

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

Tamar Taralashvili 

Università Politecnica delle Marche,  
Ancona, Italy

## Correspondence

Tamar Taralashvili, Università  
Politecnica delle Marche, Ancona, Italy.  
Email: [t.taralashvili@staff.univpm.it](mailto:t.taralashvili@staff.univpm.it)

## Abstract

This paper contributes to the literature on the economic impact of interstate conflicts by focusing on empirical analysis of the impact of interstate soft conflicts on bilateral trade. Interstate soft conflicts arising from the failure of diplomacy when a military operation seems too radical may act as a policy tool and have a negative impact on bilateral relations. The empirical approach is based on the use of balanced panel data with annual observations and a theory-consistent structural gravity framework, augmented by a new measure of interstate soft conflict. The results of standard gravity estimators show that interstate soft conflicts have a sustained negative impact on bilateral trade, regardless of the control for omitted variables (presence of regional trade agreements, various types of sanctions, state acts, and militarised interstate disputes) and different model specifications.

## KEYWORDS

bilateral, interstate soft conflict, structural gravity, trade flows

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2023 The Authors. *The World Economy* published by John Wiley & Sons Ltd.

# 1 | INTRODUCTION AND BACKGROUND

International trade is vital for countries' economic growth, so it is essential to understand the factors that may affect bilateral trade flows. To a large extent, trade patterns depend on conventional trade barriers, such as tariffs or transportation costs, and unconventional trade barriers, such as incomplete information, cultural and institutional differences between countries,<sup>1</sup> and also costs resulting from different forms and levels of cross-border conflicts, which are seen as friction-creating obstacles increasing the cost of building successful relationships across national borders.

Countries tend to interact and cooperate in the same way that they have bilateral disagreements. In some cases, a violent interstate conflict arises, resulting in a full-scale war. In other cases, countries compete for influence through various economic or diplomatic tools. While these last-mentioned forms of interstate conflict may be less violent than conventional warfare, they still carry significant risks.

While substantial theoretical and empirical literature in political science and the field of economics<sup>2</sup> explores the interrelationship between conflicts and trade, less is known about the effects of softer interstate conflicts on bilateral trade. The purpose of this study is to present empirical evidence based on data imperfections and measurement issues, arguing that the topic of 'soft conflict' (i.e., how it should be measured and what are its effect size on trade and real GDP) deserves inclusion among our literature's research priorities.

Imagining what an interstate conflict is, we most often think about large-scale disagreements between countries. However, in addition to violent disputes and wars, interstate conflict may be defined more broadly, taking different forms and levels of hostility. Mansfield and Pollins (2001, p. 852) wrote: '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.'

Guided by the idea that lower-level disruptions may act as a policy tool and have the same negative impact as higher-level militarised disputes, the main interest of this study is to analyse the transition from normal relations to tense, defined here as 'interstate soft conflict.'<sup>3</sup>

Interstate soft conflict is a flare-up of tension that precedes a 'lower-intensity' type of conflict and may be driven by different reasons (political, economic, historical, social, etc.) with the idea of changing the perpetrator's actions for the better (e.g., tension over L'Oréal's continued use of 'innovative' ingredients tested on rabbits, mice, and guinea pigs, has been prompted by the idea of stopping companies from testing cosmetics on animals (Naturewatch Foundation, 2000); Similarly, Irish society boycotted Japanese products to stop Japanese whaling expeditions for consumption (Irish Examiner, 2007). Interstate soft conflict may trigger but does not imply the imposition of tariffs or other severe restrictions and does not intend to cause lower/higher-intensity conflict.

<sup>1</sup>See Anderson and Van Wincoop (2004) for a thorough survey of trade costs.

<sup>2</sup>A vast amount literature tries to evaluate whether trade promotes peace (liberal school, e.g., Martin et al., 2008; Polachek, 1980) or if increased asymmetries in existing relationships lead to a conflict between trading partners, affecting their economic relations (neo-Marxist school, realists). Pollins (1989) empirically asserts that in the long run, there is a two-way causality: trade relations influence the level of conflict and cooperation between countries, while political relations affect trade flows. Even though both theories agree that conflicts harm trade (Barbieri & Levy, 1999). See Mansfield and Pollins (2009) for a review of the literature.

<sup>3</sup>Detailed information on the definition of interstate soft conflict is in Section 2.

This study complements the literature on the economic impact of interstate conflicts by focusing on an empirical analysis of the impact of interstate soft conflicts on bilateral trade using albeit imperfect/noisy data and a basic econometric approach at the intersection of trade theory, trade-flow econometrics, and data science, to present a first look at the economically significant effect size on bilateral trade flows and real GDP and likely other proxies of aggregate social efficiency/well-being. It is mainly related to three streams of economic literature that examine the impact of lower- and higher-intensity conflicts and political conflicts from the perspective of consumer boycotts on international trade.

First, this study is related to literature that empirically demonstrates that wars (Glick & Taylor, 2010; Jacks et al., 2011) and other forms of military invasions (Che et al., 2015), terrorism and large-scale violence (Blomberg & Hess, 2006; Nitsch & Schumacher, 2004) negatively affect international trade. However, conflicts do not have to be militarised to influence trade flows; for example, Long (2008) argues that expectations of armed conflict diminish trade due to increased transportation, transaction, and production costs of trade. In contrast, another stream of empirical literature, while supporting the view that conflict diminishes trade, also shows that trade promotes peace (Hegre et al., 2010; McDonald, 2004; Oneal et al., 2003).

While ideologically linked to the literature examining the economic consequences of higher-intensity interstate conflicts, this study differs in that interstate soft conflicts do not necessarily escalate into violent actions. At the stage of the emergence of interstate soft conflict, different parties may, for example, demonstrate anger through public speeches if one of them tries to act unacceptably. And, even if the causes of interstate soft conflict may be related to the causes of conflict and may precede conflict (if tensions escalate enough), it is not synonymous with conflict of higher intensity. Moreover, this study is of interest for examining the impact of a flare-up of tension and not its consequences, which may be, for example, higher-intensity conflicts.

Second, this study is comparable to the literature exploring the relationship between lower-intensity political conflicts and trade. The political relationship at the government level consists of deciding whether to be at peace or in conflict with any other country. Pollins (1989) argues that tense bilateral political relations negatively affect economic exchange through decisions of the representatives of the governments, diplomatic or political climate. 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 are experiencing a decline in export flows to China. Mityakov et al. (2013) suggest 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 may promote economic activity. Rose (2007) finds that the presence of foreign missions is positively correlated with exports and that each additional consulate is associated with an increase in exports. Lederman et al. (2010) claim that increasing the budget of export promotion agencies increases exports. Nitsch (2007) finds that governmental and official visits increase bilateral exports for the U.S., France, and Germany. Creusen and Lejour (2011) show that the presence of Dutch support offices abroad and trade missions in destination countries promotes trade and raises export.

Contributions that differentiate this study from previous works are broader. Foremost it focuses not only on political tensions but also uses those that have arisen due to various factors (racial, social, religious, environmental, etc.). Second, it does not study only one incident separately, as, for example, Fouka and Voth (2013) when studying the tension in Greek-German political relations but combines all cases (see Table 1 and Appendix S1 for details of cases) of interstate soft conflicts that match the definition into one indicator variable to examine the overall impact

TABLE 1 List of interstate soft conflicts and classification.

N	From	Towards	Year	Title	Reason
1 <sup>a</sup>	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 <sup>b</sup>	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 <sup>c</sup>	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 and Gabbana under fire	Racism

<sup>a</sup>Cases highlighted in grey are related to direct interstate soft conflicts.

<sup>b</sup>Officially there are 22 countries in the Arab world: Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates, Yemen. <http://worldpopulationreview.com/countries/arab-countries/>.

<sup>c</sup>See Appendix S2 for the list of Muslim-dominated countries.



of interstate soft conflicts on bilateral trade. Third, this study does not analyse the impact of interstate soft conflicts on one country's trade with another, instead, it measures the overall impact of interstate soft conflicts on trade in general.

Lastly, since consumer behaviour may respond to interstate soft conflicts (e.g., consumer boycotts) through multi-causal channels that exceed the decision variables of policymakers or 'state actors' and yet are influenced by them, my empirical work also draws on the literature on political conflicts from the perspective of consumer boycotts.

There is growing empirical evidence that consumers are changing their decisions due to strained political relations between countries, which negatively affects trade flows. Heilmann (2016) examines the impact of four different political tensions, measured as politically motivated boycotts on trade, and finds the negative effect of boycotts on trade flows, mainly affecting consumer products. Heilmann (2019) focuses on the same four politically motivated boycotts and finds that boycotts may negatively affect bilateral trade in goods and services. Empirical studies of U.S.–France dispute over the Iraq War, analysing sales of French wine in the U.S., present adverse outcomes on sales (Ashenfelter et al., 2007; Chavis & Leslie, 2006; Vannerson, 2003). 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. Meanwhile, according to Clerides et al. (2015), the rise in anti-American sentiment fueled by the Iraq war generated a statistically significant negative effect on sales of American products, such as soft drinks and detergents in 22 Arab states known as the Arab world, the Arab League, etc. Fouka and Voth (2022) find that Greek consumers cut back on purchases of German cars due to tense relations between governments during the debt crisis after 2010.

The previous literature mainly focuses on tensions arising from disagreeing with a country's activities, leading to protests against that country as a whole and a boycott of any of its products. This study takes a step further by also considering interstate soft conflicts that arise from disagreement with the activities of a particular company, which results in a protest against that company and the refusal to use a particular product or all the products it produces. Moreover, previous articles examine the impact of politically motivated consumer boycotts on selling specific products, such as wine, cars, soft drinks, or detergents, in just one particular country. This study explores the overall impact of tensions on trade by analysing the impact of aggregate interstate soft conflicts on aggregate trade flows.

This study argues that, like interstate wars or large-scale military conflicts, interstate soft conflicts resulting from failures when a military operation seems too drastic can worsen trade relations. Moreover, since, to our knowledge, little attention has been paid to studying the impact of interstate soft conflicts on bilateral trade, this study aims to fill this gap by quantifying the relationship between interstate soft conflicts and bilateral trade flows. Focusing on trade as the primary channel of economic pain for countries affected by soft conflict, I pursue this objective by assessing its related costs and the effects of these costs on welfare.

The empirical approach uses panel data with annual observations and a theory-consistent structural gravity model augmented with a new measure of interstate soft conflict. First, I quantify the impact of interstate soft conflicts on aggregated (country-level) and disaggregated (product category-level) bilateral trade flows using the PPML estimator with the full set of FEs. Then, since trade relations may influence the level of conflict and cooperation between countries, while political relations may affect trade flows, to reduce the problem of reverse causality between bilateral trade and interstate soft conflicts and to account for the time delay of the effect, I use lag of the interstate soft conflict variables in the analysis (I use lags as a first attempt, but future work may need to consider more elaborate econometric approaches). Lastly, employing the full gravity

system, I convert the resulting partial equilibrium estimates into the effect of general equilibrium on real GDP.

The results show that interstate soft conflicts have a sustained and economically significant negative effect on bilateral trade, regardless of the control for omitted variables (presence of regional trade agreements, different types of sanctions, state acts, and militarised interstate disputes) and different model specifications. The findings show a negative relationship between interstate soft conflicts and bilateral trade, even when analysed at the disaggregated product category level, claiming that product categories with comparative advantage (with higher RCA values) tend to suffer more from interstate soft conflicts. While the counterfactual experiment on a hypothetical world without interstate soft conflicts suggests that removing soft conflicts would result in possible gains from trade. In the case of real GDP, the effects vary across countries, showing that less developed and/ or small economies would benefit more from the hypothetical removal of interstate soft conflicts than developed and /or large countries. Lastly, the results imply that the 'full endowment' general equilibrium may have mixed effects on the consumer side through more favourable prices and on producers through changes in factory-gate price.

The rest of this paper is structured as follows: Section 2 provides a definition, data selection procedure, list of interstate soft conflicts, and their classification. Section 3 discusses empirical model and estimation issues. Section 4 reviews the data used in the analysis. Section 5 presents the baseline estimation results. Section 6 discusses robustness checks. Section 7 introduces product-level analysis. Section 8 presents internal trade and general equilibrium analysis. Section 9 concludes.

## 2 | MEASURING INTERSTATE SOFT CONFLICTS

### 2.1 | Definition

Motivated by the idea that the lower-level deterioration of relations between countries may act as a policy tool and have the same negative impact as higher level militarised dispute, the main interest of this study is analysing the transition from normal relations to tense, defined here as 'interstate soft conflict.'

In this study, interstate soft conflict means a flare-up of tension between two or more parties for various reasons, such as political disagreements, mutual distrust, historical tensions, human/ animal rights violations, racial or religious hatred, etc. Interstate soft conflict may be expressed as diplomatic restraints, renegotiation of relations, protests or boycotts, etc.

Interstate soft conflict may impact bilateral trade through several channels (country, company, individual). At the country level, states with the desire for domination, revenge, punishment, change of policies, or just beliefs, may avoid trading with their partner countries or companies. Such cases appear more frequently in countries where the government has more direct control of the economy and may use trade as a political tool. 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 flow to China. Similarly, the government may use its power as a tool to punish businesses with which it has tension. For example, Dolce and Gabbana's advertising campaign for a fashion show in China has been deemed racist, ignorant, and provocative, leading to the Chinese Ministry of Culture and Tourism cancelling the show and boycotting the brand by its customers (Bloomberg News, 2018).



At the company level, companies, governmental or non-governmental organisations, due to their disagreement with the activities of a particular company or country, may influence the reduction of bilateral trade ties. For example, in 2008, shortly after Nokia announced it had been closing its factory in Germany due to high costs and switching to cheaper production in Romania, German unions sparked demonstrations against Finnish company (Westall, 2008). For the case of the country, in 1995, after the French military announced a series of nuclear tests in the South Pacific, many Danish retailers stopped dealing with French businesses (Bentzen et al., 2001).

Lastly, interstate soft conflict may also arise at the individual level when consumers choose to avoid specific/all products associated with the disputed country or company due to a personal dislike of their politics or to express animosity related to military, political, economic, or social events taking place in a particular country. Consumer behaviour studies argue that animosity increases the desire of consumers to boycott, which leads to a decrease in demand for products associated with the opposing country (Klein et al., 1998). Chavis and Leslie (2006) show that U.S.-France tension over the 2003 invasion of Iraq had a negative effect on the sales of French wine, demonstrating that deteriorating political relations between countries may provoke citizens, influence their preferences and increase the likelihood of a boycott. On the other hand, in 2010, civil society groups in Cambodia called for a boycott of Tate and Lyle Sugars against an illegal and often violent land confiscation from hundreds of Cambodians (Le Coz, 2013).

The target of interstate soft conflicts may be a country in general or a specific company. They may lead to economic pressure on the target, forcing it to formulate political responsibilities and change practices in response to the coercion. When interstate soft conflicts target a country, they may result in economic losses, changes in government, or political positions. In the case of companies, interstate soft conflicts may affect their performance, especially in terms of sales, brand image, and reputation. This kind of lower-level disruptions have no intent to yield violent conflicts, the imposition of sanctions, or other official institutional acts but may act as a policy instrument and have the same negative impact on trade flows as after the imposition of tariffs, embargoes, or sanctions.

So, Interstate soft conflicts may:

- Occur between two or more parties.
- Arise for various reasons: political disagreements, mutual distrust, historical tensions, human/animal rights violations, racial or religious hatred, etc.
- Be expressed as: diplomatic restraints, renegotiation of relations, protests or boycotts, etc.
- Affect trade flows through three channels: at the level of country, company, or individual consumers. The state may use its power and trade as a tool to punish those countries and companies with which it has some kind of tension; organisational units such as companies, foundations or trade unions may disagree about the policies or activities of a particular company or country; while consumers, both individually and collectively, may stop buying products that are somehow related to the disputed country or company.
- Lead to pressure on the target entity, which may be a country in general or a particular company, in order to punish, dominate, retaliate, or try to change their certain practices.
- Act as a policy tool and have no intent to yield violent conflicts, the imposition of sanctions, or other official institutional acts.

## 2.2 | Methodology

In the case selection process, data collection is the first step. The data collection procedure is based on keyword searches using multiple top search engines such as Google, Bing, Yahoo, and Baidu (Avila, 2017). Media reports and online journals, scholarly articles, and working papers that mention the words: 'boycott,' 'tension,' 'dispute,' and 'conflict' in their texts and/or in their headlines are considered essential resources for identifying interstate soft conflicts.

The search is focused on the 2000–2019 period, which is chosen simply for convenience and the most recent data coverage. However, there is no reason to believe this period is not typical of other periods.<sup>4</sup>

After collecting the data, I review all search results using descriptions based on logic and reasoning to identify all suitable cases and determine the underlying motivation and timing of the event. Then, I narrow down the sample to cases at the interstate level, excluding cases that appear at the state level.<sup>5</sup> As a result, 20 cases matched the definition generating 194 dyadic country pairs that form the interstate soft conflict measure, available for further analysis. Table 1 summarises the classification of all 20 cases; Appendix S1 provides a brief description of the cases. Since it is challenging to be abreast of all the worldwide interstate soft conflicts, the partial observability of cases may lead to an underestimation of the overall effect of interstate soft conflicts in absolute terms. To deal with measurement issues and identification, in Section 6, I perform a control group analysis by restricting the sample, focusing on a specific time frame and a group of countries. This way, I reduce the probability of neglecting potentially relevant interstate soft conflicts. The findings are confirmed in Table 6.

From the descriptions of the cases, I determined that the target of an interstate soft conflict could be a country in general or a specific company. Further, for simplicity, these two types of interstate soft conflicts will be called indirect and direct interstate soft conflicts.

Seven out of 20 cases have been identified as tensions against specific companies (direct interstate soft conflicts). This type of interstate soft conflict arises due to unacceptable policies or activities of a particular company opposed by senior government officials, various associations or trade unions that defend human/animal/various minority rights, etc., and lastly by consumers – individually or collectively. Direct interstate soft conflicts may lead to a growing wave of protest against that company and the refusal to use a particular product or all of its products.

For example, Dolce and Gabbana's case, which sparked tension over an advertising campaign for a fashion event in China, that has been deemed racist, ignorant, and provocative, prompted the cancellation of the show by the Chinese Ministry of Culture (Bloomberg News, 2018).

---

<sup>4</sup>After estimating the impact of interstate soft conflicts over various shorter time frames, regardless of the restricted sample sizes, the coefficients of the interstate soft conflict variables remain negative in all cases, with a tendency to increase in magnitude as more years are covered, i.e., when more interstate soft conflict cases are included (see Appendix S8 for details).

<sup>5</sup>Interstate conflict involves a disagreement between two or more states, while intrastate – occurs within one state. As an example of state-level cases that I have excluded are the followings: 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 (Hyland, 2016); Freedom for Animals ran a campaign titled 'Sea Lies,' which called for a boycott of all Merlin Entertainment brands due to their treatment of captive animals in their aquariums, particularly whales (Freedom for Animals, 2014); US Campaign for Safe Cosmetics (CSC) called for a boycott against Johnson & Johnson over the company's use of harmful chemicals in its baby shampoo (NBC News Digital, 2011).

Also, the 'Stop Esso campaign' initiated by Greenpeace aimed to boycott the oil corporation Esso (known as ExxonMobil in the U.S.) due to its environmental damage (Greenpeace, 2001). Moreover, 'Mexicali's residents have called for a boycott of Constellation Brands, after the company gained access to the region's drinking-water supply in a series of "shady, undocumented" deals' (Carlile, 2018).

All these examples of direct interstate soft conflicts have been directed against specific companies such as Dolce and Gabbana, Esso, and Constellation Brands, due to their unacceptable policies or activities. As a result, they have been opposed by the Chinese Ministry of Culture, a campaigning network Greenpeace, and Mexicali consumers, leading to the rejection of a particular product or all products made by these companies.

The remaining 13 cases have been identified as tensions against a country in general (indirect interstate soft conflicts). This kind of interstate soft conflict appears due to political, military, economic, or diplomatic events and various governmental decisions, in some sense unacceptable for another country or group of countries, for various organisations representing ethnic and racial minorities, environmental and animal protection groups, etc., and lastly, for consumers. Indirect interstate soft conflicts may lead to a growing wave of protest against that country as a whole and the refusal to use a particular product or all products associated with this country.

For example, 'China has canceled a meeting with the Norwegian fisheries minister days after Beijing warned that Norway's decision to award the Nobel peace prize to a jailed Chinese dissident would harm relations between the countries' (Watts & Weaver, 2010). Another example of indirect interstate soft conflict involves the active hunting of whales for consumption in Japan. This practice prompted Irish environmental and animal rights organisations to organise campaigns that sparked public protests against Japan (Irish Examiner, 2007). Lastly, the boycott against the Maldives stemmed from a controversy over removing kettles from Chinese tourists' hotel rooms to prevent them from cooking instant noodles in their rooms instead of dining at a hotel restaurant. This discriminatory practice has sparked social and cultural animosity among Chinese tourists calling for a boycott of the Maldives (Global Times, 2013).

All these examples of indirect interstate soft conflicts have been directed against specific countries such as Norway, Japan, and Maldives due to their unacceptable policies or activities. As a result, they have been opposed by a country (China), environmental and animal rights organisations, and consumers, leading to the rejection of a particular product or all products associated with these countries.

To study the impact of interstate soft conflicts on bilateral trade flows, I exploit the fact that for each interstate soft conflict, the dataset contains information about affected or unaffected partner countries, as well as the year of occurrence of interstate soft conflict between them. Given the difficulty of determining the moment of the beginning or end of an interstate soft conflict, this study is of interest for studying the flare-up of tension. I define the flare-up of interstate soft conflict as the year it has been first mentioned in primary sources (e.g. press and social media reports).

To construct a new measure of interstate soft conflict, I list each case of interstate soft conflict twice: once with country  $i$  and  $j$  at time  $t$ , and once with countries flipped.

First, I construct the main variable of interest as a single indicator variable that equals one if there is a flare-up of interstate soft conflict between partner countries at time  $t$ , and zero otherwise. Then, given that the target of an interstate soft conflict may be a country in general or a specific company, I also zoom in on the impact of two different types of interstate soft conflicts by distinguishing between indirect and direct types of interstate soft conflict. However, the main

interest of this study lies in analysing the impact of all 20 cases altogether without distinguishing them according to the target standing behind them.

Thus, a new measure of interstate soft conflict, the main variable of interest, is the indicator variable, which is equal to one if there is a flare-up of tension between country  $i$  and  $j$  at time  $t$  and is equal to zero in all other years.

Whereas I construct the main variable of interest as an indicator variable, initially, I deemed using a non-linear treatment to be a good proxy as it is often done to detect policy changes. However, since interstate soft conflicts differ from policy adoption I address the potential pitfall of inaccurate event measurement by adopting an alternative strategy: I estimate an interstate soft conflict propensity score from logistic regression as a function of the observable variables. The logistic regression results are then exploited to build propensity score, the predicted probability of being in a soft conflict between country  $i$  and  $j$  at time  $t$ . As it may be assessed from [Figure S3.1](#) of the [Appendix S3](#) this predicted probability displays a smooth increase around the time of the event (the focus in [Figure S3.1](#) of the [Appendix S3](#) is from 2 years before to 2 years after the event) for the treated pair of countries. Hence, in a robustness check, I substitute the baseline interstate soft conflict indicator variable with this predicted probability to account for the fact that the binary classification may be crude. The estimated results are consistent with those in the baseline specification (see [Table S3.1](#) of the [Appendix S3](#) for details).

Interested in how each interstate soft conflict case affects trade flows, I plotted the corresponding graphs. [Figure 1](#) presents 18 different graphs showing the effect of interstate soft conflicts on exports from conflict-affected countries to countries initiating interstate soft conflicts. Data are presented for 3 years before and after each interstate soft conflict. In each graph, the vertical line at time  $t$  represents a flare-up time of a given case of interstate soft conflict, and the solid blue line depicts export flows from one country to another.

The graphs strongly suggest that exports from conflict-affected countries to countries initiating interstate soft conflict mostly decline after comparing exports in the conflict year with the previous year. While after the shock, we see a sharp recovery or a continuation of a downward trend. For example, the first two cases show a decreasing trend in exports compared to the previous and the following year. At the same time, the following three cases show a decrease in exports compared to the previous year, but next year we see an upward trend.

Export flows tend to increase compared to the previous year's trade in only two cases. In both cases, this may be because these particular interstate soft conflicts arose in the last months of the year, so the reduction effect manifested in the following year. Looking further on a case-by-case basis, it is easy to see that export levels decline in varying degrees compared to the previous or following year and that the interrelationship between interstate soft conflicts and exports is not straightforward, highlighting the importance of studying interstate soft conflicts that impede trade.

### 3 | EMPIRICAL MODEL AND ESTIMATION ISSUES

In order to estimate the impact of interstate soft conflicts on bilateral trade flows and to obtain partial equilibrium estimates, this study employs a theoretically grounded gravity model that corresponds to the structural gravity equation by Anderson and Van Wincoop (2003)<sup>6</sup> and re-

<sup>6</sup>See [Appendix S4](#) for details on the structural gravity model of trade.

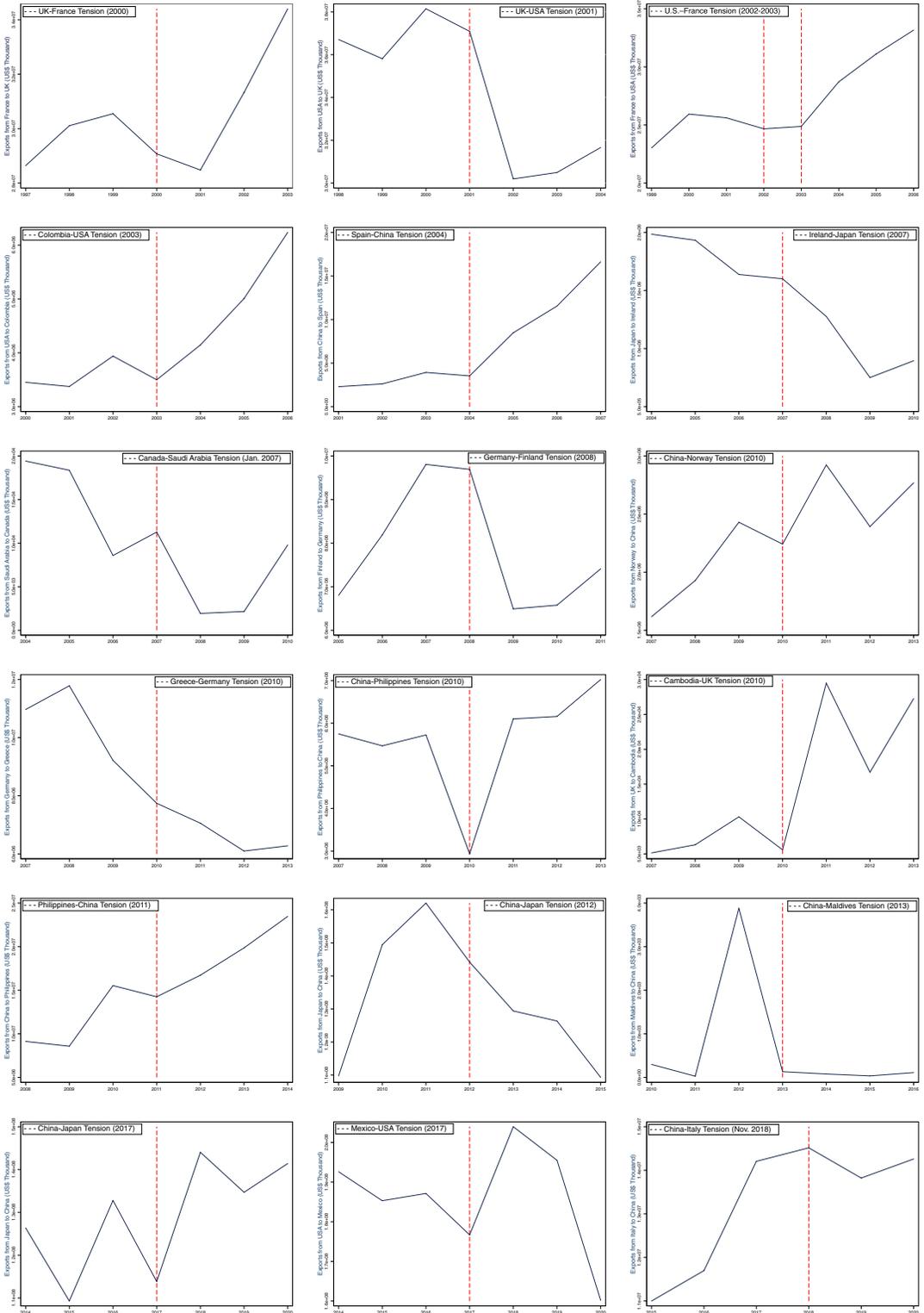


FIGURE 1 The effect of interstate soft conflicts on exports from conflict-affected countries to countries initiating interstate soft conflicts case-by-case. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

flects all proposed recommendations for proper estimation.<sup>7</sup> Following this theory-consistent framework, the econometric gravity model for the baseline analysis used in this study is:

$$X_{ij,t} = \exp[\beta_1 SOFTconflict_{ij,t} + \beta_2 GRAV_{ij} + Y_{i,t} + E_{j,t} + y_{i,t} + e_{j,t} + \mu_{ij}] + \varepsilon_{ij} \quad (1)$$

To capture bilateral relationships between countries, both time-invariant and time-varying factors are used.  $i$  and  $j$  denotes countries, and  $t$  denotes time.  $X_{ij,t}$  is the nominal trade flows from country  $i$  to  $j$  at time  $t$ .  $SOFTconflict_{ij,t}$  is an indicator variable that takes the main place in the analysis, which equals one if there is a flare-up of interstate soft conflict between partner countries at time  $t$  and zero otherwise.  $GRAV_{ij}$  is a vector of observable variables to proxy unobservable bilateral trade costs together with the measure of interstate soft conflicts. It 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. Size variables: exporter's value of output –  $Y_{i,t}$  and importer's expenditure –  $E_{j,t}$ , in practice, often proxied by GDPs.

As additional control variables of the bilateral relationship, other time-varying indicator variables are used:  $RTA_{ij,t}$  for the presence of regional trade agreements (RTAs);  $SANCT_{ij,t}$  for different types of economic sanctions: arms, military assistance, trade, financial, travel, and other sanctions;  $MID_{ij,t}$  for militarised interstate disputes (MIDs) coded into the display of force, use of force and war;  $State\_Acts_{ij,t}$  for export and import policy instruments, trade defence instruments, non-tariff barriers, and other state acts.

Appendix S5 presents a complete list of all the variables employed in the analysis, their definitions, and sources.

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

Considering the multiplicative form of the structural gravity equation of Anderson and van Wincoop, the baseline model used in the analysis could be represented in a log-linear form with an additive error term, however following Silva and Tenreyro (2006), all the regressors enter exponentially to avoid inconsistency. Based on the fact that trade flows mainly reveal a correlation between covariates and the error term (heteroscedasticity), their study suggests using the Poisson pseudo-maximum likelihood (PPML) estimator instead of applying the standard log-linear Ordinary least squares (OLS) approach, under the assumption that variance of the error term is constant across observations (homoskedasticity). In addition, the PPML estimator treats all missing trade flows as zeros and assumes that there are statistical

<sup>7</sup>For studies of the empirical gravity literature offering information on data, econometric challenges and solutions with gravity estimations, see Baldwin and Taglioni (2006), Head and Mayer (2014), Piermartini and Yotov (2016), and Silva and Tenreyro (2006).



zeros, i.e., that the zeros occur randomly (Head & Mayer, 2014). That allows using the information in zero trade flows that would otherwise be excluded from the estimation if the OLS estimator was used, creating a selection bias problem.<sup>8</sup> In addition according to Weidner and Zylkin (2019) PPML is the only estimator that can give consistent estimates to a three-way gravity specification with the full set of FEs without imposing strict assumptions on the variance of the error term.

Following the above recommendations, to obtain the estimates for all specifications of Equation (1), panel data and the PPML estimator with the full set of FEs are employed. However, to ensure that the estimates are robust, I also test for PPML estimates with standard gravity variables instead of pair fixed effects, and OLS estimates with the full set of FEs and without them (see Appendix S6 for details).<sup>9</sup>

## 4 | DATA

The sample used for the empirical analysis combines data from different sources for the period 2000–2019. A balanced database aggregates all information by country-pair and year. Appendix S7 provides a complete list of countries used in the analysis.

Aggregated (country-level) bilateral export flows data (in thousands of current US\$) is 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 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 that mention the words: ‘boycott,’ ‘tension,’ ‘dispute,’ and ‘conflict’ in their texts and/or in their headlines. See Section 2 for details on a new measure of interstate soft conflict.

The baseline dataset contains time-varying and time-invariant variables since the trade costs may be divided into their time-varying and time-invariant components.

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 & Zignago, 2011). While time-varying country-specific data on GDP per capita (current US\$) is from the World Bank World Development Indicators (WDI).

Time-varying control variables like RTAs, sanctions, MIDs, and state acts are used apart from standard gravity variables.

Data on RTAs is from Mario Larch’s Regional Trade Agreements Database (Egger & 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; Kirilakha et al., 2021; Syropoulos et al., 2022).

<sup>8</sup>In the trade data, we observe zero and missing trade flows which may occur either because two countries do not trade with each other or because trade flows need to be correctly reported and thus are missing.

<sup>9</sup>According to Head and Mayer (2014, p. 17) ‘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’.

Data on militarised interstate conflicts stem from MID dyadic database, compiled by the Correlates of War Project (Maoz et al., 2019). MID sample covers interstate armed conflicts coded into the display of force, use of force, and war.

Lastly, the data on export and import policy instruments, trade defence instruments, non-tariff barriers, and other types of restrictions is from the Global Trade Alert initiative (Evenett & Fritz, 2020), which includes more than 33,000 records of state acts.

## 5 | BASELINE ESTIMATION RESULTS

After employing several panel data estimation techniques (see Appendix S6 for details), PPML proved to be the only estimator that could provide consistent estimates for the specifications used in this study. Thus, the PPML estimator with exporter-time, importer-time, and country-pair FEs is used in further analysis. Assessed in Stata using the 'ppmlhdfc' command (Correia et al., 2019).

The baseline estimates of the impact of interstate soft conflicts on bilateral trade flows across various targets are presented in Table 2. Due to the rich structure of FEs, I can only identify the impact of time-varying bilateral covariates, which in this case includes the interstate soft conflict variable, as the main object of the analysis, as well as two other variables to see if the effect of interstate soft conflicts is driven more by indirect or direct interstate soft conflicts. The estimated result for the main variable of interest, which reflects the impact of flare-ups of both indirect and direct interstate soft conflicts between partner countries, is shown in Column (1). The result implies that, on average, interstate soft conflicts reduce bilateral trade flows by about 8.61% (that is  $[e^{-0.090} - 1] \times 100$ ). Separation of indirect and direct cases of interstate soft conflicts shows that tensions against the country as a whole due to its unacceptable actions have a greater effect on trade. The estimated results presented in Column (2) show that the indirect interstate soft conflicts reduce bilateral trade flows by about 10.24% on average, while direct types by about 6.48%.

The results show that interstate soft conflicts have an immediate negative effect on bilateral trade flows. However, such tensions may affect the country's trade flows immediately and over an extended period.

Moreover, it is argued that conflicts may react to changes in trade flows, meaning that countries with close trade relations with their trading partners are less likely to enter into conflict. To reduce the problem of reverse causality between bilateral trade and interstate soft conflicts and to consider the time delay of the effect, lag of the interstate soft conflict variables is introduced into the analysis. Testing the impact of interstate soft conflicts using a lag approach makes it more likely to demonstrate the impact of interstate soft conflicts on trade flows than the other way around.

The results presented in Table 2, Columns (3–4) suggest that interstate soft conflicts may negatively affect bilateral trade flows over an extended period. The interstate soft conflict of the next year could reduce bilateral trade flows by about 11.31%, as shown in Column (3). The estimated results do not differ significantly from the results presented in Columns (1–2); the only difference is the higher magnitude of the coefficients.

Since it is rather challenging to achieve an immediate downturn in trade after the emergence of interstate soft conflict, and it generally takes time to get an effect, a lagged version of the interstate soft conflict variable will henceforth be used.

Interested in the timing of the effect of interstate soft conflicts, I also assess the baseline model using lagged effects of the interstate soft conflict variable (up to 5 years). This way, I can test the impact of interstate soft conflicts over time. The results show that the effect of interstate soft conflicts disappears in 5 year period (see Table A1 of Appendix A).

TABLE 2 Baseline estimation results.

	(1)	(2)	(3)	(4)
SOFTconflict	-0.090 (0.014)***			
INDIRECT		-0.107 (0.017)***		
DIRECT		-0.065 (0.023)***		
L.SOFTconflict			-0.120 (0.017)***	
L.INDIRECT				-0.146 (0.019)***
L.DIRECT				-0.078 (0.027)***
<i>N</i>	435,241	435,241	415,295	415,295
Pseudo $r^2$	0.995	0.995	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

Note: This table presents estimates of the impact of interstate soft conflicts on bilateral trade flows across various targets using the PPML estimator and exporter-time, importer-time, and country-pair FEs. All estimates are obtained with balanced panel data for the period 2000–2019. The dependent variable is trade in levels. Column (1) covers all interstate soft conflict cases. Column (2) includes indirect and direct cases. Column (3) covers all interstate soft conflict cases over the next year. Column (4) includes indirect and direct cases for the next year. All Standard errors are in parentheses.

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

To further bootstrap the empirical distribution of effect sizes, I re-estimate the baseline model for different sub-samples. I restrict the time frame to a shorter randomly selected, pre/post-'year' period (pre/post-2004, 2007, 2010, and 2013 years). After estimating the impact of interstate soft conflicts over shorter time frames, regardless of the restricted sample sizes, the coefficients of the interstate soft conflict variables remain negative in all cases, with a tendency to increase in magnitude as more years are covered, i.e., when more interstate soft conflict cases are included (see Appendix S8 for details).

## 6 | ROBUSTNESS CHECKS

### 6.1 | Robustness of baseline specification and sample composition

Due to the rich structure of the FEs, results can only be obtained for time-varying two-tailed variables. Thus, bilateral time-varying control variables like RTAs, different types of sanctions, state acts, and MIDs are employed to test the reliability of the estimates.

To perform robustness checks, I include control variables one by one due to the limited data available for these variables. In the case of RTAs and sanctions, I conduct a full sample assessment. However, I restrict the sample to the 2000–2014 and 2008–2019 periods to control for militarised interstate disputes and state acts respectfully. As I restrict the sample, I repeat the baseline estimation, including the RTAs indicator variable for the sub-samples.

TABLE 3 Accounting for competing explanations.

	(1)	(2)	(3)	(4)	(5)	(6)
	RTAs	Sanctions	RTAs	MIDs	RTAs	State acts
	2000–2019	2000–2014	2000–2014	2008–2019	2008–2019	
L.SOFTconflict	-0.119 (0.017)***	-0.121 (0.017)***	-0.117 (0.027)***	-0.120 (0.029)***	-0.082 (0.017)***	-0.092 (0.017)***
RTA	0.117 (0.022)***	0.117 (0.022)***	0.069 (0.025)***	0.068 (0.025)***	0.104 (0.020)***	0.100 (0.020)***
ARMS_sanction		-0.096 (0.075)		-0.045 (0.082)		-0.092 (0.068)
MILITARY_sanction		-0.036 (0.051)		-0.036 (0.047)		-0.040 (0.054)
TRADE_sanction		-0.122 (0.038)***		-0.029 (0.041)		-0.174 (0.042)***
FINANCIAL_sanction		0.054 (0.045)		-0.050 (0.041)		0.124 (0.044)***
TRAVEL_sanction		-0.079 (0.090)		0.208 (0.126)		-0.124 (0.068)*
OTHER_sanction		0.078 (0.066)		-0.112 (0.060)*		0.118 (0.062)
DISPLAY_of_force				0.009 (0.016)		0.045 (0.012)
USE_of_force				-0.044 (0.033)		-0.015 (0.029)
Interstate_War				0.183 (1.148)		0.000 (.)
Capital_controls						-0.003 (0.049)

TABLE 3 (Continued)

	(1)	(2)	(3)	(4)	(5)	(6)
	RTAs	Sanctions	RTAs	MIDs	RTAs	State acts
	2000–2019		2000–2014		2008–2019	
Exp_imp_instruments						−0.002 (0.004)
Foreign_investment_policy						−0.009 (0.013)
Labor_migration_policy						−0.002 (0.008)
Public_procurement_policy						0.022 (0.010)**
Subsidies_and_state_aid						−0.010 (0.005)**
Trade_defence_instruments						−0.012 (0.013)
Non_tariff_barriers						0.059 (0.024)
<i>N</i>	415,295	415,295	297,828	297,828	261,335	261,335
Pseudo <i>r</i> <sup>2</sup>	0.994	0.994	0.994	0.994	0.995	0.995
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

*Note:* This table presents estimates of the impact of interstate soft conflicts on bilateral trade flows and robustness checks by including control variables in the baseline model. All estimates are obtained with balanced panel data for different periods due to data unavailability using the PPML estimator and exporter-time, importer-time, and country-pair FEs. The dependent variable is trade in levels. Columns (1–3–5) control for the RTAs in different periods. Column (2) controls the different types of sanctions. Column (5) additionally controls MIDs. Column (6) controls the state acts. All Standard errors are in parentheses.

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

Table 3 presents the estimated results for the main variable of interest. Regardless of the added control variables and restricted sample size, the coefficient of the interstate soft conflict variable remains negative in all cases.

These findings suggest that interstate soft conflicts do not manifest themselves in increased sanctions, militarised disputes, or state acts. The estimates are robust, and interstate soft conflicts have a negative effect on bilateral trade even after significant sampling constraints due to data availability.

However, to ensure that I do not account for the impact of sanctions, MIDs, and state acts in the estimates of interstate soft conflict in Columns (2–4–6) of Table 3, I perform further robustness checks. First, I include all the sanctions imposed between pair countries in a year in the baseline specification. Then, I exclude all pairs of countries subject to any type of sanctions over the entire period. The results after including and excluding all sanctions, MIDs, and state acts, suggest that the effect of interstate soft conflicts is not due to any of them (see Table A2 in Appendix A for details).

In addition, to dispel any suspicion that a China effect does not influence the estimation results, I exclude China from the baseline specification as an exporter, an importer, and both. The results presented in Table A3 of the Appendix A suggests that interstate soft conflict variable estimates are independent of the China effect.

Since the dataset includes the global financial crisis period, I restrict the sample in three ways to exclude the possibility of capturing the impact of the financial crisis. First, I restrict the sample to the 2000–2008 period to include the starting year of the crisis in the estimation. Second, I restrict the sample to the 2009–2019 period to control for the subsequent years of the crisis. Lastly, I drop 2008, 2009, and 2010 years from the sample. Obtaining similar results in Column (1) and Column (2) of Table A4 of the Appendix A indicate that the crisis did not affect interstate soft conflicts, which is further confirmed in Column (3), where the 2008, 2009, and 2010 years are not taken into account in the estimation.

To further test the robustness of the results, I add the lag of the bilateral trade variable to the baseline specification to control for initial trade. Then, I interact this lag with the interstate soft conflict variable. The estimated results presented in Table A5 of the Appendix A Columns (1–2) show that interstate soft conflicts continue to have a sustained negative effect on bilateral trade flows in both cases.

And lastly, I control for distance in preferences. I introduce the Linder variable into the baseline specification, which is expressed as the absolute difference between the two countries' GDP per capita.<sup>10</sup> In Column (3) of Table A5 of the Appendix A, the coefficient of the Linder variable is negative, as predicted by the Linder's hypothesis. However, the size of the coefficient equals zero and is insignificant. That indicates that countries prefer to avoid trading with countries with similar economic development and structure of preferences or tastes. In addition, I include the logarithm of the Linder variable. In Column (4) of Table A5 of the Appendix A, the coefficient of the Linder variable turned out to be positive, emphasising that there are considerable differences between the characteristics of demand in countries; therefore, the validity of the Linder's hypothesis cannot be confirmed in this study.

Overall, the results suggest that interstate soft conflicts have a robust negative effect on bilateral trade flows, regardless of the control for omitted variables and across different model specifications.

<sup>10</sup>Linder =  $|GDP_{pc}^j - GDP_{pc}^i|$ . According to Linder's hypothesis, the distance in GDP per capita can be used to measure the similarity of tastes, the greater the similarity of the economic structures of countries (smaller Linder variables), the higher the likelihood of their mutual trade (Linder, 1961).

## 6.2 | Measurement issues and identification

It is challenging to be abreast of all the worldwide interstate soft conflicts. The lack of identification of relevant cases implies that the control group may include countries affected by soft conflicts. If so, the baseline results in this study may underestimate the overall effect and are expected to be biased towards zero. To inspect this possibility, I do the following:

First, I select two events from the list of cases: indirect and direct interstate soft conflict (see [Table 1](#)). Indirect interstate soft conflict flared up in 2010 when ‘China has canceled a meeting with the Norwegian fisheries minister days after Beijing warned that Norway’s decision to award the Nobel peace prize to a jailed Chinese dissident would harm relations between the countries’ (Watts & Weaver, 2010). While direct interstate soft conflict arose in 2018 after the ad campaign for ‘The Great Show,’ a Dolce and Gabbana event in China that has been deemed racist, ignorant, provocative, and sexually offensive in China, leading to the Chinese Ministry of Culture and Tourism cancelling the show and sparking a massive controversy against the Italian brand (Bloomberg News, 2018).

Second, I test the impact of selected cases in the full sample by restricting the interstate soft conflict indicator variable to equal one only for one selected case at time  $t$  and zero otherwise, therefore putting all those cases that previously figured as ones in my interstate soft conflict variable to zero. The results for both cases, presented in [Table 4](#), are insignificant, suggesting that partial observability of cases leads to an underestimation of baseline results.

Third, I test the impact of the same two cases on a restricted sample where the control group comprises China-Norway’s four major trading partners in 2010 and China-Italy in 2018 (World Integrated Trade Solution, 2020). Lastly, I restrict the time frame to a shorter pre/post-event period by keeping the event year, the year before and after (see [Table 5](#)).

In this case, the smaller size of the control group and the narrower time frame reduce the probability of neglecting potentially relevant interstate soft conflicts. The findings are confirmed in [Table 6](#), implying that the baseline estimates in this study identify a lower bound (in absolute terms) of the true effect.

## 7 | PRODUCT LEVEL ANALYSIS

Having found the 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 this, I employ the structural definition of the gravity model<sup>11</sup> using disaggregated (at the product category level) bilateral export flows data from the World Integrated Trade Solution (WITS) software, which provides

<sup>11</sup>Although, the basic definition of gravity only considers aggregated and not sectoral or product-specific trade, the structural definition of gravity explains bilateral trade at the sector or product level. The equation presented by Anderson and Van Wincoop (2004) gives the familiar sectoral gravity model.

$$X_{ij,t}^k = \frac{Y_{i,t}^k E_{j,t}^k}{Y_w^k} \left( \frac{t_{ij,t}^k}{\Pi_{i,t}^k P_{j,t}^k} \right)^{1-\sigma_k} \quad (2)$$

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

trade statistics from the United Nations Commodity Trade Statistics database (UN COMTRADE). Thus, the unbalanced database for the 2000–2019 period aggregates information by country-pair, product type according to the 2-digit Harmonised System (HS) classification (99 product categories) and year.

Since interstate soft conflicts are not usually directed against a specific product or product category, and such disputes may affect several products or product categories, I needed to use something general. For this reason, I use the Revealed Comparative Advantage (RCA) index in this study, which is a helpful way to analyse a country's comparative advantage based on its export performance.

I use standard Balassa's RCA index (Balassa, 1965):

$$RCA_{i,t}^k = \frac{X_{i,t}^k / X_{i,t}}{X_{w,t}^k / X_{w,t}} \quad (3)$$

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.

To check if the impact of interstate soft conflicts is general or caused by a specific product category, I use the PPML estimator and, to eliminate as many conflicting factors as possible, to account for the actual trade cost effect, I include exporter-time, importer-time, pair-country and exporter-product, importer-product FEs.

Since I would like to see how interstate soft conflicts affect product categories with comparative advantage, I do not take into account country-product-time FEs<sup>12</sup> that would absorb changes in productivity that are country-product specific and vary over time.

I expect that product categories with comparative advantage (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 a solution. In addition, I interact the interstate soft conflict variable with the log of RCA index. The estimation results given in Column (1) of Table 7 show that bilateral trade is higher for categories of products with comparative advantage, lower by about 7.7% if interstate soft conflicts arise, and lower by about 6.8% if interstate soft conflicts hit product categories with a comparative advantage.

Interested in how estimates change depending on the type of interstate soft conflicts, I additionally perform estimations for indirect and direct interstate soft conflicts Columns (2–3). In product-level assessments, the indirect interstate soft conflicts give negative and statistically significant results both in general and at product-level specific results, while the direct interstate soft conflicts have a negative and statistically significant effect on bilateral trade only in the general case.

In addition, Laursen (2015) suggests to use a symmetric index expressed as:

$$SymmetricRCA_{i,t}^k = \frac{RCA_{i,t}^k - 1}{RCA_{i,t}^k + 1} \quad (4)$$

<sup>12</sup>Since it might be interesting to see if excluding country-product-time FEs changes the effect size on disaggregated (at the product category level) bilateral export flows, I re-estimate the model for both model specifications with additional country-product-time FEs. Results imply that the effect remains once FEs are included (see Appendix S9 for details).

TABLE 4 Impact of one case of interstate soft conflict in the full sample.

	(1)	(2)
	Indirect case	Direct case
	China–Norway (2010)	China–Italy (2018)
SOFTconflict	0.012 (0.101)	−0.053 (0.051)
<i>N</i>	452,104	452,104
Pseudo $r^2$	0.993	0.993
Exporter-time FEs	Yes	Yes
Importer-time FEs	Yes	Yes
Country-pair FEs	Yes	Yes

Note: This table presents estimates of the impact of two interstate soft conflicts on bilateral trade flows for a full sample using the 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 (1–2) present the results for two different cases of interstate soft conflict.

This index has similar properties to the logarithm solution, but can be determined in the case of zero exports from the sector. So I introduce another continuous variable, transforming  $RCA_{i,t}^k$  into a symmetric version that ranges from  $-1$  to  $1$ , and then I interact it with the interstate soft conflicts variables. The estimation results on the impact of interstate soft conflicts, presented in Columns (4–6) of Table 7, are very similar to the results obtained using Log RCA, while the estimates of the impact of interstate soft conflicts on certain product categories are significantly higher in magnitude.

To further bootstrap the empirical distribution of effect sizes, I re-estimate the model for two sub-samples for both model specifications using half the sample at random start and stop years. I restrict the time frame to a pre/post-2010 period. Results suggest that excluding many cases of interstate soft conflicts in both sub-samples in both model specifications reduces the effect in magnitude, as expected, but remains consistent with the leading results (see Appendix S10 for details).

Ultimately, it may be concluded that the overall effect of interstate soft conflicts on bilateral trade flows, even when analysed at the disaggregated product category level, is consistently negative, product categories with comparative advantages (with higher RCA values), as expected, have a tendency to suffer more from interstate soft conflicts.

## 8 | INCLUSION OF INTERNAL TRADE AND GENERAL EQUILIBRIUM ANALYSIS

Following the recommendations of Piermartini and Yotov (2016) and Yotov (2021) regarding the inclusion of intra-national trade data in structural gravity estimation, this study additionally considers domestic trade flows for a theoretically consistent estimation.

Although domestic trade flows feature in all theoretical gravity models, they have been avoided in the empirical literature due to limited data and insufficient coverage compared to bilateral trade flows.

TABLE 5 Interstate soft conflicts based on control group classification.

From	Towards	Year	Type	N	Control group countries	Years
China	Norway	2010	Indirect interstate soft conflict	1	U.S.–Japan–UK–Sweden	2009–2010–2011
				2	U.S.–Japan–Netherlands–Germany	
				3	Japan–Korea–UK–Sweden	
				4	Japan–Korea–Netherlands–Germany	
				5	U.S.–Korea–UK–Germany	
				6	U.S.–Korea–Netherlands–Germany	
China	Italy	2018	Direct interstate soft conflict	1	Germany–France–U.S.–Korea	2017–2018–2019
				2	Germany–France–U.S.–Vietnam	
				3	Germany–Spain–U.S.–Korea	
				4	Germany–Spain–U.S.–Vietnam	
				5	France–Spain–U.S.–Korea	
				6	France–Spain–U.S.–Vietnam	

TABLE 6 Control group refinement.

	(1)	(2)	(3)	(4)	(5)	(6)
	Control	Control	Control	Control	Control	Control
	Group N1	Group N2	Group N3	Group N4	Group N5	Group N6
INDIRECT	-0.154 (0.040)***	-0.136 (0.019)***	-0.223 (0.054)***	-0.196 (0.062)***	-0.210 (0.055)***	-0.176 (0.061)***
DIRECT	-0.061 (0.023)***	-0.061 (0.022)***	-0.070 (0.024)***	-0.071 (0.022)***	-0.039 (0.028)**	-0.041 (0.023)**
<i>N</i>	90	90	90	90	90	90
Pseudo $r^2$	0.999	0.999	0.999	0.999	0.999	0.999
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

Note: This table presents estimates of the impact of two cases of interstate soft conflicts on bilateral trade flows for the restricted sample using the 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 (1–6) present the results for the different control groups according to classification in Table 5. All Standard errors are in parentheses.

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

To fill this gap, the recently introduced International Trade and Production Database for Estimation (ITPD-E) (Borchert et al., 2021) is included in the analysis. This database contains consistent data on bilateral and domestic trade flows suitable for estimation. In the ITPD-E domestic trade flows are constructed as the difference between gross production and total exports. The ITPD-E covers 243 countries, 170 industries, and 17 years from 2000 to 2016.

For the empirical analysis, I construct two balanced panel datasets, one that only covers bilateral trade observations and the other that additionally includes domestic trade observations from the ITPD-E database. Both datasets cover 168 country pairs over the 2000–2016 period.

Table 8 presents the results of the re-estimated baseline specification obtained with the PPML estimator and the full set of FEs to a smaller sample (2000–2016), first with international trade data only and then with the addition of domestic trade data.

Column (3) of Table 8, which presents estimates of interstate soft conflicts based on a sample of international and domestic trade, is similar to the corresponding estimates based on a sample of only bilateral trade presented in Column (1). The impact of interstate soft conflicts is slightly larger for a specification that considers only bilateral trade data. Ceteris paribus interstate soft conflicts result in an average reduction in bilateral trade of about 7.13%, while after including domestic trade data, it results in an average reduction of about 6.76%.

The same situation arises when using the lagged variable of interstate soft conflict. Column (2) of Table 8 suggests that the effect of interstate soft conflicts in the last year could have reduced trade between countries by about 10.32% for a specification that takes into account only bilateral trade data, and by about 10.77% when including both international and domestic trade flows.

Since the estimates in both cases (with and without taking into account domestic trade flows) are almost the same and the baseline dataset with only bilateral trade covers a longer time interval (2000–2019), not excluding existing cases of interstate soft conflicts, and since estimations using only bilateral trade flows may provide reliable results [albeit under stringent auxiliary

TABLE 7 Product category level analysis.

	(1)	(2)	(3)	(4)	(5)	(6)
	<b>Log RCA</b>					
SOFTconflict	-0.080 (0.023)***			-0.088 (0.036)***		
soft*(Log)RCA	-0.071 (0.035)**					
(Log) RCA	0.945 (0.016)***	0.945 (0.016)***	0.945 (0.016)***			
INDIRECT		-0.095 (0.020)***		-0.092 (0.023)***		
indirect*(Log)RCA		-0.051 (0.048)*				
DIRECT			-0.076 (0.025)***			-0.072 (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 (0.040)***	2.334 (0.040)***	2.334 (0.040)***

TABLE 7 (Continued)

	(1)	(2)	(3)	(4)	(5)	(6)
	<b>Log RCA</b>					
<i>N</i>	24,458,297	24,458,297	24,458,297	24,991,545	24,991,545	24,991,545
Pseudo $r^2$	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
	<b>Symmetric RCA</b>					
<i>N</i>	24,458,297	24,458,297	24,458,297	24,991,545	24,991,545	24,991,545
Pseudo $r^2$	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

*Note:* This table presents estimates of the impact of interstate soft conflicts on disaggregated (product category-level) bilateral trade flows and robustness checks using continuous interaction variables. All estimates are obtained with panel data for the 2000–2019 period using the PPM 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 impact of interstate soft conflicts and their interaction with the Log of RCA. Column (2) presents estimates of the impact of indirect interstate soft conflicts and their interaction with the Log of RCA. Column (3) presents estimates of the impact of direct interstate soft conflicts and their interaction with the Log of RCA. Column (4) presents estimates of the impact of interstate soft conflicts and their interaction with the symmetric RCA variable. Column (5) presents estimates of the impact of indirect interstate soft conflicts and their interaction with the symmetric RCA variable. Column (6) presents estimates of the impact of direct interstate soft conflicts and their interaction with the symmetric RCA variable. All Standard errors are in parentheses.

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

assumptions, as argued for by Yotov (2021)], internal trade flows have not taken into consideration in the baseline analysis.

I conclude by quantifying the general equilibrium effects of the hypothetical removal of all the interstate soft conflicts by years on real GDP relying on the structural gravity system (see Appendix S4 for details on the structural gravity model of trade).

Following the steps of Larch and Yotov (2016) I estimate the model with the PPML estimator, using intra-national and international trade yearly data and exporter-time, importer-time FEs. First, I normalise MRTs, by setting the MRTs of Germany equal to one. Second, I estimate the baseline gravity model to obtain estimates of the trade costs and elasticities necessary to construct baseline indexes (variables of bilateral trade costs and MRTs, estimated international trade for given output and expenditures). Third, I define a counterfactual scenario that hypothetically eliminates all interstate soft conflicts in the world by introducing a new, counterfactual interstate soft conflict variable that is equal to zero for each possible pair of countries in the sample. Fourth, I deliver the values of the counterfactual indexes of interest in the 'conditional' and in the 'full endowment' general equilibrium scenarios of eliminating interstate soft conflicts. Lastly, I compute different indexes of interest between the baseline scenario and the 'conditional' and 'full endowment' scenarios as percentage changes.

Interested in how the removal of interstate soft conflicts affects real GDP, I plot the corresponding graphs for each year where I have a flare-up of events (see Table 1 and Appendix S1 for details of cases). Figure 2 presents 12 different graphs, excluding the last three cases of 2017 and 2018, since the data from the ITPD-E database, which includes domestic trade observations, covers the 2000–2016 period. Figure 2 depicts the changes in real GDP associated with the removal of interstate soft conflicts for each specific year and decomposes these changes into effects on the consumers (via the inward MRTs defined as  $-1 \times P_{j,t}$ ) and on the producers (via the factory-gate prices  $p_{j,t}$ , resulting from the changes in the outward MRTs<sup>13</sup>) for each country in the sample.

First, the effects of 'full endowment' general equilibrium on real GDP differ yearly. They are small in some years and large in others, suggesting that, in most cases, the elimination of interstate soft conflicts results in possible gains from trade and that there may be substantial opportunities for further gains from trade.

Second, the impact on real GDP varies significantly across the countries included in the sample. The indexes suggest that, in general, less developed and/or small countries would benefit more from the hypothetical removal of interstate soft conflicts than developed and/or large countries. For example, if the elimination of the soft conflict between the UK and France in 2000 leads to an increase in the real GDP of each country by about 2.5–3% in the case of the removal of soft conflict between Columbia and the U.S., the increase in real GDP occurs only in Colombia, reaching 250%. These results are in line with the intuition that the smaller and/or less developed of two countries gains more moving from conflict to peace and that larger and/or developed countries with a larger home market share gain less, similar to the results obtained by Anderson et al. (2015) in case of the potential removal of international borders and the transition from autarky to free trade.

Lastly, the results imply that the 'full endowment' general equilibrium may have mixed effects on the consumer side through more favourable prices (interpreted relative to the changes in consumer prices, inward MRTs, in the reference country, Germany), and on producers (through changes in factory-gate price relative to Germany). For example, in 2004, faced with unfair competition from cheap Chinese imports, loss of business due to Chinese immigrants, and fears that

<sup>13</sup>See Appendix S4 for details on the structural gravity model of trade.

TABLE 8 Inclusion of domestic trade flows.

	(1)	(2)	(3)	(4)
	Bilateral trade flows		Bilateral + Domestic trade flows	
	2000–2016		2000–2016	
SOFTconflict	−0.074 (0.020)***		−0.070 (0.037)***	
L.SOFTconflict		−0.109 (0.023)***		−0.114 (0.036)***
<i>N</i>	366,702	366,702	390,800	390,800
Pseudo $r^2$	0.994	0.994	0.999	0.999
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

Note: This table presents estimates of the impact of interstate soft conflicts on bilateral and domestic trade flows using the 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) add the internal trade observations. Standard errors are in parentheses.

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

Spanish ‘age-old social customs, employment norms, and labor relations’ might be distorted, led Spanish workers to protest. Figure 2 in the corresponding 2004 graph implies that in the case of Spain, the real GDP gains come mainly on the consumer side, while in the case of China, producers appear to be gaining more. Similarly, Maldivian consumers may benefit more than producers from the hypothetical end of interstate soft conflict between China and Maldives in 2013, which arose when kettles have been removed from Chinese tourists’ hotel rooms so they could not cook instant noodles in their rooms instead of having dinner at the hotel’s restaurant. Whereas in the case of China, the ‘full endowment’ general equilibrium effect on all indexes: real GDP, consumers, and producers appear to be very small compared to the Maldives.

These results give an intuition that the hypothetical removal of interstate soft conflicts may be more valuable for consumers who are boycotting other countries, which reduces their consumer opportunities, while in the case of producers since boycotted countries are exporters, hypothetical removal of interstate soft conflicts may be more profitable for them. In addition, the economy’s size and the development level play important roles since, for stronger countries, such soft turbulence may be negligible compared to smaller and/or less developed countries.

## 9 | CONCLUSION

This study assesses the cost of interstate soft conflicts arising from trade disruptions and argues that interstate soft conflicts may act as a policy tool to punish or try to change particular behaviour of trading partners or companies rather than using military force, sanctions, or other official institutional acts.

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

conflict. Employing the PPML estimator with the full set of FEs the results imply that, on average, interstate soft conflicts reduce bilateral trade flows by about 8.61%. After introducing a lag of the interstate soft conflict variable to reduce the problem of reverse causality between bilateral trade and interstate soft conflicts and to account for the time delay of the effect, the result shows that interstate soft conflicts could negatively affect bilateral trade flows over an extended period (the effect disappears in 5 years), reducing bilateral trade flows by about 11.31%.

This study argues that, like interstate wars or large-scale military conflicts, interstate soft conflicts resulting from failures when a military operation seems too drastic can worsen trade relations. Moreover, since, to our knowledge, little attention has been paid to studying the impact of interstate soft conflicts on bilateral trade, this study aims to fill this gap by quantifying the relationship between interstate soft conflicts and bilateral trade flows. Focusing on trade as the primary channel of economic pain for countries affected by soft conflict, I pursue this objective by assessing its related costs and the effects of these costs on welfare.

The findings support the main message of this study, showing a negative relationship between interstate soft conflicts and bilateral trade, even when analysed at the level of disaggregated product categories, claiming that product categories with comparative advantage (with higher RCA values) tend to suffer more from interstate soft conflicts. Results show that bilateral trade is higher for categories of products with comparative advantage, lower by about 7.7% if interstate soft conflicts arise, and lower by about 6.8% if interstate soft conflicts hit product categories with a comparative advantage.

After re-evaluating the model by expanding the sample to include data on domestic trade flows in addition to bilateral trade flows, the results show that interstate soft conflicts have a sustained negative effect on trade in both cases (with and without taking into account domestic trade flows).

Employing the full gravity system and converting the resulting partial equilibrium estimates into the effect of general equilibrium on real GDP and other social welfare proxies suggests that the hypothetical removal of interstate soft conflicts would result in possible gains from trade. In the case of real GDP, the effects vary across countries, showing that less developed and/or small economies would benefit more from the hypothetical removal of interstate soft conflicts than developed and/or large countries. Lastly, the results imply that the 'full endowment' general equilibrium may have mixed effects on the consumer side through more favourable prices and on producers through changes in factory-gate price.

There are several contributions to this study. First, this article empirically explores the relationship between interstate soft conflicts and bilateral trade flows by introducing a new measure of interstate soft conflict. Second, since deteriorating relations may be detrimental to bilateral trade, the real GDP, and other social welfare proxies, the results may help policymakers and governments facing these types of conflicts to address their root causes and mitigate their negative impacts through appropriate policies; by strengthening dialogue and diplomatic relations; by promoting cooperation between trading partners etc. Lastly, there are reasons to believe that the results apply to a broader set of countries worldwide. Hence, empirically presenting consistent results may have broader implications, as there may be more cases of interstate soft conflicts to study, with far-reaching economic consequences.

I believe that this analysis reflects significant progress in measuring trade costs. This study has several limitations, which remain areas for further research. From both an applied and policy perspective, there may be scope for future research and additional contributions, such as improving the measurement and coding of interstate soft conflicts at the level of firm, the state dyad and at the regional level; expanding the analysis to include more cases; analysing the impact of interstate soft conflicts on trade on a case-by-case basis, or examining the threshold at which interstate soft conflicts damage economic relations or distort well-being.

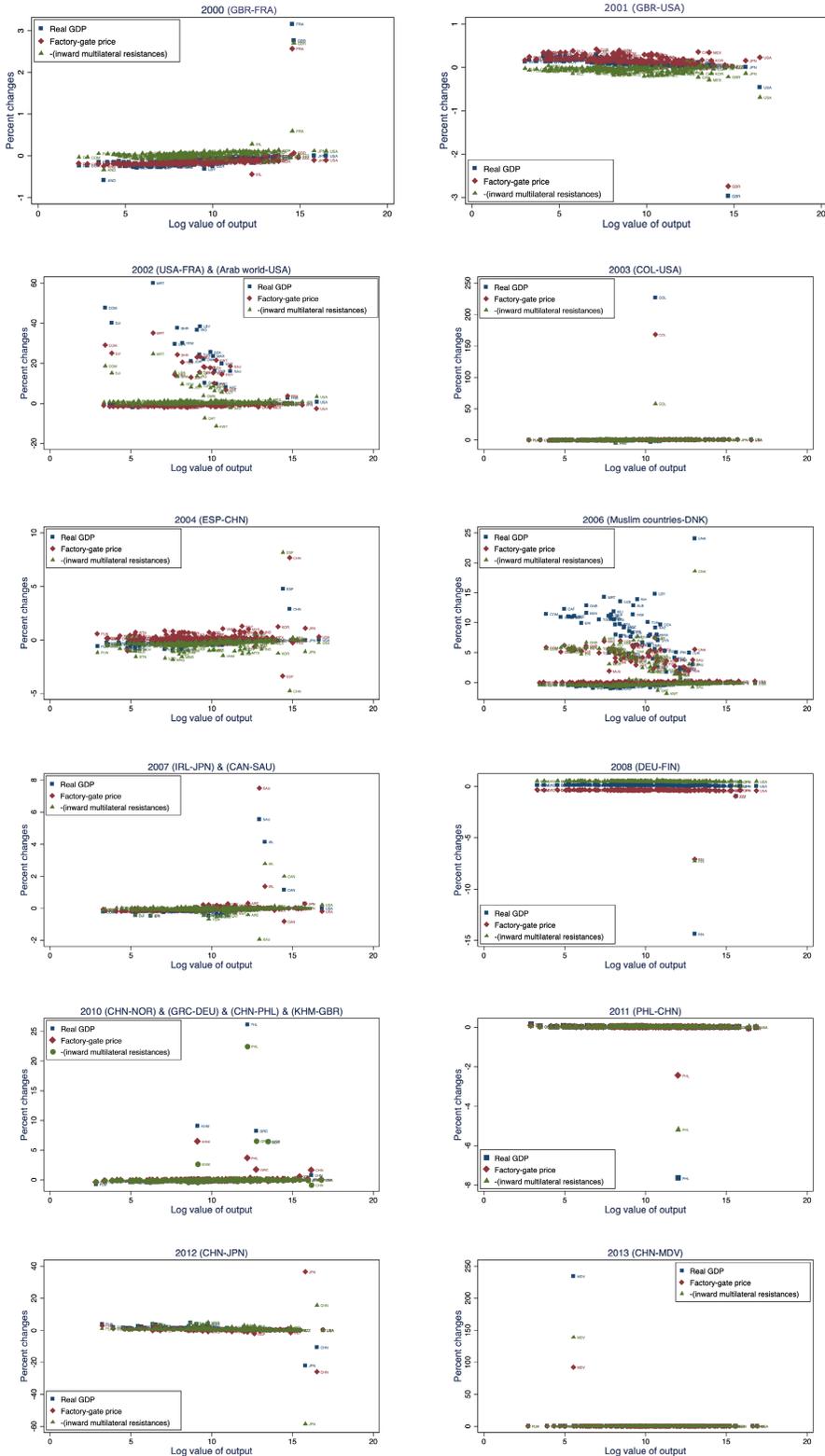


FIGURE 2 Effects of abolishing interstate soft conflicts on real GDP by years. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

## ACKNOWLEDGEMENTS

I express my gratitude to Alessia Lo Turco for her continuous guidance and support, together with two anonymous referees for their helpful comments and suggestions.

## FUNDING INFORMATION

No external funding was used for this study.

## CONFLICT OF INTEREST STATEMENT

There is no conflict of interest to declare.

## DATA AVAILABILITY STATEMENT

The data supporting this study's findings are available from the corresponding author upon request.

## ORCID

Tamar Taralashvili  <https://orcid.org/0000-0002-8272-3530>

## REFERENCES

- Anderson, J. E., Larch, M., & Yotov, Y. V. (2015). *Estimating general equilibrium trade policy effects: GE PPML*.
- Anderson, J. E., & Van Wincoop, E. (2003). Gravity with gravitas: A solution to the border puzzle. *American Economic Review*, 93(1), 170–192.
- Anderson, J. E., & Van Wincoop, E. (2004). Trade costs. *Journal of Economic Literature*, 42(3), 691–751.
- Ashenfelter, O., Ciccarella, S., & Shatz, H. J. (2007). French wine and the us boycott of 2003: Does politics really affect commerce? *Journal of Wine Economics*, 2(1), 55–74.
- Avila, I. (2017). *The top 19 best search engines list*. <https://aofirs.org/articles/the-top-19-best-search-engines-list-2017>
- Baier, S. L., & Bergstrand, J. H. (2007). Do free trade agreements actually increase members' international trade? *Journal of International Economics*, 71(1), 72–95.
- Balassa, B. (1965). Trade liberalisation and “revealed” comparative advantage 1. *The Manchester School*, 33(2), 99–123.
- Baldwin, R., & Taglioni, D. (2006). *Gravity for dummies and dummies for gravity equations* (Technical Report). National Bureau of Economic Research.
- Barbieri, K., & Levy, J. S. (1999). Sleeping with the enemy: The impact of war on trade. *Journal of Peace Research*, 36(4), 463–479.
- Bentzen, J., & Smith, V. (2001). *Did the French nuclear tests under the Mururoa atoll affect the export of French wine to Denmark?* Aarhus School of Business.
- Blomberg, S. B., & Hess, G. D. (2006). How much does violence tax trade? *The Review of Economics and Statistics*, 88(4), 599–612.
- Bloomberg News. (2018). *Dolce and Gabbana Faces China Boycott calls over racist videos*. <https://www.bloomberg.com/news/articles/2018-11-21/dolce-gabbana-faces-china-boycott-calls-over-racist-videos>
- Borchert, I., Larch, M., Shikher, S., & Yotov, Y. (2021). The international trade and production database for estimation (ITPD-E). *International Economics*, 166, 140–166.
- Carlile, C. (2018). *Boycott of constellation brands | Ethical consumer*. <https://www.ethicalconsumer.org/food-drink/boycott-constellation-brands>
- Chavis, L., & Leslie, P. (2006). *Consumer boycotts: The impact of the Iraq war on french wine sales in the US* (Working Paper 11981). National Bureau of Economic Research.
- Che, Y., Du, J., Lu, Y., & Tao, Z. (2015). Once an enemy, forever an enemy? The long-run impact of the Japanese invasion of China from 1937 to 1945 on trade and investment. *Journal of International Economics*, 96(1), 182–198.
- Clerides, S., Davis, P., & Michis, A. (2015). National sentiment and consumer choice: The Iraq war and sales of us products in Arab countries. *The Scandinavian Journal of Economics*, 117(3), 829–851.
- Correia, S., Guimarães, P., & Zylkin, T. (2019). Ppmlhdf: Fast poisson estimation with high-dimensional fixed effects. *arXiv preprint arXiv:1903.01690*.
- Creusen, H., & Lejour, A. (2011). *Uncertainty and the export decisions of Dutch firms* (Technical Report) FIW Working Paper.



- Egger, P., & Larch, M. (2008). Interdependent preferential trade agreement memberships: An empirical analysis. *Journal of International Economics*, 76(2), 384–399.
- Evenett, S. J., & Fritz, J. (2020). The global trade alert database handbook. *Published Online as Manuscript, Version 14*.
- Felbermayr, G., Kirilakha, A., Syropoulos, C., Yalcin, E., & Yotov, Y. V. (2020). The global sanctions data base. *European Economic Review*, 129, 103561. <https://doi.org/10.4337/9781839102721.00010>
- Fouka, V., & Voth, H.-J. (2013). *Reprisals remembered: German-greek conflict and car sales during the euro crisis*.
- Fouka, V., & Voth, H.-J. (2022). Collective remembrance and private choice: German–greek conflict and behavior in times of crisis. *American Political Science Review*, 117, 1–20.
- Freedom for Animals. (2014). *Sea Lies Campaign 2014*. <https://sea-lies.org.uk/sea-lies-investigation-2014/>
- Fuchs, A., & Klann, N.-H. (2013). Paying a visit: The dalai lama effect on international trade. *Journal of International Economics*, 91(1), 164–177.
- Glick, R., & Taylor, A. M. (2010). Collateral damage: Trade disruption and the economic impact of war. *The Review of Economics and Statistics*, 92(1), 102–127.
- Global Times. (2013). *Maldives resort cuts hot water supplies for noodle-hungry Chinese guests – Global Times*. <http://www.globaltimes.cn/content/767434.shtml>
- Greenpeace. (2001). *Stop Esso Campaign Launch in the UK*. <https://media.greenpeace.org/Detail/27MZIFJJPYYXX>
- Head, K., & Mayer, T. (2014). Gravity equations: Workhorse, toolkit, and cookbook. In *Handbook of international economics* (Vol. 4, pp. 131–195). Elsevier.
- Hegre, H., Oneal, J. R., & Russett, B. (2010). Trade does promote peace: New simultaneous estimates of the reciprocal effects of trade and conflict. *Journal of Peace Research*, 47(6), 763–774.
- Heilmann, K. (2016). Does political conflict hurt trade? Evidence from consumer boycotts. *Journal of International Economics*, 99, 179–191.
- Heilmann, K. (2019). *6 political conflict and service trade*. *Disrupted Economic Relationships: Disasters, Sanctions, Dissolutions*, p. 155.
- Hyland, V. (2016). *People are using GrabYourWallet to Boycott Ivanka Trump's clothing line*. <https://www.thecut.com/2016/10/people-are-using-twitter-to-protest-ivanka-trumps-line.html>
- Irish Examiner. (2007). *Call issued to boycott Japanese goods*. <https://www.irishexaminer.com/news/arid-30337507.html>
- Jacks, D. S., Meissner, C. M., & Novy, D. (2011). Trade booms, trade busts, and trade costs. *Journal of International Economics*, 83(2), 185–201.
- Kirilakha, A., Felbermayr, G., Syropoulos, C., Yalcin, E., & Yotov, Y. V. (2021). The global sanctions data base: An update that includes the years of the trump presidency. *The Research Handbook on Economic Sanctions*, 62–106.
- Klein, J. G., Ettenson, R., & Morris, M. D. (1998). The animosity model of foreign product purchase: An empirical test in the People's Republic of China. *Journal of Marketing*, 62(1), 89–100.
- Larch, M., & Yotov, Y. (2016). *General equilibrium trade policy analysis with structural gravity*.
- Larsen, K. (2015). Revealed comparative advantage and the alternatives as measures of international specialization. *Eurasian Business Review*, 5(1), 99–115.
- Le Coz, C. (2013). *The canes of wrath – Southeast Asia Globe*. <https://southeastasiaglobe.com/sugar-cambodia/>
- Lederman, D., Olarreaga, M., & Payton, L. (2010). Export promotion agencies: Do they work? *Journal of Development Economics*, 91(2), 257–265.
- Linder, S. B. (1961). *An essay on trade and transformation*. Almqvist & Wiksell Stockholm.
- Long, A. G. (2008). Bilateral trade in the shadow of armed conflict. *International Studies Quarterly*, 52(1), 81–101.
- Mansfield, E. D., & Pollins, B. M. (2001). The study of interdependence and conflict: Recent advances, open questions, and directions for future research. *Journal of Conflict Resolution*, 45(6), 834–859.
- Mansfield, E. D., & Pollins, B. M. (2009). *Economic interdependence and international conflict: New perspectives on an enduring debate*. University of Michigan Press.
- Maoz, Z., Johnson, P. L., Kaplan, J., Ogunkoya, F., & Shreve, A. P. (2019). The dyadic militarized interstate disputes (mids) dataset version 3.0: Logic, characteristics, and comparisons to alternative datasets. *Journal of Conflict Resolution*, 63(3), 811–835.
- Martin, P., Mayer, T., & Thoenig, M. (2008). Make trade not war? *The Review of Economic Studies*, 75(3), 865–900.
- Mayer, T., & Zignago, S. (2011). *Notes on cepii's distances measures: The geodist database*.

- McDonald, P. J. (2004). Peace through trade or free trade? *Journal of Conflict Resolution*, 48(4), 547–572.
- Mityakov, S., Tang, H., & Tsui, K. K. (2013). International politics and import diversification. *The Journal of Law and Economics*, 56(4), 1091–1121.
- Naturewatch Foundation. (2000). *Animal testing*. <https://naturewatch.org/campaigns/previous-projects/animal-testing/>
- News Digital, N. (2011). *Activists call for boycott of Johnson and Johnson over chemicals in baby shampoo*. <https://www.nbcnews.com/health/health-news/activists-call-boycott-johnson-johnson-over-chemicals-baby-shampoo-flna1c9453246>
- Nitsch, V. (2007). State visits and international trade. *The World Economy*, 30(12), 1797–1816.
- Nitsch, V., & Schumacher, D. (2004). Terrorism and international trade: An empirical investigation. *European Journal of Political Economy*, 20(2), 423–433.
- Oneal, J. R., Russett, B., & Berbaum, M. L. (2003). Causes of peace: Democracy, interdependence, and international organizations, 1885–1992. *International Studies Quarterly*, 47(3), 371–393.
- Pandya, S. S., & Venkatesan, R. (2016). French roast: Consumer response to international conflict—Evidence from supermarket scanner data. *Review of Economics and Statistics*, 98(1), 42–56.
- Piermartini, R., & Yotov, Y. (2016). *Estimating trade policy effects with structural gravity*.
- Polachek, S. W. (1980). Conflict and trade. *Journal of Conflict Resolution*, 24(1), 55–78.
- Pollins, B. M. (1989). Conflict, cooperation, and commerce: The effect of international political interactions on bilateral trade flows. *American Journal of Political Science*, 33, 737–761.
- Rose, A. K. (2007). The foreign service and foreign trade: Embassies as export promotion. *The World Economy*, 30(1), 22–38.
- Silva, J. S., & Tenreyro, S. (2006). The log of gravity. *The Review of Economics and Statistics*, 88(4), 641–658.
- Syropoulos, C., Felbermayr, G., Kirilakha, A., Yalcin, E., & Yotov, Y. V. (2022). *The global sanctions data base. Release 3: Covid-19, Russia, and multilateral sanctions* (Technical Report). WIFO.
- Vannerson, F. L. (2003). *Wine, francophobia and boycotts*.
- Vollrath, T. L. (1991). A theoretical evaluation of alternative trade intensity measures of revealed comparative advantage. *Weltwirtschaftliches Archiv*, 127(2), 265–280.
- Watts, J., & Weaver, M. (2010). *China cancels meeting with Norwegian minister after Nobel peace prize row*. <https://www.theguardian.com/world/2010/oct/11/china-cancels-norway-meeting>
- Weidner, M., & Zylkin, T. (2019). Bias and consistency in three-way gravity models. *arXiv Preprint arXiv:1909.01327*.
- Westall, S. (2008). *German unions urge Nokia boycott over plant closure*. <https://www.reuters.com/article/us-germany-nokia/german-unions-urge-nokia-boycott-over-plant-closure-idUSL1780747720080117>
- World Integrated Trade Solution. (2020). *Trade balance, exports, imports by country 2020*. <https://wits.worldbank.org/CountryProfile/en>
- Yotov, Y. (2021). *The variation of gravity within countries* (Technical Report). LeBow College of Business, Drexel University.

## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**How to cite this article:** Taralashvili, T. (2024). The impact of interstate soft conflicts on bilateral trade flows using structural gravity model. *The World Economy*, 47, 1943–1977. <https://doi.org/10.1111/twec.13519>

## APPENDIX A

## ADDITIONAL ROBUSTNESS CHECKS

TABLE A1 Lagged variables.

	(1)	(2)	(3)	(4)	(5)
L.SOFTconflict	-0.120 (0.017) <sup>***</sup>				
L2.SOFTconflict		-0.114 (0.024) <sup>***</sup>			
L3.SOFTconflict			-0.070 (0.021) <sup>***</sup>		
L4.SOFTconflict				-0.038 (0.023) <sup>*</sup>	
L5.SOFTconflict					-0.026 (0.028)
<i>N</i>	415,295	394,462	372,525	350,386	328,195
Pseudo $r^2$	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

*Note:* This table presents estimates of the impact of interstate soft conflicts on bilateral trade flows using the 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) allow to gradually implement the effects of interstate soft conflicts using various lags (up to 5 years). All Standard errors are in parentheses.

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

TABLE A2 Accounting for competing explanations.

	(1)	(2)	(3)	(4)	(5)	(6)
	Includes	Excludes	Includes	Excludes	Includes	Excludes
	All sanctions		All MIDs		All state acts	
L.SOFTconflict	-0.121 (0.017)***	-0.115 (0.021)***	-0.125 (0.019)***	-0.110 (0.021)***	-0.120 (0.017)***	-0.115 (0.029)**
ALL_sanctions	-0.060 (0.024)					
ALL_MIDs			0.044 (0.016)			
ALL_state acts					-0.006 (0.004)	
N	415,295	351,791	415,295	409,524	415,295	215,279
Pseudo $r^2$	0.993	0.993	0.994	0.993	0.993	0.956
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

Note: This table presents estimates of the impact of interstate soft conflicts on bilateral trade flows using the PPML estimator and exporter-time, importer-time, and country-pair FEs. All estimates are obtained with balanced panel data for the 2000–2019 period. The dependent variable is trade in levels. Columns (1–3–5) include all sanctions, MIDs, and state acts between the two countries to control their impact throughout the entire sample period. Columns (2–4–6) exclude a pair of countries that were subject to any types of sanctions, MIDs, and state acts to control their impact throughout the entire sample period. All Standard errors in are parentheses.

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

TABLE A3 China effect.

	(1)	(2)	(3)
	Excludes China as		
	Exporter	Importer	Exporter and importer
L.SOFTconflict	-0.123 (0.023)***	-0.114 (0.017)***	-0.111 (0.023)***
N	412,122	412,541	409,368
Pseudo $r^2$	0.993	0.993	0.993
Exporter-time FEs	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes

Note: This table presents estimates of the impact of interstate soft conflicts on bilateral trade flows using the PPML estimator and exporter-time, importer-time, and country-pair FEs. All estimates are obtained with balanced panel data for the 2000–2019 period. The dependent variable is trade in levels. Column (1) excludes China as an exporter. Column (2) excludes China as an importer. Column (3) excludes China as an exporter and an importer. All Standard errors are in parentheses.

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

TABLE A4 Financial crisis.

	(1)	(2)	(3)
	2000–2008	2009–2019	Excludes 2008–9–10 years
L.SOFTconflict	–0.090 (0.019)***	–0.072 (0.015)***	–0.111 (0.016)***
<i>N</i>	156,812	238,300	344,524
Pseudo $r^2$	0.996	0.995	0.993
Exporter-time FEs	Yes	Yes	Yes
Importer-time FEs	Yes	Yes	Yes
Country-pair FEs	Yes	Yes	Yes

Note: This table presents estimates of the impact of interstate soft conflicts on bilateral trade flows using the 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 the 2000–2008 sub-sample. Column (2) Column covers the 2009–2019 sub-sample. (3) excludes 2008, 2009 and 2010 years from the full sample. All Standard errors are in parentheses.

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

TABLE A5 Initial trade/distance in preferences.

	(1)	(2)	(3)	(4)
	Initial trade		Distance in preferences	
L.SOFTconflict	–0.121 (0.017)***	–0.100 (0.025)***	–0.120 (0.017)***	–0.119 (0.017)***
L.trade	0.000 (0.000)			
SOFTconflict*L.trade		–0.000 (0.000)		
Linder			–0.000 (0.000)	
(Log) Linder				0.011 (0.004)**
<i>N</i>	415,295	415,295	415,295	415,261
Pseudo $r^2$	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

Note: This table presents estimates of the impact of interstate soft conflicts on bilateral trade flows using the 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 the lag of the bilateral trade variable as a control. Column (2) presents the interaction between the lag of trade and interstate soft conflicts as a control variable. Column (3) introduces Linder variable as a control for distance in preferences. Column (4) presents the logarithm of Linder variable. All Standard errors are in parentheses.

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .