship between interstate soft conflicts and bilateral FDI stocks[1], using balanced panel data with annual observations on 175 countries over 2001-2012 period using a theory-consistent structural gravity framework augmented by a new measure of interstate soft conflict, which comprises 20 cases of outbreaks of interstate disputes (Table 2.1).

The results suggest that interstate soft conflicts have a statistically significant and sustained negative impact on FDI stocks regardless of the added control variables (presence of regional trade agreements, different types of sanctions and militarized interstate disputes), different specifications and robustness checks.

The rest of this chapter is structured as follows: Section 4.2 presents theoretical framework of the structural gravity model. Section 4.3 introduces the empirical strategy employed in the paper, discusses the data and presents the estimation results. Section 4.4 concludes.

4.2 Theoretical background: the structural gravity model for FDI

Gravity models has been successfully used in the empirical FDI literature but without satisfactory theoretical foundation.[2] Basic gravity model, in analogy with the Newton's law of universal gravitation,[3] states that bilateral trade/FDI increase with

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[1] "FDI stock is the value of the share of their capital and reserves (including retained profits) attributable to the parent enterprise, plus the net indebtedness of affiliates to the parent enterprise"[UNCTAD, 2007][p. 246].

[2] Reviewing the literature on FDI determinants, [Blonigen, 2005] claims: "As with trade flows, a gravity specification actually fits cross-country data on FDI reasonably well. However, there is no similar paper to [Anderson and Van Wincoop, 2003] that lays out a tractable model that specifically identifies gravity variables as the sole determinants of FDI patterns"[p. 393].

[3] The Newton's Law of Universal Gravitation from 1687 states that the mass of an object causes a force of attraction which diminishes with increasing distance; this force is called gravity.

partner countries economy sizes and decrease with the distance between them. Relying on [Anderson, 2011] approach, who extended the micro-foundation of the gravity model to both FDI and migration flows, so-called "structural" form of the gravity model for bilateral FDI stocks can be expressed as:

$$X_{ij,t}^{stock} \quad = \quad \frac{Y_{i,t}E_{j,t}}{Y_w}\left(\frac{f_{ij,t}}{\Pi_{i,t}P_{j,t}}\right)^{1-\sigma} \tag{4.1}$$

Here, at each point of time t, $X_{ij,t}^{stock}$ is the value of FDI stock from country i to country j; $Y_{i,t}$ and $E_{j,t}$ indicate the size of economies of the origin and destination country respectively and Y_w is the value of world output; $f_{ij,t}$ is bilateral FDI frictions, normally proxied by observable determinants of FDI stocks, such as distance, common language or shared border, but also by other policy-made barriers to FDI or conflicts; key structural terms $\Pi_{i,t}$ outward and $P_{j,t}$ inward FDI-based multilateral resistance variables, general equilibrium (GE) indexes which translate changes in bilateral trade costs into additional GE effects on all countries in the world; $\sigma > 1$ is the elasticity of substitution between all investments from different countries.

Equation (1) is analogues to [Anderson and Van Wincoop, 2003] structural gravity model of trade, but is applied to FDI stocks. It can be decomposed into two terms, where the first term represents the FDI pattern of frictionless world, while the second term captures the total effect of FDI frictions. It shows how the market clearing conditions can be used to explain the relationship between bilateral FDI stocks, market size and FDI frictions: bilateral FDI costs and aggregated measures of the bilateral FDI frictions for each origin and destination, so-called outward and inward multilateral resistance terms (MRTs), interpreted as the relative costs to all other countries.

MRTs introduce relative price terms into the gravity equation in the form of relative price and are a key factors in transforming the results of partial equilibrium between two countries into GE effects for FDI.[4] These variables include third country effects to the estimation. When relative prices in a third country change, this affects the relative prices of bilateral trading partners, reflecting the opportunity costs of choosing one particular FDI destination country versus all other countries. An estimation that does not take into account this kind of information is considered as theoretically biased[Anderson and Van Wincoop, 2004].

4.3 Empirical analysis

4.3.1 Methodology

In order to estimate the impact of interstate soft conflicts on bilateral FDI stocks and to obtain partial equilibrium estimates, we employ a theoretically grounded gravity model that corresponds to the structural gravity equation (1) and reflects all

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[4]See [Larch and Yotov, 2016] for details and analysis of the MRTs, their importance in the structural gravity system and their relevance for GE analysis.

proposed recommendations for proper estimation.[5] Following this theory-consistent framework, our baseline gravity model specification is:

$$X_{ij,t}^{stock} = exp[\beta_1 SOFTconflict_{ij,t} + \beta_2 GRAV_{ij} + y_{i,t} + e_{j,t} + \mu_{ij}] + \epsilon_{ij} \qquad (4.2)$$

To capture bilateral relationships between countries, we use both time-invariant and time-varying factors. As defined above, $X_{ij,t}^{stock}$ denotes bilateral FDI stocks from country i to country j at time t in Millions of USD. $SOFTconflict_{ij,t}$ is the interstate soft conflict variable that take a main place in our analysis. Our variable of interest is an indicator variable, which equals one if there is an outbreak of interstate soft conflict between partner countries at time t and zero otherwise. To study the impact of interstate soft conflicts across various targets the variable is coded in three different ways. First $SOFTconflict_{ij,t}$ is constructed as a single indicator variable that equals one if there is any type of interstate soft conflict between partner countries at time t and zero otherwise. Second includes only indirect interstate soft conflicts in an indicator variable $INDIRECT_{ij,t}$ and third only direct interstate soft conflicts in an indicator variable $DIRECT_{ij,t}$.

To proxy unobservable bilateral FDI costs $f_{ij,t}$ formulated in the structural gravity equation (3.1), besides our measure of soft conflicts we use series of observable variables that determine FDI costs. $GRAV_{ij}$ is a vector of observable variables, that includes all standard time-invariant country-specific dyadic gravity covariates like logarithm of weighted bilateral distance and indicator variables capturing the presence of contiguous borders, common language and colonial ties.

Following the [Baldwin and Taglioni, 2006] guidelines, in our specification we include full set of fixed effects commonly used in the economic literature to get reliable results. $y_{i,t}$ denotes the vector of origin-time fixed effect, which will control for the unobservable outward (MRTs). $e_{j,t}$ denotes the vector of destination-time fixed effect, which will control for the unobservable inward MRTs. Moreover both sets of time-varying origin and destination-country dummies absorb the country size variables $Y_{i,t}$ and $E_{j,t}$ along with any other observable and unobservable origin and destination specific time-varying factors that may affect bilateral FDI. μ_{ij} is a vector of country-pair fixed effects which absorb all time-invariant observable and unobservable determinants of FDI frictions and as demonstrated by [Baier and Bergstrand, 2007] absorb linkages between the potentially endogenous variables and our last error term ϵ_{ij}, clustered at the country-pair level.

As additional control variables of bilateral relationship between the country of origin and destination, we use such indicator variables as: $RTA_{ij,t}$ for presence of regional trade agreements (RTAs), $SANCT_{ij,t}$ for different types of economic sanctions: arms, military assistance, trade, financial, travel and other sanctions and $MID_{ij,t}$ for militarized interstate disputes (MIDs) coded into display of force, use of force and war. The choice of control variables is associated with factors that are related to both conflict and FDI variables and thus may influence the results.

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[5]For studies of the empirical gravity literature offering information on data, econometric challenges and solutions with gravity estimations, see: [Baldwin and Taglioni, 2006], [Silva and Tenreyro, 2006], [Head and Mayer, 2014], [Piermartini and Yotov, 2016]

Appendix (F) presents complete list of all the variables employed in the analysis along with their definitions and sources.

Taking into consideration the multiplicative form of the structural gravity equation (3.1) our baseline model could be presented in log-linear form with and additive error term, however following [Silva and Tenreyro, 2006], all our regressors enter exponentially to deal with zero bilateral FDI flows and account for the presence of heteroskedasticity in FDI data.

To estimate our model and select the most appropriate estimator we follow the [Silva and Tenreyro, 2006] and [Head and Mayer, 2014] econometric approach. First we employ various panel data estimation techniques such as OLS and Pseudo-Maximum Likelihood estimators like Poisson (PPML) and Gamma (GPML) to demonstrate the robustness of our approach and then we compare the findings, since there exists no econometric estimator that strictly dominates all the others. Although according to [Weidner and Zylkin, 2019] the use of GPML estimator with a three-way gravity specification with exporter-time, importer-time and country-pair FEs is considered as inconsistent, and in fact, PPML is the only estimator that can give consistent estimates of the specification that we are trying to estimate without imposing strong assumptions on the variance of the error term. GPML would be consistent if we could safely assume that the conditional variance is proportional to the square of the conditional mean, but in that case, we should just use OLS instead, because it would be more efficient.

4.3.2   Data

The sample used for the empirical analysis combines data from different sources for the period 2001-2012. Balanced database aggregates all information by country-pair and year. Appendix (G) provides a complete list of countries used in the analysis.

Aggregated (country-level) bilateral FDI data is obtained from the UNCTAD global database, which provides bilateral data on inward and outward FDI flows and stocks (in millions of US$). Our core estimations use the inward FDI stock data, which is the category of FDI with the most data availability and, due to less variability over time, tend to be more reliable than data on FDI flows. "FDI stock is the value of the share of their capital and reserves (including retained profits) attributable to the parent enterprise, plus the net indebtedness of affiliates to the parent enterprise"[UNCTAD, 2007][p. 246]. For this reason, in our sample, we have about 0.36% negative values, which we replace with zeros

Data for the variable of interest is based on media reports and online journals, scholarly articles and working papers, books and other websites mentioning the words: boycott, tension, dispute, conflict in their texts and/or in the headlines. Appendix (A) offers review of each case used in our estimation.

All standard time-invariant dyadic gravity variables like bilateral distance, contiguity, common language and colonial ties are from the Centre d'Études Prospectives et d'Informations Internationales (CEPII) dyadic GeoDist data [Mayer and Zignago, 2011].

As mentioned above, apart from standard gravity variables, we use time-varying control variables like RTAs, economic sanctions and MIDs.

Data on RTAs is retrieved from Mario Larch's Regional Trade Agreements Database [Egger and Larch, 2008].

The information on bilateral sanctions covering trade, financial activity, arms, military assistance, travel and other sanctions is from The Global Sanctions Database (GSDB) [Felbermayr et al., 2020].

Data on militarized interstate conflicts stems from MIDs dyadic database, compiled by the Correlates of War Project [Maoz et al., 2019]. By keeping the data only for outbreaks of disputes (most conflicts tend to last for many years, which is beyond the scope of our analysis) and dropping duplicated observations, MIDs sample covers interstate armed conflicts coded into display of force, use of force and war.

4.3.3 Estimation results

Selection of the estimator

We begin our analysis with the most commonly used log-linearized OLS estimation considered as a starting point for other estimators. Estimation results reported in Column (1) of Table (4.1) show that model fits the data well, explaining about 58% of the variation in bilateral FDI stocks. All traditional gravity covariates are statistically significant and have the expected signs. While estimated coefficients of traditional gravity variables are intuitive, highlighting that trade increases with the size of economy and when countries are sharing the border, speak the common language or have ever been in colonial relationship and decreases with the distance - our variable of interest, is positive and insignificant. We expect β_1 to be negative, to support hypothesis that interstate soft conflicts reduce bilateral FDI stocks.

The influential works of [Anderson and Van Wincoop, 2003] and [Baldwin and Taglioni, 2006] highlighting the importance of proper control for MRTs, prompted researchers to move towards fixed effects estimation techniques accounting for MRTs to obtain reliable estimates.

After adding the exporter-time and importer-time FEs, that absorb all observable and unobservable time-varying country-specific determinants of FDI and properly treats multilateral resistance, the fit of estimated equation improves and the coefficient of soft conflict dummy variable becomes negative but still remains insignificant. Estimate on the effect of bilateral distance is larger, while for the rest of variables is smaller, which means that due to the omission of MRTs, interpreted as 'Gold Medal Mistake' by [Baldwin and Taglioni, 2006], Column (1) may contain biased and inconsistent estimates.

Additional inclusion of country-pair FEs, that absorb all observable and unobservable time-invariant bilateral determinants of FDI costs and controls for potential endogeneity concerns, improves the fit of estimated equation and lowers the standard error and produces negative, statistically not significant result in Column (3)

Table 4.1: Estimation results

	(1) OLSnoFEs	(2) OLS	(3) OLSFEs	(4) PPMLnoFEs	(5) PPML	(6) PPMLFEs
SOFTconflict	0.592	-0.004	-0.057	0.880	0.027	-0.107
	(0.213)	(0.226)	(0.113)	(0.165)	(0.224)	(0.073)
(Log) distance	-0.681	-1.214		-0.243	-0.619	
	(0.028)***	(0.036)***		(0.060)***	(0.095)***	
Contiguity	0.945	0.531		0.610	0.627	
	(0.104)***	(0.115)***		(0.189)***	(0.147)***	
Common language	1.173	0.545		0.598	0.391	
	(0.066)***	(0.087)***		(0.158)***	(0.168)**	
Colonial ties	0.850	0.956		0.278	0.436	
	(0.121)***	(0.142)***		(0.205)	(0.151)***	
(Log) output	0.621			0.904		
	(0.009)***			(0.026)***		
(Log) expenditure	0.607			0.911		
	(0.012)***			(0.034)***		
N	37630	37320	38516	252624	252318	56260
r2	0.575	0.689	0.757	0.485	0.870	0.981
Exporter-time FEs	No	Yes	Yes	No	Yes	Yes
Importer-time FEs	No	Yes	Yes	No	Yes	Yes
Country-pair FEs	No	No	Yes	No	No	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral FDI stocks using OLS and PPML estimation methods. All estimates are obtained with balanced panel data for 2001-2012 period. The dependent variable is FDI stocks in logs in the first three columns and in levels in all the rest. Columns (1)-(3) use the OLS estimator. Column (1) does not control for the multilateral resistances. Column (2) uses exporter-time and importer-time fixed effects. Column (3) additionally uses country-pair fixed effects. Columns (4)-(6) use the PPML estimator. Column (4) does not control for the multilateral resistances. Column (5) uses exporter-time and importer-time fixed effects. Column (6) uses all fixed effects. Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

for our main variable of interest.

To a large extent, results obtained using the log-linearized equation estimated by OLS method with or without FEs is not encouraging. In the absence of any doubt, we apply the recommended PPML estimation method, where the dependent variable is represented in levels instead of logs as in OLS.

PPML estimates for all traditional gravity covariates reported in Column (4) reveal significant differences compared to OLS estimation results. The magnitude of coefficients is much lower, therefore they are closer to the values shown in Table (5) of [Silva and Tenreyro, 2006] and in Table (7) of [Head and Mayer, 2014], although the samples used are different. However, as with the OLS in Column (1), coefficient for the variable of interest is positive and remains unchanged even after accounting for MRTs with an appropriate set of FEs in Column (5).

After inclusion of country-pair fixed effects, coefficient for the soft conflict variable tabulated in Column (6) becomes negative but is still insignificant.

Although [Silva and Tenreyro, 2006] state that PPML is the best substitute for the

standard linear OLS estimator for the multiplicative gravity model, they also take GPML into account. While [Head and Mayer, 2014] suggest that "rather than selecting the Poisson PML as the single "workhorse" estimator of gravity equations, it should be used as part of a robustness-exploring ensemble that also includes OLS and Gamma PML"[p. 17]. Although we applied the GPML estimator for our dataset, we were unable to achieve convergence. This can be caused by lots of zeroes in our sample. [Correia et al., 2019b] recommend to be careful when using GPML estimator in this case, as there is no straightforward way to detect or resolve separation issues in the GPML model. However, a more important consideration here is the use of GPML estimator with a three-way gravity specification with the full set of FEs, since, according to [Weidner and Zylkin, 2019] it tends to be inconsistent and PPML is the only estimator that can give consistent estimates to such a specification without imposing strong assumptions on the variance of the error term.

Despite the fact that so far we have not been able to find a significant result for our soft conflict variable, the evidence so far suggests that the PPML estimation method is more appropriate for our dataset. Thus, we will rely on PPML estimator with exporter-time, importer-time and country-pair FEs for further analysis. It is estimated in Stata using the command "ppmlhdfe" [Correia et al., 2019a].

Baseline results

Our baseline estimates of the effect of interstate soft conflicts on bilateral FDI stocks across various targets are reported in Table (4.2). Estimated result for our main variable of interest that captures the impact of outbreaks of both indirect and direct type of interstate soft conflicts between partner countries is tabulated in Column (1) which is negative but insignificant. The separation of indirect and direct cases of interstate soft conflicts shows that tensions against the country in general due to its unacceptable actions have not an effect. Estimated results presented in Column (2) suggests that, indirect type of soft conflicts do not reduce bilateral FDI stocks, while direct types interstate soft conflicts reduce bilateral FDI stocks by about 21.34% in Column (3).

The estimation results indicate that the direct type of interstate soft conflicts have an immediate negative impact on bilateral FDI stocks. However it is possible that such tensions can affect country's FDI stocks not only immediately, but also for a longer time period.

Moreover, it is argued that conflicts can be a reaction to changes in FDI flows, that is, countries that have close relations with their partners are less likely to enter into conflict. To reduce the reverse causality issue between bilateral FDI stocks and interstate soft conflicts, we introduce lagged interstate soft conflict variable. Thus, we will test the impact of interstate soft conflicts in the last year and are more likely to demonstrate the impact of interstate soft conflicts on FDI stocks than vice versa.

The results presented in Table (4.3) prove that interstate soft conflicts can negatively affect bilateral FDI stocks for a longer time period. The interstate soft conflict from

Table 4.2: Baseline results

	(1)	(2)	(3)	(4)
SOFTconflict	-0.107			
	(0.073)			
INDIRECT		0.021		0.021
		(0.091)		(0.091)
DIRECT			-0.240	-0.240
			(0.125)*	(0.126)*
N	56260	56260	56260	56260
r2	0.985	0.985	0.985	0.985
Exporter-time FEs	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral FDI stocks, across various targets, using PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data for 2001-2012 period. The dependent variable is FDI stocks in levels. Column (1) covers all obtained interstate soft conflict cases. Column (2) considers only indirect cases. Column (3) includes only direct cases. Column (4) includes indirect and direct cases. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

the last year can decrease bilateral trade flows by about 16.89%, and the result becomes significant at 10% level in Column (1). Estimated results presented in Column (2) suggests that, indirect type of soft conflicts still do not have effect on bilateral FDI stocks, while direct types interstate soft conflicts reduce bilateral FDI stocks by about 29.46% in Column (3).

Table 4.3: Baseline results

	(1)	(2)	(3)	(4)
L.SOFTconflict	-0.185			
	(0.095)*			
L.INDIRECT		0.042		0.045
		(0.105)		(0.106)
L.DIRECT			-0.349	-0.349
			(0.135)***	(0.135)***
N	51969	51969	51969	51969
r2	0.986	0.986	0.986	0.986
Exporter-time FEs	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral FDI stocks, across various targets, using PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data for 2001-2012 period. The dependent variable is FDI stocks in levels. Column (1) covers all obtained interstate soft conflict cases from the last year. Column (2) considers only indirect cases from the last year. Column (3) includes only direct cases. Column (4) includes indirect and direct cases from the last year. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Since it is rather difficult to achieve an immediate downturn in FDI stocks after the emergence of soft conflict, and in general it takes time to get the effect, from now on we will use the lagged version of our interstate soft conflict variable.

Robustness checks

Because of the rich structure of FEs, we can only get results for time-varying two-tailed variables. Thus to further test the reliability of our estimates, we employ time-varying control variables like RTAs, different types of sanctions and MIDs.

To perform a robustness checks for each type of interstate soft conflicts, we include our control variables one by one, due to the limited data availability on our control variables. In case of RTAs and sanctions we run the estimation on full sample, but to control for militarized interstate disputes we restrict our sample for 2001-2010 period. As we restrict our sample, additionally we repeat our baseline estimation including RTAs indicator variable for the specific sub-sample.

Estimated result for our main variable of interest that captures the impact of outbreaks of both indirect and direct type of interstate soft conflicts between partner countries is tabulated in Table (4.4). Regardless of the added control variables and sample size, the coefficient of interstate soft conflicts variable remains negative and significant in all cases. Similarly to the overall effect of interstate soft conflicts, independent of the added control variables and size of the sample, the coefficient of indirect soft conflict variable remains positive and insignificant in all cases in Table (4.5) while in case of direct soft conflicts, the coefficient remains negative and significant in all cases in Table (4.6).

This findings suggest that interstate soft conflicts do not operate through an increase of sanctions or militarized disputes. Our estimates are robust and interstate soft conflicts have negative and significant impact on bilateral trade. Estimates of specific types of soft conflicts yields plausible results. Depending on whether interstate soft conflicts lead to indirect or direct tensions, we find that, results appear to be mainly driven by direct type of soft conflicts even after robustness checks.

However to be sure that we are not capturing the effect of sanctions in our interstate soft conflict estimate in Column (3) of Table (4.4), we perform further robustness checks. After including all the sanctions imposed between two countries for a year in our baseline specification, the coefficient of the interstate soft conflict variable presented in Column (1) of Table (4.7) remains almost at the same level. Furthermore, in order to see what happens after excluding the pair of countries being affected by any type of sanctions across all the period we obtain result proving that the impact of interstate soft conflicts is not driven by the effect of sanctions Column (2) of Table (4.7). Repeating the same for militarized interstate disputes, we can conclude that interstate soft conflicts do not operate neither through an increase of sanctions nor militarized disputes. In addition to overcome the suspicion that our estimation results are affected by the China effect, we exclude China from our baseline specification as an exporter, importer, and both. The results presented in Table (4.7) proves that our estimated coefficient is independent of China effect.

Table 4.4: Robustness checks - interstate soft conflicts

	(1)	(2)	(3)	(4)
	RTAs	Sanctions	SOFT	MIDs
		2001-2012		2001-2010
L.SOFTconflict	-0.184	-0.183	-0.172	-0.171
	(0.095)*	(0.095)*	(0.097)*	(0.097)*
RTA	-0.040	-0.040	-0.082	-0.081
	(0.061)	(0.061)	(0.070)	(0.071)
ARMS_sanction		-0.901		-0.776
		(0.408)**		(0.430)*
MILITARY_sanction		-0.022		-0.029
		(0.085)		(0.093)
TRADE_sanction		-0.194		0.192
		(0.458)		(0.498)
FINANCIAL_sanction		-0.206		-0.366
		(0.503)		(0.295)
TRAVEL_sanction		-0.002		0.267
		(0.380)		(0.271)
OTHER_sanction		-0.826		-0.897
		(0.312)***		(0.299)***
DISPLAY of force				-0.030
				(0.036)
USE of force				0.025
				(0.055)
Interstate WAR				1.641
				(0.472)***
N	51725	51725	38469	38469
r2	0.986	0.986	0.987	0.987
Exporter-time FEs	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes

 This table reports estimates of the effects of interstate soft conflicts on bilateral FDI stocks and robustness checks by including additional control variables to the baseline model. All estimates are obtained with balanced panel data for different periods due to data availability using PPML estimator and exporter-time, importer-time and country-pair FEs. The dependent variable is FDI stocks in levels. Column (1) controls for RTAs. Column (2) controls for different types of sanctions. Column (3) repeats baseline estimation for 2001-2010 sub-sample. Column (4) additionally uses MIDs. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table 4.5: Robustness checks - indirect interstate soft conflicts

	(1)	(2)	(3)	(4)
	RTAs	Sanctions	SOFT	MIDs
	2001-2012		2001-2010	
L.INDIRECT	0.043	0.044	0.053	0.054
	(0.105)	(0.105)	(0.109)	(0.110)
RTA	-0.042	-0.043	-0.084	-0.084
	(0.062)	(0.062)	(0.071)	(0.071)
ARMS_sanction		-0.906		-0.781
		(0.409)**		(0.431)*
MILITARY_sanction		-0.030		-0.036
		(0.085)		(0.094)
TRADE_sanction		-0.194		0.191
		(0.459)		(0.499)
FINANCIAL_sanction		-0.207		-0.367
		(0.504)		(0.295)
TRAVEL_sanction		0.000		0.269
		(0.380)		(0.271)
OTHER_sanction		-0.828		-0.899
		(0.312)***		(0.300)***
DISPLAY of force				-0.029
				(0.036)
USE of force				0.018
				(0.054)
Interstate WAR				1.436
				(0.474)***
N	51725	51725	38469	38469
r2	0.986	0.986	0.987	0.987
Exporter-time FEs	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes

This table reports estimates of the effects of indirect type of interstate soft conflicts on bilateral FDI stocks and robustness checks by including additional control variables to the baseline model. All estimates are obtained with balanced panel data for different periods due to data availability using PPML estimator and exporter-time, importer-time and country-pair FEs. The dependent variable is FDI stocks in levels. Column (1) controls for RTAs. Column (2) controls for different types of sanctions. Column (3) repeats baseline estimation for 2001-2010 sub-sample. Column (4) additionally uses MIDs. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table 4.6: Robustness checks - direct interstate soft conflicts

	(1)	(2)	(3)	(4)
	RTAs	Sanctions	SOFT	MIDs
		2001-2012		2001-2010
L.DIRECT	-0.348	-0.347	-0.328	-0.327
	(0.135)**	(0.135)**	(0.138)**	(0.138)**
RTA	-0.041	-0.041	-0.083	-0.081
	(0.061)	(0.061)	(0.070)	(0.070)
ARMS_sanction		-0.901		-0.775
		(0.408)**		(0.430)*
MILITARY_sanction		-0.020		-0.027
		(0.085)		(0.093)
TRADE_sanction		-0.194		0.192
		(0.459)		(0.499)
FINANCIAL_sanction		-0.207		-0.367
		(0.503)		(0.295)
TRAVEL_sanction		-0.002		0.268
		(0.380)		(0.271)
OTHER_sanction		-0.825		-0.896
		(0.311)***		(0.298)***
DISPLAY of force				-0.032
				(0.037)
USE of force				0.015
				(0.054)
Interstate WAR				1.485
				(0.464)***
N	51725	51725	38469	38469
r2	0.986	0.986	0.987	0.987
Exporter-time FEs	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes

This table reports estimates of the effects of direct type of interstate soft conflicts on bilateral FDI stocks and robustness checks by including additional control variables to the baseline model. All estimates are obtained with balanced panel data for different periods due to data availability using PPML estimator and exporter-time, importer-time and country-pair FEs. The dependent variable is FDI stocks in levels. Column (1) controls for RTAs. Column (2) controls for different types of sanctions. Column (3) repeats baseline estimation for 2001-2010 sub-sample. Column (4) additionally uses MIDs. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table 4.7: Robustness checks - sanctions / MIDs / China effect

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	includes	excludes	includes	excludes	excludes China as:		
	All sanctions		All MIDs		exporter	importer	exp & imp
L.SOFTconflict	-0.184	-0.184	-0.185	-0.186	-0.185	-0.189	-0.188
	(0.095)*	(0.064)*	(0.095)*	(0.096)*	(0.096)*	(0.096)**	(0.097)*
ALL_sanctions	-0.026						
	(0.084)						
ALL_MIDs			0.018				
			(0.044)				
N	51969	47769	51969	50821	50743	51595	50369
r2	0.986	0.985	0.986	0.986	0.986	0.985	0.985
Exporter-time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral FDI stocks using PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data for 2001-2012 period. The dependent variable is FDI stocks in levels. Column (1) controls weather there was an impact of sanction between two countries in the year. Column (2) excludes the pair of countries affected by any type of sanctions across all the period. Column (3) controls weather there was an impact of MIDs between two countries in the year. Column (4) excludes the pair of countries affected by any type of MIDs across all the period. Column (5) excludes China as an exporter. Column (6) excludes China as an importer. Column (7) excludes China as an exporter and an importer. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Since our dataset includes the period of the global financial crisis, in order to exclude the possibility of capturing the effect of the financial crisis we restrict our sample in three different ways. First we restrict the full sample for 2001-2008 period, thus including starting year of the crisis into the estimation, second we restrict the sample for 2009-2012 period, what controls for the following years of the crisis and last we drop 2008, 2009 and 2010 year from the full sample. Obtaining similar results in Column (1) and Column (2) of Table 4.8) states that crisis had no effect on interstate soft conflicts, what is further proved in Column (3) where 2008, 2009 and 2010 years were not considered in the estimation.

While being interested in the timing of the effect of interstate soft conflicts we assess our baseline model using lagged effects of the interstate soft conflict variable (up to 5 years). By doing so, we can test the impact of soft conflicts over time. The results reported in the Table (4.9) show that the effect of interstate soft conflicts disappears in 5 year period. Thus interstate soft conflicts can negatively affect bilateral FDI stocks for a longer time period.

Column (1) concludes that if there was a soft conflict last year, the effect is even greater in comparison to the impact obtained in the current year, and this makes sense since the conflict could have arisen in the middle of the year. So interstate soft conflict from the last year can decrease bilateral FDI Stocks by about 16.88%, and the result is significant at 10% level. While if a soft conflict appeared two years ago, then the effect become smaller, reducing bilateral FDI Stocks by about 12.89% and for the third year it loses its significance.

Table 4.8: Robustness checks - financial crisis

	(1)	(2)	(3)
	2001-2008	2009-2012	excludes 2008-9-10 years
L.SOFTconflict	-0.160	-0.213	-0.185
	(0.093)*	(0.156)	(0.095)*
N	25396	20515	51969
r2	0.988	0.992	0.986
Exporter-time FEs	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral FDI stocks using PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data. The dependent variable is FDI stocks in levels. Column (1) covers 2001-2008 sub-sample. Column (2) Column covers 2009-2012 sub-sample. (3) excludes 2008, 2009 and 2010 years from the full sample. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table 4.9: Robustness checks - lagged variables

	(1)	(2)	(3)	(4)	(5)
L.SOFTconflict	-0.185				
	(0.095)*				
L2.SOFTconflict		-0.138			
		(0.100)*			
L3.SOFTconflict			-0.206		
			(0.076)		
L4.SOFTconflict				0.031	
				(0.040)	
L5.SOFTconflict					-0.005
					(0.046)
N	51969	47745	43433	39004	34391
r2	0.986	0.986	0.987	0.988	0.989
Exporter-time FEs	Yes	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral FDI stocks using PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data. The dependent variable is FDI stocks in levels. Columns (1-5) allows for phasing in effects of interstate soft conflicts using various lags (up to 5 years). All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

To further check robustness of our results we add to our baseline specification, lag of the bilateral FDI stocks variable to control for initial FDI stocks, and then we interact this lag with the interstate soft conflict variable. Estimation results presented in Table (4.10) Columns (1-2) show that interstate soft conflicts continue to have a statistically significant and robust negative impact on bilateral FDI stocks in both cases.

And lastly, we control for distance in preferences. We introduce Linder variable into

our baseline specification, which is expressed as an absolute difference between the two countries' GDP's per capita.

$$Linder \quad = \quad |GDP_{pc}^j - GDP_{pc}^i| \qquad (4.3)$$

According to Linder's hypothesis, the distance in GDP per capita can be used to measure the similarity of tastes, the more the similarity of the economic structures of countries (smaller Linder variables), the higher the likelihood of their mutual trade [Linder, 1961].

In our estimation results Table (4.10) Column (3), the coefficient of the Linder variable is negative as predicted by the Linder hypothesis, but the size of the coefficient equals zero and is statistically not different from zero, indicating that countries do not prefer to invest in countries with a similar level of economic development and preference structures or tastes.

In addition, we include logarithm of the Linder variable Table (4.10) Column (4). The coefficient of the Linder variable turned out to be positive, highlighting that there are large differences between the characteristics of demand in countries, therefore, the validity of the Linder hypothesis cannot not be confirmed in our case.

Table 4.10: Robustness checks - initial trade / distance in preferences

	(1)	(2)	(3)	(4)
	Initial trade		Distance in preferences	
L.SOFTconflict	-0.126	-0.119	-0.182	-0.185
	(0.071)*	(0.081)*	(0.094)*	(0.094)*
L.FDI	0.000			
	(0.000)***			
SOFTconflict*L.FDI		-0.000		
		(0.000)*		
Linder			-0.000	
			(0.000)	
(Log) Linder				0.012
				(0.011)
N	51969	51969	47653	47653
r2	0.986	0.986	0.985	0.985
Exporter-time FEs	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes

This table reports estimates of the effects of the interstate soft conflicts on bilateral FDI stocks using PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data. The dependent variable is FDI stocks in levels. Column (1) introduces lagged dependent variable as a control. Column (2) presents interaction between lag of FDI stocks and soft conflicts as a control variable. Column (3) introduces linder variables as a control for distance in preferences. Column (4) brings into logarithm of Linder variable. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Overall the results suggest that interstate soft conflicts have a statistically significant and robust negative impact on bilateral FDI stocks across different specifications.

Control group analysis

Due to the fact that it is difficult to be abreast of all the interstate soft conflicts that arise around the world in order to control for the bias of our results, we take our sample and restrict it to a specific window to see how interstate soft conflicts affect FDI stocks.

From our list of cases (see Table 2.1), seven indirect and four direct types of interstate soft conflicts that correspond to our bilateral FDI stock dataset, we select a control group for each of our events and perform an estimation, isolating each episode, following the steps bellow:

- we select one specific case from our list of events (see Table 2.1), for example, the well-known tension between the U.S. and France in 2002

- to run estimation, we first restrict our sample. For the U.S.-France example, we keep the year of the event (in this case 2002), the two previous years (2001 and 2000), and the year after (2003). Thus, we cover a total of four years

- then we restrict the sample to counties that undergo this soft conflict (the U.S. and France) and the other four countries that have not experienced this particular tension (Germany, United Kingdom, Austria and Italy)

In doing so, we isolate our interstate soft conflict between the U.S. and France, focusing on a specific time period and on a control group of four other countries that have not experienced this particular tension. In order to form control groups for

Table 4.11: List of indirect and direct types of interstate soft conflicts based on control group classification

N	From	Towards	Year	Control group countries	Years
Indirect type of interstate soft conflict cases					
1	U.S.	France	2002	Germany-UK-Austria-Italy	2001-2002-2003
2	Ireland	Japan	2007	Germany-Belgium-Austria-Italy	2005-2006-2007-2008
3	China	Norway	2010	Germany-Belgium-Austria-Italy	2008-2009-2010-2011
4	Greece	Germany	2010	UK-Belgium-Austria-Italy	2008-2009-2010-2011
5	China	Philippines	2010	Germany-UK-Austria-Italy	2008-2009-2010-2011
6	Philippines	China	2011	Germany-UK-Austria-Italy	2009-2010-2011-2012
7	China	Japan	2012	Germany-UK-Austria-Italy	2010-2011-2012
Direct type of interstate soft conflict cases					
1	UK	U.S.	2001	Germany-Belgium-Austria-Italy	2001-2002
2	Columbia	U.S.	2003	UK-Belgium-Austria-Italy	2001-2002-2003-2004
3	Germany	Finland	2008	UK-Belgium-Austria-Italy	2006-2007-2008-2009
4	Cambodia	UK	2010	Germany-Belgium-Austria-Italy	2008-2009-2010-2011

each case of interstate soft conflict, we decided to focus on the four countries of the European Union for two reasons. Mainly one of the parties to our soft conflicts is the EU member state, and also because of the greater availability of data on bilateral FDI stocks.

Since we have two types of interstate soft conflicts (indirect and direct), we test them separately. While we are testing, for example, the indirect type of soft conflicts, there are no direct cases for the same period of time and vice versa. List of treated control groups for certain periods of time is presented in Table (4.11).

We repeat the same procedures for all eleven cases. The results of the estimations presented in Table (4.12) and (4.13) allow us to conclude that, despite the significant restriction of the initial sample, both indirect and direct types of soft conflicts continue to affect the stocks of FDI and that estimates of our intestate soft conflict indicator variable is not upper-biased.

Table 4.12: Control group analysis - indirect type of interstate soft conflicts

	(1) (2002)	(2) (2007)	(3) (2010)	(4) (2010)	(5) (2010)	(6) (2011)	(7) (2012)
INDIRECT	0.063	-0.005	-0.904	-0.835	-0.410	-0.276	-0.029
	(0.088)	(0.334)*	(0.078)***	(0.041)***	(0.180)***	(0.153)*	(0.067)*
N	740	932	1274	1335	1044	1450	999
r2	0.994	0.994	0.991	0.994	0.997	0.996	0.997
Exporter-time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table reports estimates of the impact of seven different cases of indirect interstate soft conflicts on bilateral FDI stocks using country control groups via PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data. The dependent variable is FDI stocks in levels. Column (1) introduces soft conflict between U.S. and France in 2002. Column (2) introduces soft conflict between Ireland and Japan in 2007. Column (3) introduces soft conflict between China and Norway in 2010. Column (4) introduces soft conflict between Greece and Germany in 2010. Column (5) introduces soft conflict between China and Philippines in 2010. Column (6) introduces soft conflict between Philippines and China in 2011. Column (7) introduces soft conflict between China and Japan in 2012. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

Table 4.13: Control group analysis - direct type of interstate soft conflicts

	(1) (2001)	(2) (2003)	(3) (2008)	(4) (2010)
DIRECT	-0.304	-0.173	-0.097	-0.840
	(0.166)*	(0.077)**	(0.047)**	(0.207)***
N	358	1087	899	1335
r2	0.997	0.994	0.995	0.994
Exporter-time FEs	Yes	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes	Yes

This table reports estimates of the impact of four different cases of direct interstate soft conflicts on bilateral FDI stocks using country control groups via PPML estimator and exporter-time, importer-time and country-pair FEs. All estimates are obtained with balanced panel data. The dependent variable is FDI stocks in levels. Column (1) introduces soft conflict between United Kingdom and U.S. in 2001. Column (2) introduces soft conflict between Colombia and U.S. in 2003. Column (3) introduces soft conflict between Germany and Finland in 2008. Column (4) introduces soft conflict between Cambodia and United Kingdom in 2010. All Standard errors in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

4.4 Conclusion

Studies on how interstate conflicts affect bilateral FDI receive limited attention as they focus mainly on international trade. Even less attention has been paid to examining the impact of nonviolent disputes on FDI. This chapter extends the analysis of the conflict-trade relationship by introducing FDI.

In that sense, this chapter contributes to supporting the argument that interstate soft conflicts have impact on FDI stocks.

Using a new measurement of interstate soft conflict, this chapter shows that soft conflicts have the potential to deter FDI stocks between countries. The impact remains negative not only in the current period, but could also affect FDI stocks in the next year.

The use of a theory-consistent structural gravity model and PPML estimator with exporter-time, importer-time and country-pair FEs shows that interstate soft conflicts have a statistically significant and sustained negative impact on bilateral FDI stocks regardless of the added control variables (presence of regional trade agreements, different types of sanctions and militarized interstate disputes), different specifications and robustness checks.

FDI, like trade, influences international relations, reduces incentives for conflict, and encourages cooperation between partner countries.

To test whether the results of interstate soft conflicts are biased due to fact that it difficult to cover all existing cases, we conduct control group analysis, isolating each of our cases, focusing on a specific time period and on countries in the control group that have not experienced this specific tension. The results show that soft conflict continues to have negative and significant impact on FDI stocks, proving that our interstate soft conflict indicator variable is not upper biased.

Our findings support the main message of our study, showing a negative association between interstate soft conflicts and bilateral FDI stocks, even after the original sample was significantly restricted. The overall results are consistent and may have policy implications, as it is clear that soft conflicts have damaging and far-reaching economic consequences. Policymakers facing these types of conflicts need to address their root causes and try to mitigate their negative impacts through appropriate policies.

We believe that our analysis reflects significant progress in measuring the costs of soft conflicts. At the same time, from an applied and policy perspective, there may be scope for future research and additional contributions such as expending analysis to include more cases, analyzing the impact of interstate soft conflicts on FDI stocks on a case-by-case basis, or examining the threshold at which interstate soft conflicts start to damage economic relations.

Appendix F

Data description

Variable	Description	Source
$X_{ij,t}^{stock}$	Value of the bilateral inward FDI stocks from country i to j at time t (millions of current US$)	UNCTAD `https://unctad. org/topic/investment/ investment-statistics-and-trends` for **2001-2012** period
SOFTconflict *INDIRECT* *DIRECT*	Indicator variable equal to 1 if: - any type of interstate soft conflict - indirect interstate soft conflict - direct interstate soft conflict occurred between countries i and j at time t	Media reports and online journals, scholarly articles and working papers, books and other websites mentioning the words: boycott, tension, dispute, conflict in their texts and/or in the headlines obtained from keyword search using several search engines Google, Bing, Yahoo, Yandex, Swisscows, OneSearch
(Log) distance *Contiguity* *Common language* *Colonial ties*	Time-invariant gravity variables: - logarithm of weighted distance (pop-wt, km) - Indicator equal to 1 when countries i and j share a common border - Indicator equal to 1 if a language is spoken by at least 9% of the population in countries i and j - Indicator equal to 1 for pairs ever in colonial relationship	Centre d'Études Prospectives et d'Informations Internationales (CEPII) `http://www.cepii.fr`

Variable	Description	Source
RTA	Indicator variable equal to 1 when countries i and j are members of same RTA at time t	Mario Larch's Regional Trade Agreements Database `https://www.ewf.uni-bayreuth.de/en/research/RTA-data/index.html` for **1950-2018** period
Sanctions	Vector of indicator variables equal to 1 if arms, military assistance, trade, financial, travel or other sanctions occurred between countries i and j at time t	Global Sanctions Data Base (GSDB) `https://www.globalsanctionsdatabase.com/` for **1950-2016** period
MIDs	Vector of indicator variables equal to 1 if display of force, use of force or war occurred between countries i and j at time t	Correlates of War Project `http://cow.dss.ucdavis.edu/data-sets/MIDs` for **1816-2010** period

Appendix G

List of countries

Aruba	Germany	Lebanon	Paraguay
Afghanistan	Denmark	Liberia	French Polynesia
Angola	Dominican Rep.	Libya	Qatar
Anguilla	Algeria	Sri Lanka	Romania
Albania	Ecuador	Lithuania	Russia
Netherlands Antilles	Eritrea	Luxembourg	Rwanda
United Arab Emirates	Spain	Latvia	Saudi Arabia
Argentina	Estonia	Macao	Sudan
Armenia	Ethiopia	Morocco	Senegal
American Samoa	Finland	Moldova	Singapore
Antigua and Barbuda	Fiji	Madagascar	Sierra Leone
Australia	France	Maldives	El Salvador
Austria	Gabon	Mexico	Serbia
Azerbaijan	United Kingdom	Marshal Islands	Suriname
Belgium	Georgia	Macedonia	Slovak Rep.
Benin	Ghana	Mali	Slovenia
Burkina Faso	Guinea	Malta	Sweden
Bangladesh	Equatorial Guinea	Myanmar	Swaziland
Bulgaria	Gambia	Montenegro	Seychelles
Bahrain	Guatemala	Mongolia	Syrian Arab Rep.
Bahamas	Hong Kong	Mozambique	Turks-Caicos Islands
Bosnia and Herz.	Honduras	Mauritania	Togo
Belarus	Croatia	Mauritius	Thailand
Belize	Haiti	Malawi	Tajikistan
Bermuda	Hungary	Malaysia	Trinidad and Tobago
Bolivia	Indonesia	Namibia	Turkey
Brazil	India	New Caledonia	Taiwan
Barbados	Ireland	Niger	Tanzania
Brunei	Iran	Nigeria	Uganda
Botswana	Iraq	Nicaragua	Ukraine
Canada	Iceland	Netherlands	Uruguay
Switzerland	Israel	Norway	United States
Chile	Italy	Nepal	Venezuela
China	Jamaica	Nauru	British Virgin Islands
Cote d'Ivoire	Jordan	New Zealand	Virgin Islands
Cameroon	Japan	Oman	Vietnam
Congo, Rep.	Kazakhstan	Pakistan	Vanuatu
Cook Islands	Kenya	Panama	Samoa
Colombia	Kyrgyzstan	Peru	Yemen
Cape Verde	Cambodia	Philippines	South Africa
Costa Rica	St. Kitts-Nevis	Papua New Guinea	Congo, Dem. Rep.
Cayman Islands	Korea, Dem. Rep.	Poland	Zambia
Cyprus	Kuwait	Puerto Rico	Zimbabwe
Czech Rep.	Lao PDR	Portugal	

Chapter 5

Conclusion

This study assesses the cost of interstate soft conflicts arising from trade and FDI disruption, arguing that soft conflicts can act as a policy tool to punish or try to change certain behavior of trading partners or companies, rather than using military force, sanctions or other official institutional acts.

Trade costs are an important aspect of bilateral relations. What makes it very important to analyze and understand how conflict-related costs may affect bilateral trade flows or bilateral FDI stocks.

As the world has been characterized by less violence and decreasing tolerance for militarized conflicts between countries in recent times, shifts at a lower level, expressed as interstate soft conflicts associated with unconventional trade costs, warrant further and in-depth research.

This thesis contributes to the analysis of the costs of soft conflicts using a theory-consistent structural gravity model and PPML estimator with a full set of fixed effects (exporter-time, importer-time and country-pair) and presents statistically significant and consistent results representing the negative impact of our new measure of interstate soft conflicts both on bilateral trade flows and on FDI stocks.

The paper has provided the strong evidence that soft conflicts are indeed associated with decline in bilateral trade flows and FDI stocks. The impact of different types of interstate soft conflicts – indirect, against the country in general and direct, against a specific organization or firm - turns out to be quite heterogeneous between trade and FDI. Both types of soft conflicts have a significant negative impact on trade, while in case of FDI, we found significance only for direct cases.

The overall results are consistent and may have policy implications, as it is clear that soft conflicts have damaging and far-reaching economic consequences. Governments or representatives of organizations/firms facing these types of conflicts need to address their root causes and try to mitigate their negative impacts through appropriate policies. This is mainly because the intensification of soft conflicts will have an adverse influence on economic relations and affect traders, private actors or investors willing to benefit from long-term bilateral relations. Although policymakers should pay attention to soft conflicts arising in neighboring countries, even

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if themselves they are not affected by the conflict, as they may at some point suffer negative spillovers from their neighbors. The deterioration of relations can harm the well-being of everyone - countries/organizations/firms/consumers, one way or another associated with soft conflicts. In general, policymakers should try to understand the interests of partner countries, strengthen the dialogue between the political system and political/organizational culture, and establish strategic trustworthy relationship to safeguard common interests. Moreover, an escalation of soft conflicts would fuel economic uncertainty, leading consumers to delay expenditure and businesses to postpone trade or investment. In response to higher uncertainty, financial investors could also reduce their exposure to equities, reduce credit supply while trade flows can be redirected to potentially safer countries.

We believe that our analysis reflects the significant progress in the area of measuring trade costs. At the same time, from an applied and policy perspective there can be opportunities for future research and further contributions.

This thesis can be further developed in several directions. Even if this study assesses the impact of soft conflicts on trade/FDI with restricted cases, it is evident that the cases in this research support the argument with empirical evidences. Thus, firstly, the thesis can be developed further to include more cases. Secondly, since there is a high probability that a country has different political, trade, or economic relations with each of the different countries, and the impact of interstate soft conflicts on trade/FDI may be different depending on the case, our study can be expanded analyzing the impact of interstate soft conflicts on trade/FDI on a case-by-case basis, and making the analysis even more accurate than observing the general effects. This could help to suggest a specific direction in establishing foreign and trade policy with the country. And finally, since the duration or frequency of soft conflicts may matter if longer or recurring periods of tension cause some effects, such as diminishing the prestige of a country/organization/firm, future research may examine the threshold at which interstate soft conflicts begin to damage economic relations.

In addition, effective empirical results from future research will provide more substantive policy advice with the precise effects and anticipated outcomes of interstate soft conflicts on trade/FDI.

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