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The Import of Strategic and Nonstrategic Commodities During War: A Systematic Case Study Focusing on Israel from 1980 till 2014

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Abstract: Under what circumstances do belligerents succeed in increasing their imports during wartime? This research seeks to answer that question by addressing contradictory findings in the literature on the relationship between trade and war. We propose that the answer depends on two factors that have not been examined together: the value of the imports for the battlefield and the intensity of the war. These two factors influence the willingness of belligerents to reprioritize their import preferences based on strategic considerations. However, they also influence exporters' willingness to signal their dissatisfaction, as well as the extent of the damage to the belligerent's economy. To test this contention, we classified 96 commodities as strategic or nonstrategic using the HS02 classification, and then employed gravity models to analyze dyadic import flows from 168 countries to Israel between 1980 and 2014. The findings reveal that the relationship between war and imports varies with the intensity of the conflict. Strategic commodities are associated with a stronger positive relationship between war and imports when the intensity of the conflict does not exceed 1,000 casualties. In contrast, when casualties surpass 1,000, war is associated with a sharper decline in strategic imports, suggestive of economic damage and exporters' dissatisfaction with war.

Keywords: strategic; commodities; war; import

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1 Introduction

Most studies promoting the 'peace through globalization' thesis assume that conflict hinders the multilateral trade of belligerents. Although conflict is commonly

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assumed to disturb trade, its influence on third-party trade has been rarely explored. The few existing studies that set trade as a dependent variable typically rely on highly aggregated trade data, yielding mixed results. This study delves into the impact of war on import flows by investigating the effect of two neglected factors: the value of the commodity on the battlefield, and the intensity of the interstate militarized conflict (MID). Both factors shape the motivation of the belligerent to import certain products, its ability to do so due to the damage to the economy, and its inability to import them as a result of the growing dissatisfaction of exporters with the conflict. By adopting a disaggregated approach to wartime trade, this study seeks to improve our understanding of the specific conditions under which conflict imposes trade-related costs. These costs may have substantial macro-level consequences that help generate the deterrent effect that liberals often attribute to trade in an increasingly globalized world.

The theoretical framework of this study rests on the idea that belligerents prioritize their import flows according to the value of the commodity on the battlefield. Therefore, we differentiate between strategic and nonstrategic commodities and examine how their import patterns vary across different levels of MID intensity. Alongside the importance of the commodity's value to victory, the rationale behind dividing commodities into strategic and nonstrategic is twofold: to analyze whether belligerents can substitute for lost sources of imports during intense conflicts and to determine whether the prioritization of certain commodities impacts import flows during war. We maintain that when commodities have strategic value on the battlefield and the scope of the war remains limited, strategic imports exhibit a positive trend, as exporters remain assured that the conflict is not escalating. To support this argument, the analysis includes an examination of Israel's imports from 168 nations between 1980 and 2014, a period that includes several major interstate wars and ongoing violent incidents with its neighbors. In addition, we classified 96 commodities according to the HS02 classification, dividing them into strategic and nonstrategic commodities by assessing whether they were crucial to victory on the battlefield.

The article proceeds as follows: First, we briefly review the literature on the trade–conflict nexus, which typically treats trade as an independent variable and rarely considers the importance of disaggregating trade flows by commodity type. Next, we explain why Israel is an appropriate case study for testing our hypotheses. We also outline the causal mechanisms linking the strategic motivations of combatants and third parties to the impact of conflict on third-party trade. This is followed by a description of our research design and an analysis of four hypotheses using disaggregated Israeli imports data spanning the period from 1980 to 2014. We conclude with a discussion of the contribution of our findings to the literature on trade globalization and conflict.

2 Case Selection: Why Israel Serves as an Appropriate Case Study

The ongoing involvement of Israel in clashes of varying intensity between 1980 and 2014 yields a substantial within-case variance in the independent variable. Therefore, the case of Israel is appropriate for testing our contentions. This period includes the outbreak of the 1982 Lebanon War, which is coded in the COW MID dataset as a full-scale war between Israel and Syria. Between 1982 and 1985, the fighting between Israel and the Lebanese Army and local guerrilla groups led to over 1,000 casualties yet the intensity of the conflict fluctuated significantly in this period. The Israeli Defense Forces (IDF) withdrew from the south of Lebanon in 2000. However, in 2006, another war broke out between Israel and Hezbollah, which included a massive launch of missiles towards the north of Israel and the IDF's invasion of Lebanon. It is therefore coded as a fatal MID between Israel and Lebanon. Between 1980 and 2014, the year 2006 was the only one in which the number of casualties was between 100 and 999 people.

The different fighting actions during these times provide rich data regarding MIDs with other countries. It includes two successful airstrikes of nuclear sites by the IDF: the first one in Iraq in 1981 and the other one in Syria in 2007. The Israeli case includes single incidents of military actions committed by only one actor and did not lead to an escalation between the two states, such as the launch of missiles from Iraq towards Israel during the Gulf War in 1991. In addition, several fatal border incidents occurred with Jordan and Egypt, despite the existence of peace treaties with both states.

The complex and extensive relationships between Israel and other nations also justify its choice as an appropriate case study. Several states have signaled their displeasure with Israel's actions by restricting its access to certain types of commodities since the onset of the October 2023 conflict. One significant example is Turkey, a member of the G-20. In the 1990s and the early 21st century, Turkey upgraded its diplomatic, security, and economic relations with Israel. The trade flow between the nations was $200 million in 1993 and reached $2 billion in 2004 (Inbar 2005). However, tensions between the countries regarding the Israeli-Palestinian conflict increased to record levels. In May 2010 the Israeli navy captured the Turkish ship Mavi Marmara on its way to Gaza. In response, Turkey recalled its ambassador from Israel. Since May 2024, Turkey has halted its trade with Israel completely as a result of Turkish dissatisfaction with Israel's actions in Gaza.

EU member states, which typically call for the promotion of liberal values and a peace process in the Middle East, have a special relationship with Israel. For instance, Israel has participated in cultural events such as the Eurovision Song Contest and

European sports events for decades. Economically, Israel enjoys its accession to the Association Agreement. Thus, the special relationship between Israel and the EU is helpful in examining the question of whether allies support each other during wartime when they have disagreements regarding the war.

Finally, even the unique special relationship between Israel and the US has been tested by the latter's dissatisfaction with the Israeli operation in Gaza and Lebanon. US support for Israel may therefore shed light on the extent to which the economic support of a major global actor affects a belligerent's ability to import. In 2024 there were doubts about whether the US would keep providing Israel with arms for its war against Hamas, Hezbollah, the Houthis, the pro-Iranian militant groups in Iraq, and Iran itself.

The ongoing war involving Israel presents significant challenges for drawing definitive conclusions, as real-time trade data remain incomplete, yet preliminary data suggest several trends. Imports of most goods declined by tens of percentage points between 2022 and 2023, but Israel's economic recovery from the COVID-19 pandemic in 2022 could also account for this decline. A closer examination of import categories indicates that strategic goods, such as iron and minerals, experienced significant declines of around 30 % and 50 %, respectively, between 2022 and 2023 (UN Comtrade n.d.). These initial findings suggest that strategic goods are more vulnerable to disruptions caused by war. Given its long history of involvement in multiple conflicts, Israeli data offer a valuable opportunity to investigate how belligerents maintain access to strategic imports. As far as we know, our study is the first attempt to broadly analyze the impact of war on imports of 96 types of commodities.

3 Literature Review

According to the core causal logic of commercial liberalism, extensive trade between two states raises the opportunity costs of military conflict, thereby increasing the likelihood that both will seek to avoid confrontation. While the traditional commercial liberal perspective focuses on how dyadic trade influences the likelihood of conflict between trading partners (Oneal and Russett 1999, 2001; Polachek 1980; Polachek and Xiang 2010), research over the last century has shifted its attention toward how states' integration into the global trade system along with other aspects of economic globalization, may affect their conflict behavior. Building on the opportunity costs mechanism, liberals argue that as trade becomes more deeply embedded in national economies, the potential costs of its disruption in the event of conflict rise, thereby reducing states' willingness to engage in war occurring (e.g. Aydin 2010; Dafoe and Kelsey 2014; Hegre et al. 2010; Lee and Pyun 2016; Oneal and Russett 2001; Mansfield and Pollins 2003).

The assumption that conflict imposes substantial costs on combatants' trade with uninvolved third parties is also important in the research that proposes competing mechanisms underlying the pacifying effect of trade exposure. For example, network-based studies argue that as global trade networks become more complex, a growing number of states develop economic incentives to prevent conflicts that could harm their interests. This, in turn, increases their motivation to mediate or signal disapproval of disputes that threaten to disrupt trade (Dorussen and Ward 2011; Kinne 2012, 2014).

An alternative line of research suggests that openness to world trade allows states in crisis to send "costly signals" and express their resolve to use force, without resorting to military use (Gartzke et al. 2001; Kinne 2014). However, signals are considered costly only if they lead to substantial alternative costs (Polachek and Xiang 2010). For example, State A's attempt to signal resolve by jeopardizing trade with State B lacks credibility if State B knows State A can quickly compensate with alternative partners. Similarly, a third-party State C's ability to signal disapproval through trade actions is diminished if State A recognizes that both can easily substitute their trade.

By contrast, critics of the "peace through globalization" thesis contend that globalization undermines the deterrent power that liberal theorists attribute to trade, as it facilitates smoother substitution of trade partners during wartime. High levels of trade openness and the multilateral nature of the globalized trade system reduce the income losses caused by taking belligerent measures against an individual trade partner (Schneider 2014, 2023), consequently increasing the likelihood of dyadic conflict (Martin et al. 2008; Peterson 2011).

Against this backdrop, recent literature has emphasized the importance of identifying factors that shape combatants' trade-related conflict costs and their capacity to substitute a significant portion of their pre-war trade (Brutger and Marple 2024; Chen 2021; Chen and Zhou 2021; Garfinkel and Syropoulos 2018; Gartzke and Oliver 2016). This focus has led to a growing number of studies using the gravity model of trade, where conflict between countries A and B is the key independent variable, and trade between one of the belligerents (either State A or B) and a third-party State C serves as the dependent variable (Glick and Taylor 2010; Gowa and Hicks 2017). Several of these studies demonstrate that the trade-related costs of conflict are contingent upon elements such as combatants' alliance networks (Feldman and Sadeh 2018; Gowa and Hicks 2017), trade agreements and institutions (Peterson 2015; Sadeh and Feldman 2020), and the geographic location of the dispute (Brutger and Marple 2024).

Nonetheless, just as the trade-related costs of conflict are not uniformly distributed across states, the impact of conflict on trade is also likely to vary across different commodities. The few studies that examine trade at lower levels of

aggregation tend to focus on the impact of conflict on trade, rather than the impact of conflict on different goods. Assuming that the disruption of trade in asset-specific manufactured goods entails substantial adjustment costs, Dorussen (2006) finds that such trade generates stronger deterrent effects, thereby enhancing the pacifying impact of bilateral trade. Similarly, Goenner (2010) shows that trade in chemicals, electronics, and nuclear materials is more likely to reduce conflict compared to other goods, which he categorizes as more easily substituted or expropriated.

Yet, like other studies that examine how trade influences conflict, these important contributions, which use a disaggregated approach, do not empirically test their core assumption about the varying sensitivity of different goods to conflict. Moreover, the level of disaggregation in these studies remains limited, typically covering only a few broad commodity categories. Most importantly, their assumptions about wartime trade substitution processes focus primarily on economic factors, while paying less attention to the strategic and military considerations that combatants and their trade partners must weigh during conflict.

We suggest that disaggregating commodities by their battlefield value provides insights into the relationship between conflict and import dynamics. We aim to contribute to the discussion on wartime trade-related costs and substitution processes by examining import flows across a wide range of commodities classified as strategic or nonstrategic.

4 The Missing Piece of the Puzzle in Understanding Conflict–Trade Relationships: The Value of a Commodity on the Battlefield and Conflict Intensity

Even studies that argue that globalization facilitates smoother substitution processes, by enabling the redirection of exports and the identification of alternative sources of imports, acknowledge that conflict generates both direct and indirect costs. First, even when substitution is feasible, shifting away from first-best trade partners results in efficiency losses (Gowa and Hicks 2017: 654). Second, wartime trade often incurs increased insurance and transportation costs (Feldman and Shipton 2022). Third, damage to infrastructure and a rise in conflict-related risk premiums may render business operations unprofitable. Fourth, the effects of conflict on financial markets – including potential capital flight (Mintz and Huang 1990) and growing fiscal stress due to wartime expenditures (Stamegna et al. 2024) – may affect trade through additional channels, such as currency fluctuations.

Under such constraints, combatant governments and economic agents may be compelled to prioritize shipments. For example, if a country's port is damaged and shipments are redirected to alternative ports, the government must determine which cargo takes precedence for unloading and docking. In the context of high-intensity conflict, trade that directly supports the war effort or enhances deterrence capabilities is likely to be prioritized. Put differently, the externalities of war on trade capacity force belligerents to favor imports that improve their chances of battlefield success, often at the expense of non-essential goods. Furthermore, the need to prioritize commodities is amplified by the conflict's severity, which increases the degree of the damage to the economy (Yamarik et al. 2010). The latter may reflect how economic damage hurts state revenues and leads belligerents to reprioritize their budgets according to battlefield developments.

For example, since the fighting in Eastern Ukraine in 2014, a fundamental principle of Russian policy has been to accelerate its substitution process. Initially, Russia limited its search for substitutes and instead concentrated on imports of technology components from friendly states (Simola 2022). However, the intensity of the war in Ukraine in 2022 was greater than the invasion of Crimea in 2014, and required Russia to import advanced Iranian arms, such as the Shahed 136 suicide drones because Russia's Western suppliers cut off its access to the chips it relied on to create weapons (Watling and Somerville 2024). This case demonstrates that countries prioritize their imports according to the value of the commodities to achieve victory, even at the expense of importing other commodities.

Alongside such strategic motivations and economic determinants, imports are also shaped by the politically driven responses of exporters. Several studies have shown that conflict tends to inflict greater damage on trade with the enemy's friends and allies (Chen 2021; Chen and Zhou 2021; Feldman and Sadeh 2018). Kinne (2014) argues that third parties often signal their disapproval of a conflict by imposing trade restrictions. These signals become especially potent when such restrictions target goods that affect a combatant's ability to sustain its war effort, thereby amplifying the political message and demonstrating support for the combatant's adversary. Nonetheless, arms exporters do not tend to reduce their exports to influence the importer's policy when they are a major supplier of the importer (Johnson 2020).

The interplay between the strategic and political motivations of both the combatant and third parties shapes the relationship between conflict and disaggregated trade flows across product categories. We maintain that the balance of motivations between combatants and politically motivated third parties is a function of the intensity of conflict. Low-intensity conflict is unlikely to sever long-standing relations because the political and economic interests of third parties are not harmed severely by the conflict. As a result, third parties are less likely to signal dissatisfaction by reducing shipments of strategic commodities when the intensity of conflict

is low. Additionally, the limited direct and indirect economic disruptions to trade in the case of low-intensity conflict reduce the expected damage to imports. However, belligerents may still have incentives to increase imports of goods that are critical to their ability to win the conflict, to deter the enemy from escalating it, or to prevent renewed hostilities after it ends.

While a combatant's motivation to import strategic goods tends to increase with the intensity of conflict, so too does the willingness of some third parties to restrict the export of such goods. This, combined with the greater economic disruptions typically associated with high-intensity conflict, may mitigate the combatant's efforts to boost strategic imports. Table 1 displays how variations in war intensity coincide with changes in strategic imports, highlighting patterns that may be linked to the motivations of the belligerent and its trade partners.

To conclude, the missing piece of the puzzle in understanding the relationship between war and trade is the failure to consider the strategic value of imports to the war effort. Commodities without battlefield value tend to show greater trade declines during conflict. Thus, we posit that:

H1: *As the intensity of a militarized interstate dispute increases, the decline in the import of nonstrategic commodities becomes more pronounced.*

We also maintain that nations concentrate on increasing their imports of strategic commodities due to war. Furthermore, they seek alternative sources of these imports when their original sources are no longer available. They do so in response to the conflict's intensity, which may influence exporters' willingness to signal dissatisfaction and is often associated with a decline in imports. Thus, our second hypothesis states that:

H2: *Low-intensity militarized interstate disputes are associated with an increase in the import of strategic commodities.*

The rationale of H2 is that the damage to the economy is insignificant because the conflict represents a minor incident, which also attracts limited attention from exporters. However, the use of strategic commodities creates a need to restore their supply, leading to a positive trend in their imports.

H3: *Intermediate-intensity militarized interstate disputes are associated with a greater increase in the import of strategic commodities than low-intensity wars.*

As the situation escalates, the importer tries to obtain strategic commodities. Furthermore, by avoiding a full-scale war, the belligerent shows its exporters that the conflict remains under control. The effect of the war on the economy is minimized, and at the same time, the belligerent's motivation to increase its imports of strategic commodities is growing.

Table 1: Mechanisms underlying the relationship between war intensity and import flows.

MID's intensity versus potential factors affecting the importing of strategic commodities	Belligerent's motivation to increase strategic imports	Exporter's motivation to halt strategic exports	The influence of the damage to the economy	The outcome
Low intensity (Level 1)	Little motivation. The belligerent uses relatively small amounts of strategic commodities due to the incident's lack of intensity, and therefore has little need to resupply its strategic commodities.	Minor motivation. The incident does not draw the attention of exporters.	Minor damage.	A slight increase in imports of strategic commodities.
Intermediate intensity (Level 2)	Strong motivation. The belligerent wants to obtain commodities that will help it win the conflict.	Limiting the conflict to an intensity that will not cause severe damage to the exporter's interests moderates the strong motivation of the exporter to halt strategic imports.	Fair amount of damage.	An increase in strategic commodities.
High intensity (Level 3)	Very strong motivation.	Very high.	Severe damage.	A severe decline in importing strategic commodities.

H4: *High-intensity wars are associated with a decrease in the import of strategic commodities.*

When all-out war occurs, the desire of importers to obtain strategic commodities is at its highest. However, this desire is undermined by the damage to its economy and the global attention that the war attracts. As a result, exporters may indicate their dissatisfaction with the war by providing fewer strategic imports and sometimes cutting them off entirely.

5 Research Design

5.1 Data and Methods

To test our hypotheses, we compiled a database that covers 529,056 dyadic observations of Israel's imports from 168 exporting nations between 1980 and 2014. We selected 1980 as the starting point to capture Israel's imports during a period when globalization was already developed worldwide. The dataset ends in 2014, which is the latest year covered by the most recent version of the COW MID dataset. The unit of analysis is exporter-year-commodity. Each observation represents a specific commodity traded by an exporter in a given year. Commodities are classified based on the HS02-system, using the 96 commodities coded in the UNCOMTRADE database. Table A1 in the appendix presents Israel's imports of HS02-level goods between 1980 and 2014, based on 96 commodities in the UNCOMTRADE database. The dependent variable, *Import*, represents the value of Israeli imports of HS02-level commodities from a specific country in a given year, measured in million nominal US dollars. Trade data are extracted from the UNCOMTRADE database (UN Comtrade n.d.).

To capture how conflict intensity and imported commodity type condition the damage that conflict inflicts on third-party trade, we interact a conflict intensity variable with an indicator distinguishing between strategic and nonstrategic goods. As research on the trade-related costs of war demonstrated, the relationship between conflict and trade may exhibit lagged patterns. We therefore estimate separate models that include either a contemporaneous conflict variable or a 1-year lagged conflict variable. We estimate the contemporaneous and lagged effects of conflict using separate models to mitigate concerns about multicollinearity. This modeling choice is particularly relevant given that some conflicts, such as the First Lebanon War, span more than one calendar year. Including both *MID* and *MID* (*t*-1) in the same specification would make it difficult to disentangle their individual effects, as the two variables would overlap temporally and be highly correlated.

Accordingly, *MID* (*t*-1) refers to the level of intensity of the conflict in which Israel was involved in the previous year when the exporter nation was not necessarily involved in this conflict.[1] Based on the Militarized Interstate Disputes 4.03 database, we divided intensity into four levels: 0 if there is no conflict or there are no casualties, 1 if there are between 1 and 99 causalities (low intensity), 2 if there are between 100 and 999 causalities (intermediate intensity), and 3 if there are 1,000 causalities or more (high intensity) (Maoz et al. 2019).

5.2 Determining Whether an Import is Valuable and Strategic

Determining which of the 96 commodity categories in the dataset should be classified as strategic goods presents a significant challenge. The term "strategic" is ambiguous and is the subject of a theoretical debate. Ding and Dafoe (2021) focus on rival externalities to help decision-makers decide whether an asset is strategic. However, they base their argument on long-lasting economic competition between great powers. As such, their argument does not directly address the specific notion of strategic commodities during wartime. The definition of a strategic commodity is also difficult to pin down because the tension between belligerents' economic and military needs is not necessarily complementary. For example, belligerents limit their trade with an adversary that may confer immediate military advantage while allowing trade in goods deemed economically important but less directly useful for warfare (Grinberg 2021).

Some scholars recognized particular commodities as strategic, such as high-tech products (Borrus and Zysaman 1992); or energy, non-ferrous metals, chemicals, electronics, nuclear materials, and arms (Goenner 2010); and others classify types of crucial mineral commodities as slag, precious metal ores, non-ferrous metal ores, calcium phosphates, steatite, granulated slag, aluminum ores, natural graphite, chromium ores, and tin ores (Caruso and Cipollina 2025). Based on these definitions, we expand the list of products that scholars have already defined as commodities that are essential for conflict. The definition of *strategic* refers to traditional security needs and excludes other aspects of security, such as food or economic security. This definition is based on the rationale that the negative effect of war on the economy motivates belligerents to seek alternatives for imports that improve their chances of winning on the battlefield at the expense of other calculations. For example, developing states increase agricultural taxes to fund arms imports (Klomp 2020). Thus, we define a strategic commodity as a *product that helps a nation win on the battlefield.*

1 The record of trade with a state involved in a conflict is rare and concludes in two cases: 65 observations of imports from Egypt in 2006 and 67 observations of imports from Egypt in 2011.

We used the World Customs Organization classification, which groups the 96 commodities into 21 broader categories. We then divided these 21 categories into strategic or nonstrategic commodities based on their contribution to victory on the battlefield.

5.3 Model Specification and Control Variables

In line with established empirical work in international trade and studies examining the effects of conflict on trade, our estimation relies on the gravity model. We begin with the traditional specification, which accounts for time-invariant variables such as geographic distance. In our second set of estimations, we include exporter fixed effects to control for unobserved time-invariant factors that may affect the propensity of two nations to engage in more or less trade.

In all models, we include 1-year lagged values (in logs) of population and GDP for both the importer (Israel) and the exporting country. Additionally, we include a dummy variable indicating whether the exporter had a trade agreement (*FTA*) with Israel, as well as a dummy for whether the exporter was a member of the General Agreement on Tariffs and Trade (GATT) or the World Trade Organization (WTO) since 1994 in a given year. Since Israel was a member throughout the entire period, this variable captures the exporter's membership status only. The data for all variables are taken from the CEPII gravity database (Conte et al. 2022).

To capture the effect of cultural and political similarity between trade partners, we included several variables that are also taken from the CEPII gravity database. *Common religion* is a religious proximity index ranging from 0 to 1, which increases when the country pair shares a common religion. *UN diplomatic distance* calculates the UN diplomatic disagreement score by measuring the absolute ideological distance between two countries based on their average ideal points based on UN General Assembly voting patterns in a given year. In the first set of models, we also included a set of dummy variables to reflect shared historical, linguistic, and legal traits: whether the partners share an official or primary language (*Common language*); a language spoken by at least 9 % of the population (*Widely spoken language*).

To consider the impact of regime similarity, with an emphasis on the democratic peace theory, the models include the dummy variable *Democracy* and examine whether the two trading partners are democracies (*Democracy*). Based on the Polity VI Project, the variable *Democracy* received a value of 1 if the database gave both trading partners a value of six or above (Marshall et al. 2017). The first set of models also includes a set of time-invariant geographic variables commonly used in the traditional gravity model. These include geographic distance and a dummy variable indicating whether the countries share a contiguous border.

5.4 Methodology

We estimate all models using the Poisson Pseudo Maximum Likelihood (PPML) estimator, which, since the seminal work of Silva and Tenreyro (2006), has been widely regarded as the standard approach for gravity models with a large number of zero trade observations. Although originally developed for count data, PPML remains consistent as long as the conditional mean is correctly specified and the dependent variable does not need to follow a Poisson distribution (Gouriéroux et al. 1984). Silva and Tenreyro (2006) demonstrated that PPML effectively addresses heteroscedasticity, which can lead to inconsistent parameter estimates when using log-linearized OLS models.

Moreover, PPML allows researchers to retain zero trade observations, which are typically lost in log-transformed models or artificially treated as very small positive values to avoid being dropped during estimation. This is particularly important when the unit of analysis is exporter-year-commodity, as many observations are either unreported or have a recorded value of zero. Since UN Comtrade is a data repository that compiles trade data from national statistical offices, it does not report zero trade values for each commodity category. Using PPML, we are able to code these missing values as zero and include them in our estimations. In our dataset, 127,807 observations are reported, while 401,249 dyadic observations were missing and thus were assigned a value of zero.[2]

For the model including time-invariant variables, we employ standard PPML estimation. In the second model, we incorporate exporter fixed effects using a PPML specification with multiple high-dimensional fixed effects (HDFE). This is done with the ppmlhdfe command in Stata, developed by Correia et al. (2020). To correct for heteroscedasticity and serial correlation, in both models we cluster standard errors at the exporter level.

Models 3 and 4 may be understood as an augmented specification in which the baseline models (Models 1 and 2) are nested. The addition of exporter fixed effects allows us to control for unobserved time-invariant characteristics across countries, address heterogeneity and improve identification.[3] While our analysis does not estimate structural parameters directly, the inclusion of fixed effects is consistent

2 Estimations based solely on the 127,807 reported observations did not produce substantially different results for our key explanatory variables of interest.

3 Recent theoretical literature recommends that, in addition to directed-dyadic fixed effects, models using time-series cross-sectional data should include importer-year and exporter-year fixed effects to account for time-varying country-specific shocks. In our case, importer fixed effects are not included, as the importer, Israel, remains constant throughout the sample. Including exporter-year fixed effects, however, is not feasible in our specification, as they are collinear with our key explanatory variable capturing bilateral conflict, which varies at the dyad-year level.

with the identification principles outlined by Gouriéroux et al. (2019). Although we do not formally nest the model within a structural framework, the augmented specification is designed to improve robustness and lend greater credibility to our reduced-form estimates.

6 Results

Table 2 presents the results of our gravity model specifications. Models 1 and 2 serve as a baseline to assess whether the traditional assumptions of the gravity model hold in the Israeli context. However, we consider Models 3 and 4 as more appropriate for interpreting the effect of conflict on trade, given the methodological considerations discussed above. In line with standard gravity model expectations, the coefficient of distance is positive and significant. By contrast, the coefficient of contiguity is statistically insignificant, likely reflecting the fact that Israel did not trade with the majority of its neighboring countries in the sample period. Consistent with gravity model predictions, Models 1 and 2 also show that increases in exporter GDP are associated with increased levels of Israeli imports. In addition, greater political distance between Israel and its trading partners is associated with lower import volumes. Other explanatory variables in the model do not reach statistical significance.

Turning to Model 3, the coefficients of all three conflict intensity levels are negative and statistically significant, indicating that even low-intensity fatal MIDs were associated with a reduction in Israel's imports of nonstrategic commodities. In line with Hypothesis 1, the coefficient of high-intensity conflict has the greatest magnitude of all variables. However, contrary to expectations, the coefficient of low-intensity conflict is greater than the coefficient of intermediate-intensity conflict.

The results indicate that even in the absence of fatal incidents, and holding all control variables constant, Israel imported nearly twice as much in strategic commodities as in nonstrategic ones ($\exp(0.66) \approx 1.93$). This pattern may reflect the country's frequent exposure to conflict or structural features of its economy. Consistent with Hypothesis 2, the interaction between low-intensity conflict and the dummy for strategic commodities is positive and statistically significant. Substantively, Model 3 shows that while low-intensity conflicts are associated with an 18 % reduction in imports of nonstrategic goods ($=\exp(-0.199) - 1$), the decline in strategic commodities is more modest, approximately 11 % ($=\exp(-0.199 + 0.083) - 1$).

In contrast, while the interactions between higher-intensity contemporaneous conflicts and strategic goods return the expected sign, they are far from statistically significant. This may reflect the fact that both the combatant's motivation to increase strategic imports and exporters' incentives to restrict such goods take time to

Table 2: Variation in import flows across levels of conflict intensity.

	(1)	(2)	(3)	(4)
MID low intensity	−0.172***		−0.199***	
	(0.042)		(0.052)	
MID intermediate intensity	−0.114***		−0.128***	
	(0.03)		(0.028)	
MID high intensity	−0.314***		−0.366***	
	(0.084)		(0.082)	
MID low intensity (t-1)		−0.069**		−0.035
		(0.03)		(0.033)
MID intermediate intensity (t-1)		−0.039		−0.002
		(0.04)		(0.034)
MID high intensity (t-1)		−0.148**		−0.148***
		(0.06)		(0.054)
Strategic	0.667***	0.7***	0.661***	0.691***
	(0.177)	(0.168)	(0.177)	(0.169)
MID low intensity × Strategic	0.083***		0.083***	
	(0.031)		(0.032)	
MID intermediate intensity × Strategic	0.057		0.063	
	(0.058)		(0.058)	
MID high intensity × Strategic	−0.048		−0.041	
	(0.071)		(0.071)	
MID low intensity (t-1) × Strategic		−0.02		−0.011
		(0.017)		(0.016)
MID intermediate intensity (t-1) × strategic		0.174***		0.182***
		(0.062)		(0.062)
MID high intensity (t-1) × strategic		−0.178**		−0.169**
		(0.083)		(0.083)
GDP importer (t-1) (logged)	−0.061	−0.115	−0.157	−0.209
	(0.22)	(0.254)	(0.241)	(0.283)
GDP exporter (t-1) (logged)	0.676***	0.678***	0.754***	0.784***
	(0.095)	(0.094)	(0.241)	(0.245)
Pop importer (t-1) (logged)	−0.306	−0.126	−0.342	−0.257
	(1.123)	(1.256)	(1.232)	(1.456)
Pop exporter (t-1) (logged)	0.13	0.129	1.695**	1.702**
	(0.168)	(0.167)	(0.788)	(0.763)
GATT/WTO	0.432	0.431	0.237	0.22
	(0.432)	(0.433)	(0.271)	(0.281)
PTA agreement	0.123	0.137	−0.306*	−0.253
	(0.177)	(0.183)	(0.158)	(0.177)
Democracy	0.031	0.034	0.266*	0.26*
	(0.217)	(0.217)	(0.143)	(0.158)
UN diplomatic distance	−0.416**	−0.41**	−0.085	−0.091
	(0.18)	(0.179)	(0.149)	(0.147)
Common religion – religious proximity index	−17.559	−17.594	345.95***	344.046***
	(16.507)	(16.464)	(65.49)	(61.521)

Table 2: (continued)

	(1)	(2)	(3)	(4)
Distance (logged)	0.001***	0.001***		
	(0)	(0)		
Common border	−0.093	−0.092		
	(1.008)	(1.007)		
Common language	0.693			
–Share an official language	(0.599)	0.695		
Widely spoken language	−0.926	(0.599)		
–a language spoken by 9 % of the population	(0.584)	−0.933		
Constant	−8.532	−9.211	−28.4***	−29.03***
	(6.29)	(6.663)	(10.428)	(10.537)
N	439,872	439,872	439,872	439,872
Pseudo R2	0.458	0.458	0.534	0.533
Exporter dummies	No	No	Yes	Yes

Numbers in parentheses are robust standard errors clustered on exporter. Significance in two-tailed tests, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

materialize. Alternatively, the combatant's efforts to secure strategic imports may be offset by the broader disruptions that high-intensity conflicts impose on trade routes. Model 4, which captures the effect of conflict with a 1-year lag, lends further support to these interpretations.

The coefficients of lagged low-level and intermediate conflict levels are statistically insignificant. This implies that the disruption that such conflict inflicts on trade is short lived and does not generate cumulative long-lasting damage. Yet, in line with Hypothesis 3, the interaction of intermediate-intensity conflict with the strategic goods dummy is positive and significant (*MID intermediate intensity* × *Strategic*). This suggests that while intermediate-intensity fatal MIDs did not impact imports of nonstrategic commodities during the conflict year, they were associated with a nearly 20 % increase in imports of strategic goods. This pattern may reflect efforts to replenish depleted inventories, the arrival of shipments agreed upon during the conflict, a desire to deter adversaries, or a combination of all three.

The coefficient of the lagged all-out war variable (*MID high intensity*) is negative and statistically significant. In our sample, this variable captures only the First Lebanon War, which lasted from 1982 to 1985 (the lagged variable therefore covers the years 1983–1986). The results indicate that imports of nonstrategic commodities declined by approximately 14 %. Consistent with Hypothesis 4, the interaction between all-out war and strategic goods is also negative and statistically significant, suggesting an additional 17 % reduction in strategic imports, which amounts to a total

decline of over 31 %. These findings underscore the severe and broad nature of the trade disruptions caused by prolonged, high-intensity conflict.

7 Discussion

Overall, the results strongly support Hypotheses 2, 3, and 4, and provide partial support for Hypothesis 1. The Israeli case demonstrates that imports of nonstrategic goods declined during all fatal conflicts. However, only the First Lebanon War, a protracted conflict lasting 3 years, was associated with long-lasting trade disruptions. Nonetheless, the findings indicate that as long as the conflict remains limited, disruptions in nonstrategic commodities imports appear in the short term, while the belligerent's economy adjusts in the medium term.

More importantly, our findings underscore the need for a disaggregated approach that accounts for the strategic nature of goods when analyzing the bidirectional relationship between trade and conflict. We interpret the rise in strategic imports following the 2006 Lebanon War, an intermediate-intensity conflict, as reflecting the combatant's motivation to replenish depleted stockpiles, deter adversaries, or prepare for renewed hostilities.

Conversely, the decline in strategic imports following the all-out war that occurred early in the sample period may represent political constraints imposed by third-party exporters. In that period, Israel's economic integration and global interconnectedness were lower than in subsequent years and it is therefore plausible that Israel's capacity to circumvent external restrictions was more limited in that context. Taken together, these findings highlight the importance of considering both combatant and third parties' motivations in shaping the trade consequences of conflict.

8 Conclusion

This study examined how the intensity of armed conflict is associated with a state's ability to maintain import flows of strategic and nonstrategic commodities. By focusing on Israel from 1980 to 2014, the analysis disaggregated trade flows and linked them to different levels of conflict intensity, offering a more refined understanding of the trade–war relationship. The results suggest that conflict does not have a uniform relationship with imports, as its nature varies according to the intensity of conflict and the strategic relevance of the imported commodities.

These findings have meaningful policy implications for importers and exporters operating in conflict-prone environments. For policymakers in importing states,

especially those facing intermediate-intensity conflicts, the results underscore the importance of building logistical flexibility, diversifying supply chains, and engaging in advance coordination with key trade partners to secure access to strategic commodities that will assist in achieving the goals of the war. Strategic import flows are more likely to be preserved when the conflict remains limited and diplomatically contained. However, as conflict escalates, these efforts become less effective, specifically for strategic commodities, making long-term planning and institutional preparedness essential. Furthermore, policymakers in importing states may consider avoiding conflicts if short term economic considerations carry severe implications. For policymakers in exporting states, the results suggest that trade behavior functions as a form of diplomatic signaling. Exporters may adjust the outflow of strategic goods in response to the perceived legitimacy or intensity of a conflict, to express their political stance and protect their interests. Recognizing this signaling dynamic allows both sides to better anticipate trade disruptions.

To our knowledge, this study is the first to theoretically integrate a disaggregated approach to examining how trade patterns vary following armed conflict, while accounting for the strategic considerations of both belligerents and third parties. We focused exclusively on the trade patterns of a single country as an initial test of our theoretical argument linking disaggregation to strategic motivations. As with any case study, especially one centered on a single country, efforts to generalize and draw broader theoretical conclusions should be approached with caution. Nonetheless, we believe the findings strongly support our core argument: understanding the relationship between conflict and trade requires a more disaggregated perspective – one that goes beyond standard economic factors such as domestic demand elasticity or global supply conditions, and gives greater attention to strategic considerations.

Future research should aim to test our hypotheses using a global sample to strengthen our theoretical argument. Moreover, further disaggregation of specific committees could enhance our proposed causal mechanism. Advancing this research agenda would deepen our understanding of wartime trade and substitution effects, which are essential components of the mechanisms underlying many theories that either support or challenge the idea that globalization fosters peace.

Appendix

This appendix presents additional substantive results, the results of a series of robustness tests, and summary statistics.

How We Categorized Strategic Commodities

As explained in the main text, to determine which commodities should be classified as strategic, we relied on the World Customs Organization (WCO) classification system. This system groups the 96 UN Comtrade commodity codes into 21 broader sections.[4]

Table A1 lists these 21 categories and indicates which were coded as strategic and which as nonstrategic, based on their relevance to military utility, deterrence, and

Table A1: Sections of commodities and their division into strategic and nonstrategic groups.

Section	Main category (scope of HS02)	Strategic/nonstrategic
I	Live animals (01–05)	Nonstrategic
II	Vegetable products (06–14)	Nonstrategic
III	Animal, vegetable or microbial fats and oils (15)	Nonstrategic
IV	Prepared foodstuffs; beverages, spirits and vinegar; tobacco and manufactured tobacco substitutes (16–24)	Nonstrategic
V	Mineral products (25–27)	Strategic. Some minerals such as sulphur have military uses, and metals are essential for building technology products and weapons that provide leverage on the battlefield.
VI	Products of the chemical or allied industries (28–38)	Strategic. Rare earth elements are the source to create products that are used for military needs, such as jet fighter engines, missile guidance systems, and missile defense.
VII	Plastics and articles thereof; rubber and articles thereof (39–40)	Nonstrategic
VIII	Raw hides and skins, leather, fur skins and articles thereof; saddlery and harness; travel goods, handbags and similar containers; articles of animal gut (41–43)	Nonstrategic
IX	Wood and articles of wood; wood charcoal; cork and articles of cork; manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork (44–46)	Nonstrategic

4 Source: https://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/hs-nomenclature-2022-edition/hs-nomenclature-2022-edition.aspx.

Table A1: (continued)

Section	Main category (scope of HS02)	Strategic/nonstrategic
X	Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard; paper and paperboard and articles thereof (47–49)	Nonstrategic
XI	Textiles and textile articles (50–63)	Nonstrategic
XII	Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof; prepared feathers and articles made therefrom; artificial flowers; articles of human hair (64–67)	Nonstrategic
XIII	Articles of stone, plaster, cement, asbestos, mica or similar materials; ceramic products; glass and glassware (68–70)	Nonstrategic
XIV	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof; imitation jewelry; coin (71)	Nonstrategic
XV	Base metals and articles of base metal (72–83)	Strategic. Metals are used for military purposes, such as ships and aircraft.
XVI	Machinery and mechanical appliances; electrical equipment; parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles (84–85)	Strategic. Machinery has military uses, such as creating weapons.
XVII	Vehicles, aircraft, vessels, and associated transport equipment (86–89)	Strategic. It includes military vessels.
XVIII	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; clocks and watches; musical instruments (90–92)	Nonstrategic
XIX	Arms and ammunition; parts and accessories thereof (93)	Strategic
XX	Miscellaneous manufactured articles (94–96)	Nonstrategic
XXI	Works of art, collectors' pieces and antiques(97)	Nonstrategic

conflict resilience as discussed in our theoretical framework. Table A2 displays the process of the variable operations and the sources of their data.

Table A3 replicates Table 2 from the main text, with standard errors double-clustered by exporter and year. Although including year fixed effects is not feasible due to high collinearity with the conflict variables, clustering by year allows us to

Table A2: Summary of variables: labels, operationalization, and data source.

Name of variable	Measurement	Data source
Import	Total annual import value (USD), reported by the importer, aggregated by country and commodity, and divided by one million.	UN comtrade database.
MID	War intensity level (0–3), based on the importer's involvement in a MID in the current year of trade.[a]	Correlates of war (MID 4.03).
MID (t-1)	War intensity level (0–3), based on the importer's involvement in a MID in the prior year.	Correlates of war (MID 4.03).
Strategic	Dummy variable. Estimating whether each of the 21 categories in the HS02 classification (as defined by the World Customs Organization) holds value on the battlefield in terms of traditional security use. If the answer is yes then it receives 1.	Table 2.
Pop importer (t-1) (logged)	Population (in thousands) of the importer in the previous year.	The CEPII gravity database.
Pop exporter (t-1) (logged) (logged)	Population (in thousands) of the exporter in the previous year.	The CEPII gravity database.
GDP importer (t-1) (logged)	GDP (current thousands US$) of the importer in the previous year.	The CEPII gravity database.
GDP exporter (t-1) (logged)	GDP (current thousands US$) of the exporter in the previous year.	The CEPII gravity database.
Distance	Geodesic distance between most populated cities (km).	The CEPII gravity database.
GATT/WTO	Dummy variable. 1 if the exporter currently is a WTO/GATT member.	The CEPII gravity database.
FTA	Dummy variable. 1 if the pair is currently engaged in a trade agreement.	The CEPII gravity database.
Democracy	Dummy variable. 1 if the pair currently received the score 6 and above for the variable Polity2.	Polity IV project manual: political regime characteristics and transitions, 1800–2017.
Common border	Dummy variable. 1 if countries are contiguous.	The CEPII gravity database.
Common religion	Religious proximity index (as cited in CEPII gravity database): Obtained by summing the products of the shares of catholics, protestants and muslims in the origin and destination countries. Varies between 0 and 1, increases when the country pair shares a common religion practiced by a large share of the population.	The CEPII gravity database.

Table A2: (continued)

Name of variable	Measurement	Data source
UN diplomatic distance	The score is calculated as the absolute distance between the average UN ideal point estimates of the importer and exporter in a given year.	The CEPII gravity database.
Common language	Dummy variable. 1 if countries share a common official or primary language.	The CEPII gravity database.
Widely spoken language	Dummy variable. 1 if countries share a common language spoken by at least 9 % of the population.	The CEPII gravity database.

[a]Category definitions based on casualty thresholds are provided in the research design section.

Table A3: Standard errors are double-clustered.

	(A1)	(A2)	(A3)	(A4)
MID low intensity	−0.173***		−0.199	
	(0.057)		(0.126)	
MID intermediate intensity	−0.11***		−0.128	
	(0.032)		(0.078)	
MID high intensity	−0.32***		−0.366***	
	(0.062)		(0.166)	
MID low intensity (t-1)		−0.069		−0.035
		(0.057)		(0.097)
MID intermediate intensity (t-1)		−0.039		−0.002
		(0.04)		(0.048)
MID high intensity (t-1)		−0.148**		−0.148
		(0.068)		(0.11)
Strategic	0.667***	0.669***	0.661***	0.691***
	(0.177)	(0.168)	(0.177)	(0.169)
MID low intensity × strategic	0.083*		0.083	
	(0.045)		(0.167)	
MID intermediate intensity × strategic	0.057		0.063	
	(0.058)		(0.058)	
MID high intensity × strategic	−0.048		−0.041	
	(0.071)		(0.082)	
MID low intensity (t-1) × strategic		−0.02		−0.011
		(0.017)		(0.016)
MID intermediate intensity (t-1) × strategic		0.174***		0.182***
		(0.062)		(0.041)
MID high intensity (t-1) × strategic		−0.178**		−0.169**
		(0.072)		(0.059)
Constant	−8.532	−9.211	−28.4***	−29.03***
	(6.29)	(6.663)	(10.428)	(10.537)
N	439,872	439,872	439,872	439,872
Pseudo R2	0.458	0.458	0.534	0.533
Exporter dummies	No	No	Yes	Yes

account, at least partially, for unobserved time-related factors that may influence the estimates. To save space, we do not report the results for all control variables; their coefficients are nearly identical to those presented in Table 2 of the main text.

While clustering by year reduces the significance level of some conflict variables, all interaction terms between conflict intensity and the strategic commodity dummy that were significant in the main text remain highly significant. These results confirm that our expectations regarding the differential impact of conflict on strategic versus nonstrategic commodities are robust to this alternative specification.

Table A4: Including GDP per capita.

	(A5)	(A6)	(A7)	(A8)
MID low intensity	−0.148***		−0.2***	
	(0.05)		(0.053)	
MID intermediate intensity	−0.144*		−0.17**	
	(0.08)		(0.068)	
MID high intensity	−0.328***		−0.377***	
	(0.088)		(0.096)	
MID low intensity (t-1)		−0.077**		−0.03
		(0.037)		(0.024)
MID intermediate intensity (t-1)		−0.068		−0.048
		(0.055)		(0.042)
MID high intensity (t-1)		−0.168**		−0.165*
		(0.074)		(0.087)
Strategic	0.667***	0.669***	0.665***	0.7***
	(0.177)	(0.168)	(0.178)	(0.169)
MID low intensity × strategic	0.084***		0.082***	
	(0.031)		(0.031)	
MID intermediate intensity × strategic	0.054		0.059	
	(0.058)		(0.058)	
MID high intensity × strategic	−0.05		−0.046	
	(0.071)		(0.071)	
MID low intensity (t-1) × strategic		−0.026*		−0.02
		(0.015)		(0.016)
MID intermediate intensity (t-1) × strategic		0.167***		0.173***
		(0.06)		(0.061)
MID high intensity (t-1) × strategic		−0.184**		−0.178**
		(0.087)		(0.085)
N	439,872	439,872	439,872	439,872
Pseudo R2	0.458	0.458	0.534	0.533
Exporter dummies	No	No	Yes	Yes

Table A4 replicates Table 2, replacing the population variable with GDP per capita (logged and lagged by 1 year). While population is the original variable in the gravity model and offers both theoretical and methodological advantages, many recent studies opt to use GDP per capita instead. Among other things, this substitution helps reduce multicollinearity between GDP and population (see Table A6). This alternative specification does not alter the sign or significance of the conflict and interaction variables, indicating that our results are robust to this change.

Table A5 replicates Model 4 from the main text, presenting a sensitivity analysis in which Israel's trade partners are divided into subgroups. The first three models

Table A5: Sensitivity analysis.

	(A9)	(A10)	(A11)	(A12)	(A13)
MID low intensity (t-1)	−0.025	−0.069***	−0.223**	−0.015	−0.051
	(0.025)	(0.017)	(0.104)	(0.035)	(0.04)
MID intermediate intensity (t-1)	−0.07**	0.131*	−0.242*	−0.038	0.014
	(0.035)	(0.071)	(0.144)	(0.035)	(0.053)
MID high intensity (t-1)	−0.214***	−0.101	−0.516	−0.045	−0.391***
	(0.06)	(0.29)	(0.431)	(0.057)	(0.096)
Strategic	0.649***	0.896***	1.272*	0.646***	0.815***
	(0.196)	(0.288)	(0.727)	(0.216)	(0.194)
MID low intensity (t-1) × strategic	−0.017	0.009	−0.343***	−0.03	0.039
	(0.019)	(0.031)	(0.114)	(0.022)	(0.032)
MID intermediate intensity (t-1) × strategic	0.17***	0.138**	−0.329*	0.212***	0.088
	(0.065)	(0.059)	(0.171)	(0.065)	(0.11)
MID high intensity (t-1) × strategic	−0.12**	−0.483*	−3.17***	−0.211***	0.093
	(0.057)	(0.267)	(1.019)	(0.081)	(0.125)
N	197,664	118,176	119,712	120,000	319,872
Pseudo R2	0.458	0.491	0.4	0.481	0.583
Exporter dummies	Yes	Yes	Yes	Yes	Yes

are based on geographic categorization, separating exporters into: (1) the Americas and Europe (Model A9), (2) Asia and Oceania (Model A10), and (3) all other countries. Models A12 and A13 differentiate between high-income and low- and middle-income countries, based on the World Bank's income classification.

In line with the results reported in the main text, the interaction term *MID high intensity* (*t*-1) × *Strategic* is negative and statistically significant across all models, except Model A13. This may suggest that low-income countries are less likely to engage in politically motivated trade restrictions during international conflicts. The interaction term *MID intermediate intensity* (*t*-1) × *Strategic* is positive and significant in Models A9, A10, and A12, but becomes insignificant in Model A13.

Interestingly, and in contrast to the global model, both *MID low intensity* (*t*-1) × *Strategic* and *MID* × *Strategic* are negative and statistically significant in Model A13. Since this subgroup includes many Middle Eastern countries, the result may indicate a higher sensitivity to regional military operations, with strategic trade policy adjustments occurring even at lower levels of conflict intensity.

Table A6 presents a robustness check addressing potential multicollinearity among the covariates. The table reports variance inflation factor (VIF) scores for two

Table A6: VIF.

	(A14)	(A15)
MID low intensity (t-1)	1.38	1.39
MID intermediate intensity (t-1)	1.38	1.32
MID high intensity (t-1)	1.82	1.71
Strategic	0.1.79	0.1.79
MID low intensity (t-1) × strategic	1.83	1.83
MID intermediate intensity (t-1) × strategic	1.32	1.32
MID high intensity (t-1) × strategic	1.46	1.46
GDP importer (t-1) (logged)	2.8	1.85
GDP exporter (t-1) (logged)	3.91	2.03
Pop importer (t-1) (logged)	47.5	
Pop exporter (t-1) (logged)	48.6	
GDP per capita importer (t-1) (logged)		10.9
GDP per capita exporter (t-1) (logged)		13.7
GATT/WTO	1.21	1.24
FTA agreement	1.62	1.62
Democracy	1.73	1.74
UN diplomatic distance	2.7	2.2
Common religion – religious proximity index	1.5	1.52
Distance (logged)	1.37	1.37
Common border	1.11	1.12
Common language	1.79	1.8
–Share an official language		
Widely spoken language	1.78	1.79
–a language spoken by 9 % of the population		
Mean VIF	6.38	2.6

model specifications. The first row (A14) reflects the specifications presented in Model 4 in the main text. The second row corresponds to the alternative model presented in Table A3, where the population is replaced with lagged GDP per capita, an approach commonly adopted in the gravity literature to reduce collinearity between economic size indicators.

Since VIFs cannot be directly estimated from Poisson pseudo-maximum likelihood (PPML) models, we compute them using ordinary least squares (OLS) regression with the same set of covariates. Although OLS is not the estimation method used in the main analysis, it provides a standard diagnostic for assessing multicollinearity. The results show that all covariates except the population exhibit low VIF levels. Replacing population with GDP per capita significantly reduces the

Table A7: Descriptive statistics.

Variables	Number of observations	Mean	SD	Minimum	Maximum	Range
Imports	529,056	2.200442	31.30239	0	3373.718	3373.718
MID (t-1)	529,056	1.693341	0.950771	1	4	3
MID	529,056	1.718744	0.944097	1	4	3
Pop importer (t-1) (logged)	524,736	8.63636	0.234188	8.239065	8.994595	0.755529
Pop exporter (t-1) (logged)	516,288	8.874309	1.822934	3.973193	14.12107	10.14787
GDP importer (t-1) (logged)	524,736	18.23192	0.809617	16.67836	19.48729	2.808929
GDP exporter (t-1) (logged)	505,440	16.58127	2.368049	10.51139	26.14984	15.63846
WTO/GATT	526,272	0.687705	0.46343	0	1	1
FTA agreement	526,272	0.09139	0.288163	0	1	1
Democracy	527,424	0.41518	0.492754	0	1	1
Common border	529,056	0.024678	0.155142	0	1	1
Common religion	513,888	0.023245	0.027447	0	0.07993	0.07993
UN diplomatic distance	455,808	2.384421	0.849967	0.000333	4.772062	4.771729
Common language	526,272	0.283838	0.45086	0	1	1
Widely spoken language	526,272	0.48869	0.499873	0	1	1
Distance (logged)	529,056	8.37881	0.85818	4.70953	9.720045	5.010515

VIF scores without affecting the core results, thereby reinforcing the robustness of our main specification.

Tables A7 and A8 display descriptive statistics and the correlation among the control variables. They support the convention of a positive correlation between population and the GDP of a state. The high positive correlation between *MID* (*t*-1) and *MID* strengthens the decision to analyze each one of these variables in separate models.

Figure A1 illustrates trends of nonstrategic commodities and strategic commodities, emphasizing their imports during intermediate and high levels of intensity.

Tables A8: Correlation matrix of key variables.

	MID (t-1)	MID	Pop importer (t-1) (logged)	Pop exporter (t-1) (logged)	GDP importer (t-1) (logged)
MID (t-1)	1	0.54	−0.37	−0.03	−0.42
MID	0.54	1	−0.39	−0.03	−0.41
Pop importer (t-1) (logged)	−0.37	−0.39	1	0.08	0.99
Pop exporter (t-1) (logged)	−0.03	−0.03	0.08	1	0.08
GDP importer (t-1) (logged)	−0.42	−0.41	0.99	0.08	1

	GDP exporter (t-1) (logged)	WTO/ GATT	FTA	Democracy	Common border
MID (t-1)	−0.08	−0.07	−0.09	−0.07	0.01
MID	−0.07	−0.07	−0.09	−0.07	0.01
Pop importer (t-1) (logged)	0.22	0.23	0.28	0.18	−0.01
Pop exporter (t-1) (logged)	0.73	0.17	0.07	0.12	0.03
GDP importer (t-1) (logged)	0.22	0.22	0.26	0.17	−0.01

	Common religion	UN diplomatic distance	Common language	Widely spoken language	Distance (logged)
MID (t-1)	0	−0.09	0.01	0.01	0.01
MID	0	−0.08	0.01	0.01	0.01
Pop importer (t-1) (logged)	0	0.14	−0.02	−0.03	−0.03
Pop exporter (t-1) logged	−0.01	−0.02	−0.15	−0.13	−0.05
GDP importer (t-1) (logged)	0	0.14	−0.02	−0.03	−0.03

	GDP exporter (t-1) (logged)	WTO/ GATT	FTA	Democracy	Common border
GDP exporter (t-1) (logged)	1	0.29	0.38	0.4	0
WTO/GATT	0.29	1	0.21	0.32	−0.11
FTA	0.38	0.21	1	0.35	−0.05
Democracy	0.4	0.32	0.35	1	−0.12
Common border	0	−0.11	−0.05	−0.12	1

	MID (t-1)	MID	Lag log pop importer	Pop exporter (t-1) (logged)	GDP importer (t-1) (logged)
GDP exporter (t-1) (logged)	−0.08	−0.07	0.22	0.73	0.22

Tables A8: (continued)

	MID (t-1)	MID	Lag log pop importer	Pop exporter (t-1) (logged)	GDP importer (t-1) (logged)
WTO/GATT	−0.07	−0.07	0.23	0.17	0.22
FTA	−0.09	−0.09	0.28	0.07	0.26
Democracy	−0.07	−0.07	0.18	0.12	0.17
Common border	0.01	0.01	−0.01	0.03	−0.01

	Common religion	UN diplomatic distance	Common language	Widely spoken language	Distance (logged)
GDP exporter (t-1) (logged)	−0.12	−0.38	−0.18	−0.16	−0.11
WTO/GATT	−0.19	−0.12	0.06	0.05	0.09
FTA	−0.17	−0.42	−0.08	−0.13	−0.13
Democracy	−0.36	−0.51	−0.01	−0.21	0.11
Common border	0.23	0.11	−0.1	0.16	−0.56

	MID (t-1)	MID	Pop importer (t-1) (logged)	Pop exporter (t-1) (logged)	GDP importer (t-1) (logged)
Common religion	0	0	0	−0.01	0
UN diplomatic distance	−0.09	−0.08	0.14	−0.02	0.14
Common language	0.01	0.01	−0.02	−0.15	−0.02
Widely spoken language	0.01	0.01	−0.03	−0.13	−0.03
Distance (logged)	0.01	0.01	−0.03	−0.05	−0.03

	Common religion	UN diplomatic distance	Common language	Widely spoken language	Distance (logged)
Common religion	1	0.35	−0.2	0.19	−0.42
UN diplomatic distance	0.35	1	0.04	0.13	0.13
Common language	−0.2	0.04	1	0.5	0.29
Widely spoken language	0.19	0.13	0.5	1	−0.08
Distance (logged)	−0.42	0.13	0.29	−0.08	1

	GDP exporter (t-1) (logged)	WTO/ GATT	FTA	Democracy	Common border
Common religion	−0.12	−0.19	−0.17	−0.36	0.23
UN diplomatic distance	−0.38	−0.12	−0.42	−0.51	0.11
Common language	−0.18	0.06	−0.08	−0.01	−0.1

Tables A8: (continued)

	GDP exporter (t-1) (logged)	WTO/ GATT	FTA	Democracy	Common border
Widely spoken language	−0.16	0.05	−0.13	−0.21	0.16
Distance (logged)	−0.11	0.09	−0.13	0.11	−0.56

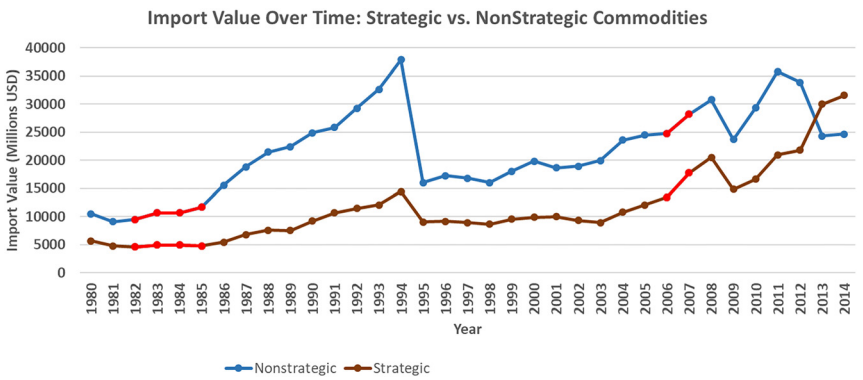

Figure A1: Import value over time: strategic versus nonstrategic commodities. The red line segments from 1982 to 1985 represent years of high war intensity, while those from 2006 to 2007 correspond to a period of intermediate intensity.

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