Does "America First" Help America? The Impact of Country Image on Exports and Welfare*

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Abstract

This paper estimates the effects of time-varying consumer preference bias on trade flows and welfare. We use a unique dataset from the BBC World Opinion Poll that surveys (annually during 2005–2017 with some gaps) the populations from a wide array of countries on their views of whether an evaluated country is having a mainly positive or negative influence in the world. We identify the effects on consumer preference parameters due to shifts in these country image perceptions and quantify their general equilibrium effects on bilateral exports and welfare (each time for an evaluated exporting country, holding the exporting country's own preference parameters constant). We consider five important shifts in country image: the George W. Bush effect, the Donald Trump effect, the Senkaku Islands Dispute effect, the Brexit effect, and the Good-Boy Canadian effect. We find that such changes in bilateral country image perceptions have quantitatively important trade and welfare effects. The negative impact of Donald Trump's "America First" campaign rhetorics on the US' country image might have cost the US as much as 3% of its total exports and welfare gains from trade. In contrast, the consistent improvement of Canadian country image between 2010 and 2017 has amounted to more than 8% of its total welfare gains from trade.

Key Words: Country Image; Consumer Preferences; Trade Flows; Quantitative Welfare Analysis
JEL Classification: C23; C51; C54; F14; F5; N4

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1 Introduction

The country-of-origin label affects the decision to purchase a product via three potential channels: cognitive, affective, and normative channels (Obermiller and Spangenberg, 1989; Verlegh and Steenkamp, 1999). For example, a car made in Japan is an informational cue that affects buyers' assessment of the product quality. However, the Japanese country-of-origin label may trigger an emotional response in buyers that surpasses the cognitive evaluation. For example, Chinese consumers may consider Japanese goods of good quality but avoid to purchase them if they have strong animosity towards Japan due to historical war experiences (Klein et al., 1998). Similarly, Dutch consumers with strong animosity towards Germany due to the latter's aggression in World War II (WWII) may be reluctant to buy German products (Nijssen and Douglas, 2004). Finally, an American consumer may evaluate a Toyota car favorably and have no emotional response to Japan as a country of origin, yet comply with a "Buy American" norm that operates in one's family or peer group.[1]

Based on this conceptual framework, we can organize the existing literature bearing on these three channels. First, on the cognitive channel, country-of-origin is documented by many marketing studies as an extrinsic product cue that consumers may use to infer product quality (Cordell, 1991; Chao, 1998; Insch and McBride, 2004; Hu and Wang, 2010; Godey et al., 2012), which may hence affect demand and trade patterns (Hallak, 2006; Khandelwal, 2010).

Second, on the affective channel, historical wars or military conflicts are often identified as an important determinant of consumer animosity. For example, many business studies (based on surveys or experiments) document the influence of historical animosity on consumer behaviors (Klein et al., 1998; Nijssen and Douglas, 2004; Little et al., 2009; Cheah et al., 2016; Harmeling et al., 2015). Their implications on international trade and investment flows are also identified in econometric studies for major wars or military conflicts (Che et al., 2015). Short of military conflicts, contemporary political tensions could potentially affect consumer sentiments and demand patterns as well, although evidence tends to show that such effects are short-lived (Morrow et al., 1998; Davis and Meunier, 2011; Davis et al., 2017; Fuchs and Klann, 2013; Mityakov et al., 2013; Fisman et al., 2014; Du et al., 2017). Beyond politics, economic events such as the German-Greek conflict during the Greek debt crisis (2010–) could equally heighten consumer animosity (Fouka and Voth, 2016).[2] Finally, contemporary cultural events may also dramatically reshape consumer preferences towards the products of a certain country; for example, Chang and Lee (2018) document significant shifts in consumer preferences towards the Korean products in response to the Korean Wave phenomenon.[3]

[1] Japanese car producers were a main target of Japan-bashing during the height of Japan-US trade frictions in the 1980s. However, anti-Japanese sentiments in the US appear to have subdued substantially by the beginning of this century.

[2] Specifically, the study shows that during the sovereign debt crisis of 2010–2014, Greeks living in areas where German troops committed massacres during World War II curtailed their purchases of German cars to a greater extent than Greeks living elsewhere.

[3] Historical cultural affinities due to ethnic, colonial, or religious ties could potentially affect consumer preferences, although they could be interpreted alternatively as affecting trade cost in international exchange (Combes et al.,

Third, the normative channel is related to the boycott literature (John and Klein, 2003). Findings about the relevance of the normative effect in this literature are in general mixed, and depend on the boycott episode studied (Huang et al., 2010; Hong et al., 2011; Heilmann, 2016; Pandya and Venkatesan, 2016). For example, Michaels and Zhi (2010) estimate that the worsening US-French relationship in 2003 due to the Iraq War led to a reduction of bilateral trade by about 9 percent; similarly, Chavis and Leslie (2009) find that the US boycott of French wine resulted in 26 percent lower weekly sales at its peak and 13 percent lower sales over the six months of boycott. In contrast, Ashenfelter et al. (2007) conclude with no such effect, once they take into account the seasonal effect and the secular decline in the French wine sales in the US. Along the same line, Teoh et al. (1999) find that the boycott of South Africa's apartheid regime had little effect on the valuation of US firms with South African operations or on the South African financial markets.

In this paper, following our working paper (Chang and Fujii, 2012), we exploit a unique data set, the BBC World Opinion Poll (WOP), to estimate changes in buyers' preferences (toward products of a country of origin) and their implied impacts on trade flows. Most importantly, we evaluate the consequences of such consumer preference changes on welfare based on quantitative trade models. To the best of our knowledge, this is the first paper in the literature to quantify the welfare impacts of changes in consumer preferences in a systematic framework for worldwide trade. In an independent study by Rose (2016), the same WOP measure is used to study its trade impacts. We go beyond the analysis by Rose (2016) in terms of econometrics methodologies (dynamic panel estimations versus OLS/IV estimations), data coverage (disaggregate trade flows versus aggregate trade flows), and interpretations of the mechanism at work (consumer preferences versus "soft power"). Rose (2016) is a pure reduced-form empirical study, and thus, is not targeted at quantitative welfare evaluation.

The BBC annual survey has been conducted during 2005–2014 and in 2017 for BBC by GlobeScan and PIPA.[4] Each year, about one thousand respondents in each of the evaluating countries are surveyed. The respondents are asked: whether they think an evaluated country is having a mainly positive or mainly negative influence in the world. We use the positive [negative] response ratio, the proportion of the respondents in an evaluating country who view an evaluated country positively [negatively] in the beginning of a year, to measure bilateral country image perception. Table 1 summarizes the coverage of the sample. Figure 1 plots the average positive and negative response ratios (across all evaluating countries). It shows that the evaluated countries vary substantially in terms of how well they are perceived. The country image also exhibits significant variations across years (e.g., for the US, China, and Canada) and across country pairs (*cf.* Figure 3).

We consider this measure of country image as a potentially powerful predictor of consumer preferences towards the products of the evaluated country by the population in the evaluating country, because the survey question is general enough to reflect the influence of either product quality, or deep-rooted war animosity, but also contemporary political, economic, and cultural

2005; Guiso et al., 2009; Head et al., 2010).

[4]The Program on International Policy Attitudes (PIPA), which is now the Program for Public Consultation (PPC), is with the Center for International and Security Studies at the University of Maryland.

events (which as highlighted in the discussions above could potentially trigger cognitive, affective, and normative responses in consumer behaviors). This measure has several advantages. First, it is not limited to consumer response to specific economic issues (Disdier and Mayer, 2007, on EU accession) or cultural events (Felbermayr and Toubal, 2010, on Eurovision Song Contest). Second, it is not limited to consumers in specific country (Du et al., 2017, on China) or region (Disdier and Mayer, 2007; Felbermayr and Toubal, 2010, on Europe). Third, its response directly represents those of potential consumers, instead of high-level political representatives (Mityakov et al., 2013, on UN voting patterns), whose preferences may or may not be shared by the general population. Fourth, it captures the realized response in opinions by consumers to events, be it strong or weak; this is in contrast with measures based on the counts of events (Davis et al., 2017), which may or may not translate into consumer affective responses or actions. Finally, many of the studies in the literature (political science, economics, or business) focus on negative events (Davis and Meunier, 2011; Davis et al., 2017) or consumer animosity due to past wars (Klein et al., 1998; Nijssen and Douglas, 2004; Che et al., 2015), while relatively less is said about positive events. We will show that the consistent improvement in the Canadian country image during 2010–2017, especially in countries which are its most important trading partners, has amounted to more than 8% of its total gains from trade.

We use an Armington (1969) model (in which bilateral preference parameters are affected by country image) to estimate the effect of country image on trade flows and on preference parameters, for the 2005–2014 period. We control for all typical trade-cost proxies that could affect trade flows, and exporter-year and importer-year fixed effects (FEs). Thus, any supply-side shocks that are multilateral in nature, such as worsened product qualities, will be absorbed by the exporter-year FEs (and the exporter-sector-year FEs in the disaggregate estimations). Similarly, any systematic differences in consumer preferences across importing countries that are multilateral in nature, will be absorbed by the importer-year FEs (and the importer-sector-year FEs in the disaggregate estimations). Hence, our identification relies on sufficient variations in residual bilateral country image perceptions across country pairs and across years. So long as any remaining supply-side bilateral shocks (e.g., to product qualities) are not systematically correlated with the demand-side bilateral shocks (to preferences), we have a clean identification of the country-image effect.

We then address potential identification threats in the following ways. First, we identify plausible instrumental variables that may reduce the concern of endogeneity bias. Next, to address potential omitted variable bias, we decompose the current-year bilateral country image perception PS_{ijt} into the lagged bilateral perception $PS_{ij,t-1}$ and the shocks to the perception over the year $\Delta PS_{ijt} \equiv PS_{ijt} - PS_{ij,t-1}$. The lagged bilateral perception is included to absorb the effects of any potential persistent country-pair characteristics. The coefficient on ΔPS_{ijt} can be regarded as the genuine effect on trade flows of country image shocks. Third, to address both endogeneity and omitted variable bias, we then adopt the dynamic panel estimators (Arellano and Bond, 1991; Blundell and Bond, 1998), whereby we allow the above two country image components to be endogenous and the current trade flow to correlate with past trade flows. Again, our focus will be

on the coefficient of the country image revision ΔPS_{ijt}. Finally, we use disaggregate trade flows and explore potentially heterogeneous effects across types of goods (consumer versus non-consumer goods; homogeneous versus differentiated goods), and verify that the pattern of heterogeneity is consistent with the proposed mechanism of consumer preferences.

The ballpark figure based on the dynamic panel estimator indicates that an increase in ΔPS_{ijt} by one percentage point is associated with a 0.884 percent increase in trade flows. This impact is both statistically and economically significant. For example, the US country image had improved by about 17.7 percentage points between 2007 and 2011. Given our estimate, this implies a direct trade-promoting effect of 16.9 percent ($= e^{0.884\times 0.177} - 1$) for the US exports. The direct partial-equilibrium effect will be moderated in general equilibrium (as we show in Section 5), but the number serves to demonstrate the importance of consumer perceptions.

We then conduct counterfactual welfare analysis of major shifts in country image, given the estimated impact of country image on preferences and trade. For example, we compute the George W. Bush and the Donald Trump effects by simulating the counterfactual exports and welfare for the US in year 2011 (the peak of the US country image), if each of the US' trade partners were to revert their ratings of the US in 2011 to the level in 2007 (Bush) or 2017 (Trump), holding the US' own preference parameters unchanged. This simulated welfare effect is then compared to the US' total welfare gains from trade to evaluate the magnitude of importance of country image. As the evaluated country's own preference parameters towards its trade partners are held constant, any changes in the country's welfare are due to changes in its country image (and as a result, changes in its outward multilateral resistance), and not because of shifts in its own preferences. In the counterfactual analysis, we include all countries in the world (where data permit). Because not all countries are included in the BBC WOP survey, we present results based on three alternative assumptions about how the opinions in the countries not included in the survey have changed. In Scenario 1, we assume that they have not changed their opinions against the evaluated country; in Scenario 2, they are assumed to take on the mean change in the views (of the BBC WOP evaluating countries) against the evaluated country, while in Scenario 3, the median change.

The observed country image measure can be affected by many factors, including military, economic, and diplomatic events. We will not attempt to tease out the contribution of each factor or event, but will take the observed changes in bilateral country image as given. We will however label each exercise by the major factor that we consider of first-order importance and are most likely to have caused such observed shifts in country image. In addition to the US, we will evaluate the Sino-Japan Senkaku Islands Dispute effects on China, the Brexit effects on the UK, and the Good-boy effects on Canada.[5] To answer the question raised in the title, we found that the "America First" anti-globalization rhetorics used by Donald Trump in his presidential campaign in 2016, leading to a sharp drop in the US country image in early 2017, might have cost the US as much as 3% of its total welfare gains from trade and exports, using the 2011 economy as a benchmark.

[5]We use the term "Good-boy Canada" to refer to Canada's generally good country image, arguably due to many factors collectively, as we will elaborate in Section 5.

These negative effects are half of the estimated Bush effects on welfare and exports, in part, thanks to smaller drops in the favorable ratings of the US during the Trump episode, but in part also due to relatively milder responses from its major trade partners towards the Trump's campaigns; for example, China has maintained the same view towards the US while Mexico has in fact become more favorable towards the US. This is in contrast with the Bush episode, where the worsening view of the US is shared among most of its major trade partners.

This paper is organized as follows. In Section 2, we provide detailed characterizations of our country image measures. In Section 3, we propose the conceptual framework and estimation specifications. Section 4 presents the estimated (partial) effects of country image on trade flows and implied tariff equivalent of the change in preference parameters. Section 5 presents the quantitative framework and algorithms of the welfare analysis. Section 6 concludes. Details on the data are provided in the appendix.

2 Measures of Country Image

The BBC World Opinion Poll (WOP), as introduced earlier, is an annual survey conducted during 2005–2014 and in 2017 by GlobeScan and PIPA. Our econometric analysis in Section 4 covers the period 2005–2014, since the data on GDP and trade flows for year 2017 are not available at the time of writing. We will however also present the latest poll data of 2017 in this section to document how country image has changed since 2014. The counterfactual welfare analysis in Section 5 will also exploit some of the country image data in 2017.

In each round of survey, about one thousand respondents in each (evaluating) country are interviewed face-to-face or by phone. The respondents are asked: whether they think each of the evaluated countries is having a mainly positive or mainly negative influence in the world. Other than "mainly positive" and "mainly negative", the recorded responses include "depends", "neither, neutral", "DK/NA (don't know or no answer)", even though these choices are not volunteered by the interviewer. We treat both "depends" and "neither, neutral" answers as "neutral".

The exact timing of the survey varies slightly from year to year and from country to country, but the survey is conducted typically in January of the reference year (i.e., year t) or December of the previous year (i.e., year $t-1$). In a few cases, the survey was conducted slightly earlier or later. Given this, the country image variables used in our analysis refer to a country's image around the *beginning* of the year.

The list of evaluated and evaluating countries, and the years in which the countries appear in the survey are shown in Table 1. The evaluated countries tend to be major economic powers, or politically-sensitive countries with strained international relations. The set of evaluating countries, on the other hand, are relatively diverse in terms of geographical locations and political/economic structures. Table 2 provides the GDP and population shares for the set of evaluated and evaluating countries relative to the Gross World Product (GWP) and the world population. As indicated by Table 2, the number of evaluated countries has increased from 6 in 2005 to 15 (excluding North

Korea for which we do not have reliable GDP figures) by 2010. The number of evaluating countries varies between 17 and 24. Together, these economies account for about three-quarters of the Gross World Product and two-thirds of the world population.

We use the proportion of the respondents in country j who say at the beginning of year t that country i has a mainly positive [negative] influence in the world to measure bilateral country image perception, and label it as the positive [negative] response ratio PS_{ijt} [NG_{ijt}]. For most records (country-pair-years), we also have the neutral response ratio NU_{ijt} and the proportion NA_{ijt} of respondents who give no answer or say "don't know".

Figure 1 provides an overview of the evaluated countries' country image. The left-hand-side of the figure reports the average positive response ratio $\overline{PS}_{i\cdot t}$ and the right-hand-side the average negative response ratio $\overline{NG}_{i\cdot t}$ towards country i, where the averages are taken over the evaluating countries j without weights.[6] Note that the right axis is in reverse order to facilitate comparisons. The figure shows that countries such as Canada and Germany have consistently good country image (i.e., a larger [smaller] fraction of people view these countries positively [negatively] relative to the other evaluated countries) over the sample period. In contrast, countries such as Iran and Pakistan have consistently poor country image. The difference across countries in their ratings can be as large as 40 percentage points.

While the ranking of countries in terms of $\overline{PS}_{i\cdot t}$ and $\overline{NG}_{i\cdot t}$ are relatively stable over time, there are notable exceptions. For example, the country image of the United States significantly improved during 2007–2011 by as much as 17.7 percentage points. This coincides with the change in the administration from Bush to Obama. But the upward trend started heading south during Obama's second term, and the US country image dropped precipitously after Trump took office in late 2016. In contrast, China's country image hit the bottom in 2009 and improved steadily afterward until 2012. A series of product scandals plagued China in the late 2000's, and the year 2009 marked the turning point when reported food scandals in China declined noticeably.[7] Apparently, the Beijing Olympics that took place in 2008 and the publicity that this mega event brought about did not manage to offset the negative effects of food scandals (and political issues such as human rights, pollution, and media freedom). Importantly, in September 2012, several violent protests broke out across China against the Japanese government's decision to nationalize three islets of the Senkaku Islands, a long-disputed territory in the East China Sea, raising the spectre of military conflict between the two major powers (Perlez, 2012; Voigt, 2012; Moore, 2012; The Wall Street Journal, 2012).[8] This incident has clearly dented China's country image, as its ratings dropped significantly

[6]Specifically, $\overline{PS}_{i\cdot t} \equiv \sum_j PS_{ijt}/N_{Jt}$ and $\overline{NG}_{i\cdot t} \equiv \sum_j NG_{ijt}/N_{Jt}$, where N_{Jt} is the number of evaluating countries in year t with data on these response ratios.

[7]Some of incidents include, e.g., the 2007 pet food recalls and the 2008 Chinese milk scandal, where pet food and infant formula were found to be contaminated with melamine. As an indication of consumer reactions, in a poll conducted in Japan right after the 2008 incident of insecticide-contaminated dumplings, 76 percent of Japanese said that they would not use Chinese food again (Agence France Presse, 2008). We use Factiva to count the number of articles that contain the words "China" and "food scandal" in major news and business publications. The number was over 150 on average between 2005 and 2008, but dropped to 29 in 2009 and stayed below 50 until 2012.

[8]See, e.g., Heilmann (2016, Section 2.2) for a summary of the historical background. The Japanese officials claimed that the Japanese government's purchase of the islets from their private owner was intended to prevent the

in 2013, and Japan's country image took a hit as well. Finally, compared to 2014, several major countries' images have shifted in 2017. For example, the UK's Brexit decision in 2016 appears to have brought down its favorable ratings,[9] while Canada has overtaken Germany as the most favored country. Views towards Russia have sustained a sharp decline since 2013, likely due to its long-term military involvement in Ukraine and Syria (The Economist, 2016b).[10]

We may also further characterize the measures of country image by running regressions of PS_{ijt} and NG_{ijt}, with respect to three-way fixed effects (FEs) of evaluated country i, evaluating country j, and year t. For both evaluated and evaluating countries, we take the United States as the base country. Figure 2 summarizes the estimated FEs for each evaluated and evaluating country. The countries that appear on the right of the vertical axis in Figure 2(a) [Figure 2(b)] tend to receive [give] a higher positive response ratio than the United States after controlling for the year FE and the evaluating-country [evaluated-country] FE. Similarly, the countries that appear above the horizontal axis tend to receive [give] a higher negative response ratio than the United States after controlling for the year FE and the evaluating-country [evaluated-country] FE.

Figure 2(a) suggests that countries with a high positive response ratio are those with a low negative response ratio. It also shows that, even after controlling for the evaluating-country FE and the year FE, Canada and Germany have the best country image, while Iran and Pakistan have the poorest country image. Note that all the points in Figure 2(a) are below the negative 45-degree line. This means that people in the surveyed countries tend to have a more non-neutral (positive/negative) view about the United States than towards the other countries. This may be because the United States is the most well-known/reported country in the world by the mass media.

In comparison, Figure 2(b) shows that most countries are simultaneously less positive and less negative than the United States towards others (in other words, they tend to be less opinionated than Americans). Some countries such as Germany and Turkey, however, tend to view other countries more negatively than the United States, whereas African countries such as Ghana, Kenya, and Nigeria tend to view other countries more positively. Japan, positioned way off the negative 45° line in Figure 2(b), is an interesting case. Its people appear very reserved in opinions and respond with a large proportion of "neutral" answers (often above 30 percent, even towards China, and sometimes above 50 percent).

As our analysis in Sections 3 and 4 will control for exporter-year (it) and importer-year (jt) FEs, the multilateral dimensions of country image illustrated above will be absorbed by these time-varying FE terms. Thus, identification of the country image effect requires the sample to exhibit sufficient variations in bilateral country image: e.g., how well perceived China is in Pakistan

conservative governor of Tokyo from buying them, a step that would have heightened the clash with China. This move, however, led to strong anti-Japanese protests in several Chinese cities that later turned violent against Japanese business establishments in China.

[9] An Ipsos Mori poll of 16 nations in July 2016 shows that one in four respondents in the EU states surveyed was less likely to buy British following the referendum result (Mertens, 2016).

[10] In September 2013, just before the Maidan revolution, 88% of Ukrainians felt "positively" about Russia, says the Kiev International Institute of Sociology. By May 2015, that number had fallen to 30%, as reported by The Economist (2015).

compared to in Japan (relative to Pakistan's and Japan's average opinions towards other countries). To characterize these relative bilateral perceptions, we run a regression of $PS_{ijt} = \mu_{it} + \nu_{jt} + r_{ijt}$, controlling for the evaluated-year and the evaluating-year FEs. We then take the average of the residuals for each country pair over years to obtain $\widetilde{PS}_{ij} = (1/T)\sum_t \tilde{r}_{ijt}$, where T is the number of years of observations and $\tilde{r}_{ijt} \equiv PS_{ijt} - \widetilde{\mu}_{it} - \widetilde{\nu}_{jt}$ are the residuals from the regression. These are illustrated in Figure 3.

Interestingly, many of the unconditional bilateral views among countries continue to hold after controlling for multilateral FEs. For example, China is disliked by Japan and the US allies, and the negative feeling is reciprocated by China towards Japan. This reflects the deep impact of the two Sino-Japanese Wars (1894–1895 and 1937–45). In contrast, China is well liked by many African and Latin American countries. In spite of Germany's good overall country image, it is loathed by Greece; in fact, the intensity of the negative feeling is only second to that of China towards Japan. This apparently reflects the Greek people's resentment of the EU's dealing (led by Germany) of the Greek Debt crisis since 2010 (Fouka and Voth, 2016). Geopolitical allies help explain Pakistan's extreme favor of China and Iran, and its disfavor of the US. There are some mutual lovers, such as France and Germany, and Israel and the US. In contrast, South Korea is unilaterally beloved by the Chinese and Japanese people, possibly due to the phenomenal Korean wave (in TV dramas and pop cultures) in the region, whereas the Korean people appear to still regard China and Japan to be their archenemies. In sum, Figure 3 indicates that there are useful bilateral variations across country pairs in country image perceptions, even after we control for time-varying evaluated and evaluating country FEs.

3 Estimation Framework

We adopt the conceptual framework of Armington (1969) because it explicitly allows for bilateral country-of-origin preference parameters. Specifically, let there be $i = 1, \ldots, N$ countries. Buyers in each country j choose imports q_{ijt} from country i for all i to solve:

$$\max_{q_{ijt}} \quad Q_{jt} = \left(\sum_i b_{ijt}^{(1-\sigma)/\sigma} q_{ijt}^{(\sigma-1)/\sigma} \right)^{\sigma/(\sigma-1)} \qquad \text{s.t.} \quad \sum_i p_{ijt} q_{ijt} = E_{jt}, \tag{1}$$

where $b_{ijt}(> 0)$ is a distaste parameter for goods produced in country i perceived by buyers in country j, $\sigma(> 1)$ indicates the elasticity of substitution across sources of imports, E_{jt} the nominal expenditure of country j, and $p_{ijt}(\equiv p_{it}\tau_{ijt})$ the destination price, equal to the exporter's supply price p_{it} scaled up by the variable (iceberg) trade cost factor τ_{ijt}. The solution to (1) implies a nominal value of exports from i to j equal to $X_{ijt} \equiv p_{ijt}q_{ijt} = \left(\frac{b_{ijt}p_{it}\tau_{ijt}}{P_{jt}}\right)^{1-\sigma} E_{jt}$, where $P_{jt} \equiv \left[\sum_i (b_{ijt}p_{it}\tau_{ijt})^{1-\sigma}\right]^{1/(1-\sigma)}$ is the associated aggregate price index in country j. The goods market-

clearing condition requires that

$$\begin{aligned} Y_{it} &= \sum_j X_{ijt} \\ &= (p_{it})^{1-\sigma} \sum_j (b_{ijt}\tau_{ijt}/P_{jt})^{1-\sigma} E_{jt}, \end{aligned} \tag{2}$$

where Y_{it} is the total sales of goods by country i to all destinations, which may be different from its aggregate expenditure E_{it} if trade is not balanced. Use (2) to solve for $(p_{it})^{1-\sigma}$ and substitute the result in the expression of X_{ijt} and P_{jt}. We have

$$X_{ijt} = \frac{Y_{it}E_{jt}}{Y_{wt}} \left(\frac{b_{ijt}\tau_{ijt}}{\Pi_{it}P_{jt}} \right)^{1-\sigma} \tag{3}$$

where

$$\Pi_{it}^{1-\sigma} \equiv \sum_j (b_{ijt}\tau_{ijt}/P_{jt})^{1-\sigma} e_{jt}, \tag{4}$$

$$P_{jt}^{1-\sigma} = \sum_i (b_{ijt}\tau_{ijt}/\Pi_{it})^{1-\sigma} s_{it}, \tag{5}$$

$Y_{wt} \equiv \sum_j Y_{jt}$, $e_{jt} \equiv E_{jt}/Y_{wt}$, and $s_{it} \equiv Y_{it}/Y_{wt}$. As first introduced by Anderson and van Wincoop (2003), Π_{it} and P_{jt} can be regarded as the multilateral resistance (MR) to trade of exporter i and importer j, respectively. They reflect the weighted average of relative bilateral trade cost, augmented by preference bias here, across all destinations of sales for an exporter i and all sources of imports for an importer j, using as weights the expenditure share (e_{jt}) of destination markets and the supply share (s_{it}) of sources of imports relative to the world, respectively.

We hypothesize that a change in bilateral country image perception (PS_{ijt}) could affect the preference parameters b_{ijt} such that: $(1-\sigma)\ln b_{ijt} = a_1 + \gamma PS_{ijt}$, where γ captures the logarithmic changes in trade values associated with a one-percentage increase in PS_{ijt}. In addition, assume that the unobserved trade cost depends on the observable trade-cost proxies $\mathbf{Z}_{ijt}$ log-linearly such that $(1-\sigma)\ln \tau_{ijt} = a_0 + \boldsymbol{\beta}^T \mathbf{Z}_{ijt}$. This implies an estimable equation of (3):

$$\ln x_{ijt} = \gamma PS_{ijt} + \boldsymbol{\beta}^T \mathbf{Z}_{ijt} + \chi_{it} + \zeta_{jt} + \varepsilon_{ijt}, \tag{6}$$

where $x_{ijt} \equiv X_{ijt}(Y_{wt}/Y_{it}E_{jt})$ is bilateral trade flow normalized by gross output and expenditure of the exporting and importing countries, relative to the world output; χ_{it} and ζ_{jt} are exporter-year and importer-year fixed-effects terms, which absorb the MR terms and also other shocks specific, respectively, to the exporter-year and the importer-year. We control for a long list of trade-cost proxies including bilateral distance, language proximity, legal origin, colonial relationship, border dummy, preferential trade agreements (PTAs), generalized system of preferences (GSPs), and currency unions. Further details on the measurement of these variables are provided in the data appendix.

Given the specification in equation (6), any supply-side shocks that are multilateral in nature, such as worsened product qualities, would be absorbed by the exporter-year FEs (and the exporter-sector-year FEs in the disaggregate estimations). Threats to identification arise from any remaining supply-side bilateral shocks that could be systematically correlated with the demand-side bilateral shocks to consumer preferences. To address these concerns, we adopt the following strategies. First, we identify instrumental variables (IVs) that are likely to be correlated with PS_{ijt} but not correlated with shocks to current bilateral trade, and conduct typical IV estimations.

Next, we decompose PS_{ijt} into $PS_{ij,t-1}$ and $\Delta PS_{ijt} \equiv PS_{ijt} - PS_{ijt-1}$, and replace γPS_{ijt} in equation (6) with $\gamma_l PS_{ij,t-1} + \gamma_r \Delta PS_{ijt}$. This specification allows the lagged country image term to soak up potential unobserved persistent factors that affect trade and country image (but are omitted from the list of controls). The focus of identification thus falls on the revision to the country image ΔPS_{ijt} and its coefficient γ_r, which represent contemporary shocks to country image and effects on trade that are beyond and above historical coincidental factors.

Third, to address the remaining concern that some contemporary shocks may systematically affect both current bilateral trade and revision to country image, we adopt the dynamic panel estimators of Arellano and Bond (1991) and Blundell and Bond (1998). Specifically, we augment the right hand side of equation (6) by the lagged dependent variable $\ln x_{ij,t-1}$ and allow $PS_{ij,t-1}$ and ΔPS_{ijt} to be endogenous. Our focus of identification continues to be on the coefficient of ΔPS_{ijt}, and not on the coefficient of $PS_{ij,t-1}$, as the effects of $PS_{ij,t-1}$ are potentially confounded with $\ln x_{ij,t-1}$ and likely to be absorbed by the country-pair panel effect allowed in this framework.

As an additional validation of the mechanism at work, we will also study the trade flows at disaggregate sectoral levels and identify potential heterogeneous impacts of country image across sectors. The framework above can be easily extended to allow for multiple sectors by assuming an upper-tier Cobb-Douglas preference over the sectors (with expenditure share α_k for $k = 1, 2, \ldots, K$) and a lower-tier CES preference for each sector as in (1) over goods imported from different countries of origin (with variables suitably indexed by sector k). Assume similarly that $(1 - \sigma_k) \ln b_{ijkt} = a_k + \gamma_k PS_{ijt}$. The corresponding sectoral-level gravity equation will be:

$$\ln x_{ijkt} = \gamma_k PS_{ijt} + \boldsymbol{\beta_k^T} \mathbf{Z}_{ijt} + \chi_{ikt} + \zeta_{jkt} + \varepsilon_{ijkt}. \tag{7}$$

While it is possible to estimate γ_k for each disaggregated sector, we summarize the information by imposing some commonality assumptions. Starting with the most restrictive setup, we assume that γ_k is the same across all sectors, which allows us to make a direct comparison with the estimates obtained from the aggregate trade data. We then relax this assumption to allow γ_k to depend on the types of goods (consumer versus non-consumer goods, and homogeneous versus differentiated goods). If country image affects trade predominantly through consumer preferences, we would expect the effect to be larger on consumer goods than on non-consumer goods, and larger on differentiated goods than on homogeneous goods. Conceptually, endogeneity is less a concern at the disaggregate trade level, especially if the estimated effects systematically differ across types of goods. Nonetheless, we will also adopt the specification that decomposes the effect of country

image into that on lagged component ($PS_{ij,t-1}$) and that on contemporary component (ΔPS_{ijt}), with more confidence placed on the coefficient of the latter.

4 Estimation Results

4.1 Aggregate Trade Flows

We start with the basic specification in (6) and sequentially generalize it as discussed in Section 3 to address potential endogneity and omitted variable bias concerns.

4.1.1 OLS/IV Estimations

Column 1 of Table 3 indicates that an increase in the positive response ratio by one percentage point is associated with a 1.361 percent increase in trade flows. This impact is both statistically and economically significant. For example, the US country image (in terms of PS_{ijt}) improved by about 17.7 percentage points between 2007 and 2011. Given our estimate, this implies a direct trade-promoting effect of 27.2 percent ($= e^{1.361\times 0.177} - 1$).

The estimates for the other trade determinants have expected signs and reasonable magnitudes. A one-percent increase in distance is associated with a 0.871 percent decrease in trade. Sharing a common language facilitates trade by approximately 57.3 percent ($= e^{0.453} - 1$). PTAs, GSPs, and colonial ties (where the exporter has been a colonizer of the importer) are also found to promote trade.

In Columns 2–8 of Table 3, we conduct an extensive set of IV estimations. In Column 2, we use the leave-one-and-large-out average ($PS^c_{ijt} \equiv \sum_{j' \neq j \text{ and } j' \in SMALL} PS_{ij't}/N_{J't}$) as an IV, where the average is taken over evaluating countries of exporter i excluding j and large trading partners whose bilateral imports from i exceed the median of bilateral imports with respect to i among the set of evaluating countries. The leave-one-and-large-out average can be a good instrument because it captures the current attitude towards country i in the rest of the world (excluding j and influential importers), and hence is very likely to be correlated with country j's current view of country i. But it is likely not correlated with the error term of the trade flow equation, because any third-country effects on ij's bilateral trade flows would have been controlled for by the exporter-year and importer-year FEs. The F-test shows that PS^c_{ijt} is indeed a strong instrument.[11] The IV estimate of the country image effect is larger than the OLS benchmark, although not statistically different. In Column 3, we use an additional instrument *war*, which measures the number of wars between a country pair during the period of 1816–1945. Military conflicts in the history likely have fundamental influence on how countries perceive each other, as suggested by Guiso et al. (2009) among many others. We use the observations on historical wars only up to the end of WWII, so to avoid potential direct effects of recent wars on the current trade flows (Martin et al., 2008). The Hansen J-test and the F-test suggest that the variable *war* is a valid and strong IV. The estimation

[11] The first-stage estimation results are available upon request.

results are similar to the benchmark. Finally, we further use one more IV, *MID*, which is a weighted sum of Militarized Interstate Disputes (MIDs) between a country pair during the period of 1816–1945, where the following five levels of exporter's hostility are used as weights: 1 = No militarized action, 2 = Threat to use force, 3 = Display of force, 4 = Use of force, and 5 = War. This variable provides a continuous measure of historical military aggressions between a country pair (directed from the exporting to the importing country), where the disputes may not have always escalated to the state of wars. Column 4 indicates that the estimation results remain similar. The similarity between the OLS and IV estimates suggests that the endogeneity bias (or omitted-variable bias), if any, is likely minor. In fact, the p-values for the (unreported) Hausuman tests are all very close to one and thus there is no statistical evidence that the OLS and IV estimates are systematically different.

In Columns 5–8 of Table 3, we further restrict the sample to country pairs that had: (i) no wars after the WWII and (ii) no wars/MIDs after the WWII. This is to reduce the concern that our benchmark estimate could be contaminated by recent wars/MIDs among countries (Martin et al., 2008). The first restricted sample excludes some large country pairs such as China-US, China-UK, China-Australia, and China-France, which were involved in the Korean War (1950–1953). Columns 5–6 show that the IV estimates of the country image effect remain strong and similar in the order of magnitude to the benchmark. When the second criterion is imposed, the sample size reduces dramatically (by about a quarter). This is due to the fact that many country pairs have had some degrees of MIDs in recent years. With this criterion, it further excludes some major country pairs such as UK-France, Canada-US, China-Japan, Germany-Russia, France-Canada, Japan-Korea, and US-Mexico. Columns 7–8 indicate that for the second restricted sample, the IV estimate of the country image effect remains in similar orders of magnitude as the benchmark.

4.1.2 Lagged Country Image and Contemporary Country Image

In Column 9 of Table 3, we then decompose PS_{ijt} into the lagged component $PS_{ij,t-1}$, which reflects the events up to beginning of the previous year, and the contemporary component ΔPS_{ijt} that reflects revisions to bilateral perception due to recent events that happened in the past year. If the specification in (6) omits some unobservable long-run confounding factors that affect both PS_{ijt} and x_{ijt}, the lagged component $PS_{ij,t-1}$ is designed to absorb any such effects (in addition to its own independent impacts on trade flows). As shown in the table, its coefficient estimate is in an order of magnitude similar to the IV estimate in Columns 2–4 with full sample. The revision to country image ΔPS_{ijt} perceived by j with respect to an exporter i over the past year is then hoped to pick up the genuine effect of changes in consumer preferences on demand. As indicated, even after controlling for $PS_{ij,t-1}$, the coefficient on ΔPS_{ijt} is statistically positive: a one-percentage point larger ΔPS_{ijt} is associated with 0.942 percent larger trade flows. This is again after controlling for all potential evaluated-year and evaluating-year country FEs.

4.1.3 Poisson Pseudo Maximum Likelihood Estimation

As a further robustness check, we also repeat the above analysis using the Poisson Pseudo Maximum Likelihood (PPML) estimator (Silva and Tenreyro, 2006). This estimator is shown to be consistent in the presence of heteroskedasticity, while providing a natural way to include zero-trade observations. We do not however expect the results to change significantly here because the sample of the study happens to have no zero trade at the aggregate bilateral level. The results are presented in Table 4.

We see that the PPML estimate (1.212) in Column 1 without IVs is similar to the baseline OLS estimate in Column 1 of Table 3. We then carry out IV-Poisson estimation using GMM based on the same set of IVs introduced above.[12] As shown in Columns 2–4, the estimates are in similar orders of magnitude as the OLS/IV results (1.541, when the complete set of IVs are included). We also consider the restricted samples excluding country pairs with wars, or with wars/MIDs after the WWII.[13] The effect estimates for the restricted sample are smaller than the full sample, but not statistically different. In Column 7, with the decomposition, the coefficient on ΔPS_{ijt} continues to be positive and significant. These results reinforce our finding that there is no strong evidence of bias in the effect estimate of country image due to endogeneity or heteroskedasticity.

4.1.4 Dynamic Panel Estimation

There remains the possible concern that the contemporary shocks to bilateral perception ΔPS_{ijt} over the past year may still be correlated with the shocks to the current trade flows if such time-varying bilateral shocks happen to affect both the supply-side trading capacity and demand-side consumer preferences (but not fully accounted for by other controls). We adopt the dynamic panel estimators of Arellano and Bond (1991) and Blundell and Bond (1998) to address this concern. In particular, the right-hand-side of equation (6) is augmented with lagged trade flows ($\ln x_{ij,t-1}$); in addition, we decompose PS_{ijt} into $PS_{ij,t-1}$ and ΔPS_{ijt} as described in Section 3 and allow both of them to be endogenous. In the setup of Arellano and Bond (1991), the dynamic version of the specification in (6) is transformed into an equation in first difference, using lagged trade flows $\ln x_{ij,t-2}$ (and higher-order lags) as instruments for $\Delta \ln x_{ij,t-1}$, $PS_{ij,t-3}$ as the instrument for $\Delta PS_{ij,t-1}$, and $\Delta PS_{ij,t-2}$ as the instrument for $\Delta^2 PS_{ijt}$ ($\equiv \Delta PS_{ijt} - \Delta PS_{ij,t-1}$). Longer lags of the PS and ΔPS variables can be used as additional instruments, as we will do for robustness checks. The estimator of Blundell and Bond (1998) adds extra moment conditions, using lagged differences of the endogenous variables as instruments for their levels in the dynamic version of the level equation (6). In the dynamic framework, the country-pair panel FE is implicitly accommodated.

Table 5 reports the results based on the estimator of Arellano and Bond (1991). As discussed in Section 3, our focus falls on the coefficient of ΔPS_{ijt}, as the effects of $PS_{ij,t-1}$ are likely absorbed

[12] We use the Stata command *ivpoisson* (a Stata module to estimate an instrumental-variable Poisson regression via GMM).

[13] The estimation cannot converge for the restricted samples when ivpoisson is used, which is the reason why only the PPML results without IVs are reported.

by $\ln x_{ij,t-1}$ or the panel FE. The estimates indicate that a one-percentage point larger ΔPS_{ijt} is associated with a 0.884 percent increase in bilateral imports of j from i. This magnitude is robust whether we use only one-year lag of the variables as instruments, or up to four-year lags. The estimates are also very similar if we allow the dynamic dependence of the trade flows to be of order 2 instead of order 1. In fact, the coefficient estimate of $\ln x_{ij,t-2}$ is insignificant, and the coefficient estimate of $\ln x_{ij,t-1}$ indicates a serial correlation in the order of 0.3. This low level of serial correlation implies that the IVs in the Arellano and Bond (1991) framework have good predicative powers of the endogenous variables and not subject to the critique of this estimator when the series under study is highly persistent. The results based on the system dynamic estimator of Blundell and Bond (1998) reported in Table A.1 are virtually the same as those in Table 5.

Given that the dynamic panel estimator is general enough to accommodate most of our concerns regarding endogeneity and omitted variable bias, we will use the estimate 0.884 as our focal parameter of interest that represents the partial direct effect of changes in country image on trade. This is also the key parameter that we will use for the counterfactual welfare analysis in Section 5.

To provide an indication of the importance of consumer preferences, we may try to infer the tariff equivalent of country image. According to the survey of the gravity literature by Head and Mayer (2015), the order of magnitude of trade elasticity is around the range of 4 for aggregate trade. This implies that the direct impact of country image on tastes is 0.221 [$\ln b = \gamma/(\sigma - 1)$ in absolute values]. Thus, the increase in the US country image between 2007 and 2011 by about 17.7 percentage points is equivalent to a 3.84 percent decrease ($= e^{-0.221 \times 0.177} - 1$) in its outward trade cost (and a 16.9 percent increase in its exports).

4.2 Disaggregation of Impacts

4.2.1 By BEC Classification

In this section, we look for evidence that the effects of country image differ across types of goods. First, we use the trade flows at the HS 4-digit level[14] and use the UN Broad Economic Categories (BEC) to classify sectors into: consumer goods (C), intermediate goods (I), capital goods (K), not classified (U), and mixed sectors. A HS 4-digit sector is considered a sector of consumer goods if all its 6-digit sub-sectors are consumer goods (according to their corresponding BEC codes), and similarly for the classification of intermediate and capital goods. Some sectors are not classified by BEC, while mixed sectors contain more than one type of goods.

We expect the effect of country image on trade to be larger on consumer goods than on intermediate or capital goods, because the affective and normative effects discussed in the introduction are likely to affect final-demand consumers more than business managers who decide on the purchase of intermediate or capital goods, because the latter may be bound by existing contracts or institutions in exercising their discretions. Nonetheless, if the effect of country image is strong enough, it may have a "trickle-down" effect where business managers' sourcing decisions are influenced by their

[14] This refers to Harmonised System (HS) 2002 Revision nomenclature.

personal preference bias or by the derived demand from end consumers.

We start with the strongest homogeneity assumption that the coefficients $\{\gamma_k, \boldsymbol{\beta}_k\}$ are common across sectors, but allow for exporter-sector-year and importer-sector-year FEs. Thus, any exporter-sector-year supply-side or importer-sector-year demand-side shocks that are multilateral in nature would be absorbed by these FE terms.[15] The PPML estimation results are reported in Column 1 of Table 6. We find that country image continues to have a significantly positive effect on disaggregate trade flows: for a one-percentage point larger ΔPS_{ijt}, the disaggregate trade flows increase by 0.565 percent on average across all sectors. As we repeat the same exercise for each type of goods, we find that the effect of ΔPS_{ijt} is larger for consumers goods (0.769) than for non-consumer goods (0.591 for intermediates, which is further larger than 0.370 for capital goods). Admittedly, the difference is not statistically significant by conventional criteria (e.g., of two standard deviations). Nonetheless, this provides some suggestive evidence of a trickle-down effect of country image.

4.2.2 By Rauch Classification

As an alternative approach, we follow Rauch (1999) and classify SITC2 3-digit sectors by: goods that are traded on an organized exchange (O), goods with reference price published in trade journals (R), and differentiated products (D) that are neither (O) nor (R). All 237 SITC2 3-digit sectors are accounted for and assigned to one of the three types of goods classified by Rauch. Column 1 of Table 7 repeats the estimation that imposes the same coefficient across types of goods, and verifies that the effect (0.555) is similar to that in Table 6 based on HS 4-digit sectors.

It is a priori unclear whether the effects of country image on trade should be larger or smaller when product differentiation increases. On one hand, because homogeneous goods are more substitutable (large $1-\sigma_k$), for a given change in tastes ($\ln b_{ijkt}$), we expect the impact on trade to be larger on homogeneous goods. On the other hand, the marketing literatures suggest that differentiated goods (e.g., home appliances) have a larger extrinsic value attached to the country-of-origin label than homogeneous goods (e.g., oil). Thus, for a given change in country image (ΔPS_{ijt}), consumer tastes are likely to respond more strongly towards products produced by different origins for differentiated products (large $\partial \ln b_{ijkt}/\partial \Delta PS_{ijt}$). The net impact of country image on trade flows γ_k $[= (1-\sigma_k)(\partial \ln b_{ijkt}/\partial \Delta PS_{ijt})]$ hence depends on which of these two factors dominates.

Columns 2–4 of Table 7 suggest that ΔPS_{ijt} has no effect on trade in homogeneous goods, and a smaller effect on trade in reference-priced goods (0.426) than trade in differentiated goods (0.556). This ranking, where the country image effect on trade flows increases with the degree of product differentiation, suggests that the direct impact of country image on tastes dominates the elasticity effect.

We may try to infer the direct impact of country image on tastes using the elasticity estimates

[15] In equation (7), by definition, the trade flows are normalized by the sectoral-level gross output and expenditure. Because of lack of these two measures, we instead normalize the trade flows by the country-level gross output and expenditure. This helps reduce the scale of the dependent variable and the numerical approximation errors in PPML estimations. Any discrepancy between the country and sectoral levels in gross outputs and expenditures would be absorbed by the exporter-sector-year and importer-sector-year FEs included in the regression.

suggested by the literature. By the median estimates of Broda and Weinstein (2006) for 1990–2001, the elasticity of substitution decreases in product differentiation: they are respectively 3.5, 2.9, 2.1 for type O, R, and D goods. This implies that the direct impacts of country image on tastes are [$\gamma_k/(\sigma_k - 1)$ in absolute values]: 0, 0.224, and 0.505 for type O, R, and D goods, respectively.[16] Thus, the observed increase in the US' country image during 2007–2011 (by 17.7 percentage points) is equivalent to a 3.89 percent decrease ($= e^{-0.224\times 0.177} - 1$) in trade cost for reference-priced goods and a 8.55 percent decrease ($= e^{-0.505\times 0.177} - 1$) in trade cost for differentiated goods. These are large numbers, considering that tariff barriers are on average less than 5 percent for rich countries, and international transport costs are estimated to be about 21 percent for the US (Anderson and van Wincoop, 2004).

In summary, we find some indications that the effect of country image on consumer preferences (and trade flows) does differ across types of goods in ways consistent with ex ante expectations: they tend to be stronger for consumer goods than non-consumer goods (with caveat on the statistical significance of the difference), and stronger on differentiated goods than homogeneous goods (with a clear statistical difference).

5 Welfare Analysis

In this section, we use the effect estimates of country image identified above as inputs, and conduct counterfactual welfare analysis of major shifts in country image. For example, we compute the Bush and Trump effects by simulating the counterfactual exports and welfare for the US in year 2011 (the peak of the US country image), if each of the US' trade partners were to change their actual ratings of the US in 2011 to the level in 2007 (Bush) or 2017 (Trump), holding the US' own preference parameters unchanged. This simulated welfare effect is then compared to the US' total welfare gains from trade to evaluate the magnitude of importance of country image.

5.1 Conceptual Framework

We build on the aggregate framework introduced in Section 3 and generalize it to allow for trade deficits and intermediates in production. Time subscripts are omitted in the conceptual framework to simplify expositions. The aggregate budget constraint that allows for trade deficit requires that:

$$E_j = Y_j + D_j, \tag{8}$$

where D_j is the nominal trade deficit of country j. We assume that goods are produced one-to-one from an input bundle, where the input bundle combines labor and intermediate inputs with a constant labor share κ_i. Intermediates comprise the full set of goods as for final demand, aggregated using the same CES function as in (1). This implies that the cost of an input bundle in country i

[16] The effect for goods traded on organized exchange is taken to be zero because its estimate is statistically insignificant.

is

$$c_i = w_i^{\kappa_i} P_i^{1-\kappa_i}. \tag{9}$$

Given that goods markets are perfectly competitive, the supplier price p_i equals the production cost c_i. Finally, labor-market clearing requires that:

$$w_i L_i = \kappa_i Y_i. \tag{10}$$

To proceed with counterfactual analysis of shifts in preferences, we rewrite the system of structural equations (2)–(5) and (8)–(10) in terms of changes à la the hat algebra of Dekle et al. (2007). In particular, let x' denote the counterfactual value of a variable x and $\widehat{x} \equiv x'/x$ the ratio of the counterfactual to the actual value of the variable.

The market-clearing condition (2) and perfect competition require that the change in the supply share, the change in the cost of the input bundle, and the outward MR for each country satisfy the following condition:

$$\widehat{s}_i = \widehat{c}_i^{1-\sigma} \widehat{\Pi}_i^{1-\sigma}. \tag{11}$$

The MR structural relationship (4)–(5) and the trade flow equation (3) then require the changes in the MR terms to reflect the changes in preferences and supply/expenditure shares according to:

$$\widehat{\Pi}_i^{1-\sigma} = \sum_j \theta_{ij} \left(\widehat{b}_{ij} / \widehat{P}_j \right)^{1-\sigma} \widehat{e}_j, \tag{12}$$

$$\widehat{P}_j^{1-\sigma} = \sum_i \lambda_{ij} \left(\widehat{b}_{ij} / \widehat{\Pi}_i \right)^{1-\sigma} \widehat{s}_i, \tag{13}$$

where $\theta_{ij} \equiv X_{ij}/Y_i$ is the share of country i's sales that goes to destination j and $\lambda_{ij} \equiv X_{ij}/E_j$ is the share of country j's expenditure that is spent on source i. We follow Caliendo and Parro (2015) and assume that in the counterfactual, a country's trade deficit as a share of world production remains constant: $D_i'/Y_w' = D_i/Y_w = \delta_i$. This, together with the aggregate budget constraint (8), implies that

$$\widehat{e}_i \cdot e_i = \widehat{s}_i \cdot s_i + \delta_i. \tag{14}$$

By the definition of s_i, it follows that

$$\widehat{s}_i \cdot s_i = \frac{\widehat{Y}_i \cdot Y_i}{\sum_k \widehat{Y}_k \cdot Y_k}. \tag{15}$$

By the Cobb-Douglas cost structure (9), we have:

$$\widehat{c}_i = \widehat{w}_i^{\kappa_i} \widehat{P}_i^{1-\kappa_i}. \tag{16}$$

Finally, by the labor market-clearing condition (10), we have

$$\widehat{Y}_i = \widehat{w}_i. \tag{17}$$

Using (11)–(17), we can solve for $\left\{\widehat{c}_i, \widehat{\Pi}_i, \widehat{P}_i, \widehat{s}_i, \widehat{e}_i, \widehat{w}_i, \widehat{Y}_i\right\}$ for $i = 1, 2, \ldots, N$, given exogenous changes in the preference parameters $\widehat{b}_{ij}^{1-\sigma}$, observable variables $\{\theta_{ij}, \lambda_{ij}, e_i, s_i, \delta_i, Y_i\}$ and parameter values $\{1-\sigma, \kappa_i\}$. The welfare effects of given exogenous changes in country image can then be measured by the changes in real income (wages):

$$\widehat{W}_i = \widehat{Y}_i / \widehat{P}_i, \tag{18}$$

and the general equilibrium trade effect by:

$$\widehat{X}_{ij} = \frac{\widehat{b}_{ij}^{1-\sigma}}{\widehat{\Pi}_i^{1-\sigma} \widehat{P}_j^{1-\sigma}} \, \widehat{s}_i \, \widehat{E}_j, \tag{19}$$

where

$$\widehat{E}_j = \frac{Y_j}{E_j} \widehat{Y}_j + \frac{D_j}{E_j} \widehat{Y}_w \tag{20}$$

and $\widehat{Y}_w = \sum_i s_i \widehat{Y}_i$.[17]

We will focus on counterfactual scenarios where a country's image shifts in its trade partners' views (e.g., how the rest of the world views the US), while the country's own preference parameters towards its trade partners remain the same. Thus, any changes in the country's welfare are due to the changes in its outward trade flows and multilateral resistance, and not because of the direct impact of shifts in its own preference.

We will base our analysis on the dynamic panel estimate of γ ($= 0.884$) in Column 1 of Table 5 for the aggregate trade flows. This implies an effect of $\widehat{b}_{ijt}^{1-\sigma} = \exp(\gamma(PS' - PS_{ijt}))$, if the importing country j's view of the exporting country i in year t were to shift to the level PS' specified by the counterfactual scenario. This effect on $\widehat{b}_{ijt}^{1-\sigma}$ can then be fed into the system (11)–(17) to simulate the effects of country image on welfare (18) and trade flows (19) for the exporting country i.

For the parameters, we use $\sigma = 5$, which implies a trade elasticity of 4 and is close to the median trade elasticity often reported in the gravity literature for aggregate trade (Head and Mayer, 2015). For the parameter $\{\kappa_i\}$, we use the share of value added in gross output in country i, based on the median value-added share across sectors from Caliendo and Parro (2015). The value varies in the range of $[0.37, 0.53]$ across countries.

[17] We could also measure the welfare effects by changes in real expenditures $\widehat{W}_i = \widehat{E}_i / \widehat{P}_i$. But because it is sensitive to the assumption of trade deficit in the counterfactual, we decide to report the welfare effects based on changes in real income (wages). It can also be argued that trade deficit needs to be repaid by the borrowing country in the long run; thus, real income is a better measure of the long-run welfare of a country.

5.2 Welfare Impacts

In the counterfactual analysis, we include all countries in the world where data permit. The numbers of countries included in the analysis across 2005–2014 are indicated in Table 8. These countries collectively represent around 99.5 percent of world GDPs and above 97.5 percent of world trade. Because not all countries are included in the BBC WOP survey, we present results based on three alternative assumptions about the change in the opinions in the rest of the world. In Scenario 1, we assume that the importing countries not included in the BBC WOP as evaluating countries have not changed their opinions against the evaluated country. In Scenarios 2 and 3, these countries are assumed to take on, respectively, the mean and median change in the views (of the BBC WOP evaluating countries) against the evaluated country. Scenario 1 is an extremely conservative assumption and its results can be considered as lower-bound estimates. On the other hand, Scenarios 2 and 3 can be regarded as "best" estimates even though the possibility of over-representation (of the prevalence of change in opinions across the globe) cannot be excluded.

We label each exercise by the major factor that we consider of first-order importance and most likely to have caused observed shifts in country image (bearing in mind that there are potentially other confounding factors). Table 9 provides a detailed report of the change in bilateral country image perception for the episodes to be studied.

5.2.1 The George W. Bush and the Donald Trump Effects

As shown in Figure 1, the US country image has experienced dramatic improvement from 2007 to 2011, but an equally dramatic reversal from 2011 to 2017. In the first exercise, we compute the welfare effects for the US in 2011 if the views of its trade partners towards the US were to revert to the level prevalent in year 2007. We label this exercise as the George W. Bush effect, because the public image of the Bush administration was marred by its decision to invade Afghanistan in 2001 and Iraq in 2003 in its declared "war on terrorism," despite international disapproval. For example, when France and Germany opposed the US-led Iraq War in early 2003, the trans-Atlantic relationship severely worsened.[18] Mr. Obama, being an antiwar candidate who won the Nobel Peace Prize in 2009, had helped turn around the US country image. For example, the positive response ratio towards the US in France was 0.46 in year 2011 but 0.24 in year 2007. Similarly, the positive response ratio towards the US in Germany was 0.37 in year 2011 but 0.16 in year 2007 (*cf.* Table 9). This implies $\widehat{b}_{ijt}^{1-\sigma} = 0.823$ and 0.831, and thus, a 17.7% and 16.9% drop in $b_{ijt}^{1-\sigma}$, respectively, for the US-to-France and the US-to-Germany exports.

The general equilibrium welfare effects taking into account changes in the views of all the US trade partners from the level in 2011 to that in 2007 are reported in Column 1 of Table 10. This is compared to the total US' welfare gains from trade in Column 2, calculated using the formula of Arkolakis et al. (2012, p. 115, the version that allows for intermediates in production). As indicated, the Bush effect costs the country around 6.6–6.7% of its total welfare gains from trade

[18] It is reported that bars and restaurants in several parts of Germany refused to serve Coca-Cola, Budweiser beer, Marlboro cigarettes, and other renowned American brands (The Economist, 2003b).

in Scenarios 2 and 3. The general equilibrium effect on the US exports of around 6.9–7% is much smaller than the direct effect indicated above. This is due to the fact that the increase in the US outward multilateral resistance ($\Pi_{it}^{1-\sigma} \downarrow$) due to worsened country image partly offsets its direct trade effect ($b_{ijt}^{1-\sigma} \downarrow$) in equation (19). Figure 4 illustrates the effect on the US bilateral exports to each of its trade partners given the change in its country image across exporting destinations (based on Scenario 2). We see from Table 9 that Brazil, Indonesia, South Korea, Chile and Turkey are especially against the Bush relative to the Obama administration, followed by France, Germany, and Russia. This is reflected in the acute drop in the US exports to these destinations. In contrast, Kenya, Nigeria, and China had a relatively mild change in their views towards the US during 2007–2011. As a result, trade is diverted to these destinations (where the drop in $b_{ijt}^{1-\sigma}$ is less than the drop in $\Pi_{it}^{1-\sigma}$). The increased exports to China help cushion some of the negative overall impact.

We next conduct a similar exercise for the US in 2011 using the 2017 ratings of the US by its trade partners as the counterfactual. We label this scenario as the Donald Trump effect, who won the US presidential election in November 2016. During his presidential campaigns, Trump had pledged many controversial promises, including: halting Muslims entry into the US, withdrawal from the Paris climate agreement, building a US-Mexico border wall, withdrawal from the Trans-Pacific Partnership, and renegotiating or withdrawal from North American Free Trade Agreement. These anti-globalization rhetorics can be summed up by his America First Foreign Policy[19] and had drawn waves of criticisms from both home and abroad even before he started his work in January 2017.

Table 9 indicates that at the mean, the decline in the favorable ratings of the US between 2011 and 2017 is less acute than in the Bush era. As a result, the Trump effect is smaller than the Bush effect, costing the US about 3–3.3% of its total welfare gains from trade (*cf.* Table 10). This smaller welfare effect masks some important heterogeneity in views towards the Trump administration. The biggest drops in views towards the US between 2011 and 2017 are seen in Russia (0.38 to 0.07), Indonesia (0.58 to 0.27), Spain (0.41 to 0.16), and Brazil (0.64 to 0.42). But among the major trade partners of the US, the shift in opinions is less dramatic (e.g., 0.40 to 0.34 in Canada, 0.46 to 0.37 in France, and 0.46 to 0.33 in the UK). In fact, China has maintained the same view towards the US (0.33) while Mexico has become more favorable towards the US (0.23 to 0.29). This is in contrast with the Bush effect, where the worsened view of the US is shared among most of its major trade partners. The impacts on the US exports to each of its destinations are illustrated in Figure 5. We can see that the effects are in general warmer in the Trump era than the Bush era, with the notable exception of Russia, whose view of the US has deteriorated much more significantly during 2011–2017 than in the previous episode.

A final remark is in order. To be fair, the US country image has started its slide during the second term of the Obama administration, accounting for about half of the decline during 2011–2017. Thus, the effects identified above are partly attributable to the Obama administration. It would be interesting to re-assess the Trump effect in the future, when the data on the US country

[19] `https://www.whitehouse.gov/america-first-foreign-policy`.

image become available throughout his presidency.

5.2.2 The China-Japan Senkaku-Islands Dispute Effects

As discussed in Section 2, the Senkaku-Islands Dispute in late 2012 between China and Japan has reignited the long-standing anti-Japanese sentiment in China. The response by the Chinese government of demonstrating military power in the disputed sea area, and by the Chinese protesters of inflicting damages upon Japanese businesses across China, has escalated the political tension in East Asia and raised concerns in the US and the rest of the world about impending armed conflicts in the region (Manyin, 2016). This event was also seen by observers as China's aim to dominate the East and South China Sea, expanding its maritime boundaries. These developments did not bode well for the Chinese country image as manifested by a sharp drop in its rating between 2012 and 2013 (*cf.* Figure 1 and Table 9). Except for some Latin American and African countries, most evaluating countries have lowered their ratings of China during 2012–2013. The drop is especially pronounced for countries in the region and the US allies. In the counterfactual exercise, we analyze the effects of these negative shifts in bilateral perceptions on the welfare and trade of China in 2012.

Table 10 indicates that the welfare effect on China due to the sheer change in its country image during 2012–2013 amounts to a reduction by 3.5–3.6% of its total gains from trade; the total net loss in exports is in similar magnitudes (3.3%). Figure 6 indicates that the strongest negative trade effects are concentrated on Chinese exports to the major G7 countries. An ironic outcome arises in this exercise, where the Chinese exports to Japan increase in spite that the Japanese negative feeling towards China has worsened. This is due to the fact that the Japanese ratings of China started from a very low base (0.10 in year 2012), and its downward revision by -0.05 during 2012–2013 is small in magnitudes relative to those of Australia, Canada and Germany (-0.25, -0.24, and -0.29, respectively). Thus, in this case, the direct effect of decrease in $b_{China,Japan}^{1-\sigma}$ is dominated by the decrease in multilateral effects ($\Pi_{China}^{1-\sigma} \downarrow$), and as a result, Chinese exports in fact would be diverted towards Japan. Similar interpretations apply to the increase in Chinese exports to Russia and Mexico.

5.2.3 The Brexit Effects

The UK's Brexit decision taken in June 2016 has many potential ramifications when the negotiation on the exit terms is to complete in 2019. Before that, however, Figure 1 indicates that the British country image has taken a hit between 2014 and 2017. The negative feeling towards the UK is naturally acute among the EU member countries, such as Germany (0.51 in 2014 to 0.35 in 2017) and France (0.72 to 0.63), but it is also shared by countries outside the union such as Brazil (0.45 to 0.33), India (0.43 to 0.33), and Russia (0.44 to 0.24). China is clearly an outlier who has almost doubled its favorable rating of the UK between 2014 and 2017 (0.39 to 0.73). This has obviously brought up the mean rating of the UK relative to the median (*cf.* Table 9). As a result, the negative welfare effect of Brexit is less severe in Scenario 2 (when the rest of the world is assumed to take

on the mean change in opinions) than in Scenario 3 (when the rest of the world is assumed to take on the median change in opinions). Based on the latter, Brexit via the country image effect alone costs the UK close to 2.2% of its total welfare gains from trade in 2014 and 2.4% in total exports, as indicated in Table 10. Figure 7 illustrates the diversion of the British exports to China, Australia, and Mexico (where its country image has improved) from Russia, Germany, and Brazil (where its country image has worsened).

5.2.4 The Good-Boy Canadian Effects

Between 2010 and 2017, Canada's country image has been consistently on the rise from its already superior ranking and overtaken Germany in 2017. The increment is especially significant in the UK (0.62 to 0.94), Mexico (0.37 to 0.69), China (0.54 to 0.82), and the US (0.67 to 0.87), all of them being its most important trade partners. The country has projected itself as: socially liberal yet fiscally conservative (The Economist, 2003a, 2005); it is the world's tenth-largest economy; as a military power, it counts for less (The Economist, 2016d). It continues to maintain a generally open door policy to trade and immigrants, even as they are shunned by the US and the EU (The Economist, 2011, 2016c). The sworn-in of Prime Minister, Justin Trudeau, in November 2015 appears to have affirmed all these positive images and more. For example, the Canadian prime minister has played a more constructive role in international climate talks than his predecessor and ratified the Paris agreement in December 2015 (The Economist, 2016a,d). His growth-promoting economic policies such as increased investment in infrastructure have also won plaudits from the IMF, the World Bank, and the G20 (The Economist, 2016e). These help explain the significant increase in the favorable ratings of Canada between 2014 and 2017.

We analyze the effects of such image upgrading for Canada in 2010 if its ratings by its trade partners were to rise to the 2017 level (*cf.* Table 9). Table 10 shows that the positive welfare effects are substantial, contributing to 8.2% of its total gains from trade. The effects on its exports are similarly significant at more than 8.2%. Relative to Scenarios 2 and 3, the effects in Scenario 1 are lower by only a small margin when the rest of the world is assumed not to have improved their opinions towards Canada during 2010–2017. This is due to the fact that Canada's trade is highly concentrated among the countries that have increased their favorable ratings of Canada. Figure 8 shows that Canadian exports to Mexico and the UK would increase by more than 20%, to China by more than 15%, and to the US and Australia by more than 10%. There are however exceptions; for example, German and Russian people have lowered their ratings of Canada. This implies a drop of Canadian exports to each of these two countries by more than 15%.

6 Conclusion

This paper identifies the preference bias in demand across time and country pairs by exploiting variations in the bilateral country image perceptions derived from the BBC World Opinion Poll. As documented in the paper, preference biases are not static and can respond to contemporary

political, economic, and social events. They also exhibit significant bilateral variations across country pairs and multilateral variations across evaluated and evaluating countries. The presence of such preference bias is shown by counterfactual analysis to have quantitatively significant economic impacts on a country's export distribution (across destinations) and on its aggregate income and welfare (via shifts in its multilateral outward resistance). For example, the improving Canadian country image during 2010–2017 is estimated to amount to 8.2% of its total welfare gains from trade and contributes to a similar percentage increase in its total exports.

These findings have interesting policy implications. In an era when tariffs have been lowered by the GATT/WTO multilateral trade talks to relatively low levels, and its members find it difficult to push for trade liberalization further, and when technological innovations have significantly brought down transportation/communication costs, and it seems challenging to reduce trade cost further, consumer preferences stand out as a target that countries could influence with relatively large economic gains, at perhaps relatively low cost. Behaving responsibly as a nice global citizen (to build up one's own country image equity) may just prove to be self-rewarding. It also implies that international political calculus needs to take these economic impacts into consideration.

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A Data Appendix

A.1 Country Image

The country coverage of the BBC WOP varies in each annual release. The 2014 version was kindly provided by Lionel Bellier at GlobeScan. As documented in the main text, it has 24 evaluating countries. In 2017, GlobeScan reinstated the survey, and the latest 2017 version has kept only 19 tracking evaluating countries. Since the data on trade flows and GDPs for 2017 are not available at the time of writing, we primarily work with the data from the 2014 release; nonetheless, the counterfactual welfare analysis in Section 5 uses some of the country image data in 2017. Figure 1 looks very similar if we instead use only the 19 tracking evaluating countries of the 2017 release.

As indicated in the main text, there are five types of response: "mainly positive" (PS), "mainly negative" (NG), "depends" (DP), "neither/neutral"(NN), and "DK/NA (don't know or no answer)". We treat entries such as "$*$", "-", or "NA (not available)" in the raw data as missing. By definition, $PS+NG+NU+NA=1$ and $RS \equiv PS+NG+NU=1-NA$, where $NU \equiv DP+NN$. In the data, the sum of the five responses (treating missing as zero) is equal to 1 for the majority of observations, with discrepancies by a margin of at most 0.02 for some country pairs.

A.2 Trade Flow

For the aggregate trade flows, we use the Direction of Trade Statistics (DOTS) data maintained by the International Monetary Fund. For the disaggregate trade flows, we downloaded the data of UN COMTRADE via the WITS (World Integrated Trade Solutions),[20] by the HS2002 nomenclature at the 4-digit level for the analysis using BEC classifications, and by the SITC2 nomenclature at the 3-digit level for the analysis using Rauch classifications. All the trade statistics are reported in current US dollars. We replace missing bilateral import entries with zeros if the corresponding export values reported by the exporter are zero.

Taiwan is included in our counterfactual analysis, but it is not listed as a reporting country in DOTS. We use the FOB (Free on Board) export values reported by Taiwan's trading partners, scaled up by 10% as its CIF (Cost, Insurance and Freight) import values, to reflect freight charges and insurance costs (Head et al., 2010).

A.3 Classification of Goods

We use the UN Broad Economic Categories (BEC, Rev.4) classification and assign sectors into one of four categories: consumer goods, intermediate goods, capital goods, and not classified.[21] We use the correlation table between HS2002 and BEC4 maintained by the UN Statistics Division,[22] where each of the HS 6-digit sectors corresponds to some BEC code(s), which in turn is mapped to one of the four types of goods listed above. We classify a HS 4-digit sector as consumer goods if all

[20] `http://wits.worldbank.org`.

[21] `https://unstats.un.org/unsd/tradekb/Knowledgebase/50089/Classification-by-Broad-Economic-Categories-Rev4`.

[22] `http://unstats.un.org/unsd/trade/classifications/correspondence-tables.asp`.

its 6-digit sub-sectors are consumer goods, and similarly for the classification of intermediate and capital goods. There are 1244 HS 4-digit sectors in total. Among them, 236 sectors are classified as consumer goods, 753 as intermediates, 70 as capital goods, 8 not classified, and 177 as mixed sectors.

We downloaded the Rauch (1999) goods classification from James Rauch's website.[23] All 237 SITC2 3-digit sectors are accounted for and assigned to one of the three types of goods classified by Rauch.

A.4 Bilateral Trade Cost Proxies

The data on most of the bilateral trade cost proxy variables were obtained from the CEPII website,[24] a French research center in international economics. The time-invariant variables include: population-weighted bilateral distance ($Dist_{ij}$); common language indicator ($ComLang_{ij}$), which equals one if a language is spoken by at least 9% of the population in both countries; common legal origin indicator ($ComLeg_{ij}$), which equals one if two countries share a common legal origin; common border indicator ($Border_{ij}$), which equals one if two countries are contiguous; common colonizer indicator ($ComCol_{ij}$), which equals one if two countries have had a common colonizer after year 1945; indicator for whether exporter i has ever been a colonizer of importer j ($Exheg_{ij}$) and indicator for whether importer j has ever been a colonizer of exporter i ($Imheg_{ij}$).

The data on preferential trade agreement indicator (PTA_{ijt}), which equals one if a preferential trade agreement is in force between two countries, and the common currency indicator ($ComCur_{ijt}$), which equals one if two countries use a common currency, are from the International Economics Data and Programs website maintained by José de Sousa.[25] We update missing PTA entries using the Regional Trade Agreements Information System (RTA-IS) of the World Trade Organization.[26]

Data on whether importer j offers GSP preferential treatment to exporter i (GSP_{ijt}) are compiled manually from the "Generalized System of Preferences: List of Beneficiary Countries" reported by the UNCTAD.[27] The UNCTAD updates the information on the GSP schemes from time to time, but not annually. The information on the GSP schemes is only available for years 2005, 2006, 2008, 2009, 2011, and 2015. We fill in the gap by using the data from the previous nearest available year.

A.5 War and Military Dispute

The data on wars and military disputes between countries were obtained from the Correlates of War (COW) project.[28] We construct two instrumental variables for country image from this dataset. First, the variable *war* is defined as the number of wars between a country pair during the period of 1816–1945. Second, the variable *MID* measures the weighted sum of Militarized Interstate Disputes

[23] `http://econweb.ucsd.edu/~jrauch/rauch_classification.html`.
[24] `http://www.cepii.fr`.
[25] `http://jdesousa.univ.free.fr/data.htm`.
[26] `http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx`.
[27] `http://unctad.org/en/Pages/DITC/GSP/GSP-List-of-Beneficiary-Countries.aspx`.
[28] `http://www.correlatesofwar.org`.

(MIDs) between a country pair during the period of 1816–1945, as discussed in the main text. We consider all five levels of hostility such that *MID* exhibits a diverse degree of military tensions between country pairs. This is in contrast with Martin et al. (2008), who consider the subset of MIDs with a hostility level of 3, 4 or 5.

A.6 GDP, Gross Output, and Population

We use the Gross Domestic Product figures expressed in current US dollars from the World Development Indicators (WDI) and supplement missing entries with the GDP data from the CEPII website, except for Iran in 2015, where the estimate published in the CIA Factbook is used instead.[29] The data on population are also sourced from the WDI.

We construct gross output Y_i data by taking the ratio of GDP and the value-added share κ_i in gross output: $Y_{it} = GDP_{it}/\kappa_i$, where the data on κ_i were obtained from Caliendo and Parro (2015). In their dataset, the share varies across sectors and countries. We take the median across sectors in each country as the country-level value-added share. These are available for 30 countries and a ROW (as listed in Appendix E in their paper). The ROW value-added share is used for countries in our dataset that are not separately studied in Caliendo and Parro (2015).

A.7 Expenditure

Based on bilateral trade flows, we construct the trade deficit of a country by: $\widetilde{D}_{jt} = \sum_i X_{ijt} - \sum_i X_{jit}$. However, the world trade deficit $\widetilde{D}_{wt}$ does not always sum to zero. In that case, we allocate the discrepancy $\widetilde{D}_{wt}$ to each country in proportion to its output share of the world, i.e., $D_{jt} = \widetilde{D}_{jt} - s_j \widetilde{D}_{wt}$. The gross expenditure of a country is then constructed as: $E_{jt} = Y_{jt} + D_{jt}$.

A.8 Pseudo World in the Counterfactual Analysis

In the counterfactual analysis, we consider all countries in the world and their bilateral trade flows, where data permit. We drop countries for which GDP data are not available. We also drop countries that do not import from or export to any other countries. Given the set of countries available, we construct trade deficit and expenditure as discussed above, and drop countries if the constructed expenditure is negative. We also drop countries if the implied internal trade is negative: $X_{ii} \equiv Y_i - \sum_{j \neq i} X_{ij} < 0$. These are small territories whose data are prone to measurement errors. We iterate the procedure of constructing trade deficit and expenditure after each round of adjustment in the set of countries, until the constructed expenditure and internal trade of all countries are positive. We call this set of countries the pseudo world and calculate the supply and expenditure shares of each country relative to the pseudo world. As shown in Table 8, the number of countries and the total GDP (imports) of these countries in the pseudo world relative to the real world are both large. Thus, the pseudo world closely represents the real world.

[29] `https://www.cia.gov/library/publications/the-world-factbook`.

Table 1: The list of evaluating and evaluated countries in the BBC WOP survey.

	Evaluated Countries (Years appearing in the survey)	Evaluating Countries (Years appearing in the survey)
Brazil (BRA)	2008-2014, 2017	2005-2008, 2010-2014, 2017
Canada (CAN)	2005-2007, 2009-2014, 2017	2005-2014, 2017
China (CHN)	2005-2014, 2017	2005-2014, 2017
France (FRA)	2005-2014, 2017	2005-2014, 2017
Germany (DEU)	2008-2014, 2017	2005-2014, 2017
India (IND)	2006-2014, 2017	2005-2014, 2017
Iran (IRN)	2006-2014, 2017	
Israel (ISR)	2007-2014, 2017	2014
Japan (JPN)	2006-2014, 2017	2005, 2008-2014
North Korea (PRK)	2007-2014, 2017	
Pakistan (PAK)	2008-2014, 2017	2010-2014, 2017
Russia (RUS)	2005-2014, 2017	2005-2014, 2017
South Africa (ZAF)	2009-2014, 2017	
South Korea (KOR)	2010-2014, 2017	2005-2008, 2010-2014
United Kingdom (GBR)	2005-2014, 2017	2005-2014, 2017
United States (USA)	2005-2014, 2017	2005-2014, 2017
Argentina (ARG)		2014
Australia (AUS)		2005-2014, 2017
Chile (CHL)		2005-2014
Ghana (GHA)		2006, 2008-2014
Greece (GRC)		2013, 2017
Indonesia (IDN)		2005-2014, 2017
Kenya (KEN)		2006-2014, 2017
Mexico (MEX)		2005-2014, 2017
Nigeria (NGA)		2006-2014, 2017
Peru (PER)		2011-2014, 2017
Spain (ESP)		2005-2006, 2008-2014, 2017
Turkey (TUR)		2005-2011, 2013-2014, 2017

Note: We have excluded non-countries such as the European Union as an evaluated target.

Table 2: Number of evaluated/evaluating countries and their shares of world GDP/population.

	Evaluated Country			Evaluating Country			Combined		
year	# Country	% GDP	% Pop	# Country	% GDP	% Pop	# Country	% GDP	% Pop
2005	6	46.5	29.1	17	75.7	61.0	17	75.7	61.0
2006	9	57.8	49.6	19	66.7	61.9	21	76.0	65.0
2007	10	56.7	49.5	17	64.1	60.8	20	72.8	63.9
2008	12	61.9	55.4	20	73.4	63.6	23	74.6	67.2
2009	14	66.4	56.4	18	70.0	59.9	23	74.6	67.1
2010	15	67.7	57.0	21	74.9	65.8	24	76.5	67.7
2011	15	67.5	56.8	22	74.9	66.0	25	76.6	68.0
2012	15	68.0	56.6	21	74.3	64.8	24	76.0	66.8
2013	15	67.5	56.4	23	75.5	65.9	26	77.0	67.8
2014	15	68.0	56.2	24	76.5	66.3	26	77.5	68.1

Note: A country is included in the sample in a year if its GDP data are not missing, and its entries of PS and NG (as an evaluated or evaluating country) are available with respect to at least one trading partner. North Korea is dropped from the sample, because we do not have reliable GDP figures and other key statistics for it.

Table 3: OLS/IV estimation results for aggregate trade flows.

	OLS	IV GMM	IV GMM	IV GMM	IV GMM	IV GMM	IV GMM	IV GMM	OLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
PS_{ijt}	1.361***	1.704***	1.618***	1.619***	1.520***	1.509***	1.168**	1.285**	
	(0.442)	(0.540)	(0.534)	(0.534)	(0.534)	(0.536)	(0.529)	(0.524)	
PS_{ijt-1}									1.621***
									(0.517)
ΔPS_{ijt}									0.942***
									(0.342)
$LogDist_{ij}$	-0.871***	-0.871***	-0.867***	-0.864***	-0.932***	-0.915***	-0.976***	-0.960***	-0.880***
	(0.097)	(0.095)	(0.095)	(0.094)	(0.107)	(0.106)	(0.121)	(0.120)	(0.098)
$ComLang_{ij}$	0.453***	0.436**	0.461***	0.459***	0.463**	0.440**	0.288	0.324	0.479***
	(0.170)	(0.174)	(0.172)	(0.172)	(0.181)	(0.181)	(0.200)	(0.200)	(0.177)
$ComLeg_{ij}$	0.014	0.009	0.009	0.007	-0.021	-0.002	-0.028	-0.036	-0.011
	(0.150)	(0.149)	(0.149)	(0.149)	(0.153)	(0.153)	(0.151)	(0.152)	(0.156)
$Exheg_{ij}$	0.349*	0.347*	0.368*	0.372*	0.340	0.349	0.632***	0.623***	0.336*
	(0.196)	(0.192)	(0.193)	(0.192)	(0.213)	(0.212)	(0.193)	(0.193)	(0.198)
$Imheg_{ij}$	0.013	-0.000	0.008	0.016	0.011	0.080	0.444*	0.513**	0.026
	(0.267)	(0.272)	(0.271)	(0.267)	(0.294)	(0.291)	(0.254)	(0.249)	(0.260)
$Comcol_{ij}$	0.015	0.035	0.024	0.030	0.190	0.209	0.254	0.333	-0.008
	(0.454)	(0.457)	(0.458)	(0.457)	(0.493)	(0.492)	(0.506)	(0.503)	(0.467)
$Border_{ij}$	0.111	0.081	0.147	0.135	0.400	0.454	-0.836*	-0.856*	0.044
	(0.311)	(0.309)	(0.300)	(0.297)	(0.332)	(0.333)	(0.449)	(0.446)	(0.305)
PTA_{ijt}	0.342**	0.337**	0.347**	0.353**	0.246	0.256	0.271*	0.288**	0.336**
	(0.153)	(0.154)	(0.154)	(0.152)	(0.158)	(0.158)	(0.144)	(0.143)	(0.159)
GSP_{ijt}	0.607***	0.622***	0.643***	0.645***	0.673***	0.676***	0.412**	0.396**	0.590***
	(0.209)	(0.207)	(0.205)	(0.205)	(0.208)	(0.207)	(0.166)	(0.166)	(0.220)
$ComCur_{ijt}$	0.025	-0.001	-0.027	-0.014	-0.247	-0.260	0.698*	0.668*	-0.023
	(0.272)	(0.274)	(0.271)	(0.267)	(0.291)	(0.293)	(0.356)	(0.356)	(0.289)
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,467	2,467	2,467	2,467	2,322	2,322	1,810	1,810	2,041
R^2	0.590	0.590	0.590	0.590	0.602	0.601	0.697	0.696	0.594
Sample	Full	Full	Full	Full	no war after WWII	no war after WWII	no war/MID after WWII	no war/MID after WWII	Full
Instrumental Variables		PS^c_{ijt}	PS^c_{ijt} war	PS^c_{ijt} war MID	PS^c_{ijt} war	PS^c_{ijt} war MID	PS^c_{ijt} war	PS^c_{ijt} war MID	
Hansen J-statistic			1.187	1.262	0.118	2.397	2.210	3.939	
χ^2 p-value			0.276	0.532	0.731	0.302	0.137	0.140	
p-value for F test†			0.000	0.000	0.000	0.000	0.000	0.000	

Note: Standard errors are clustered by (asymmetric) country pairs. The variables *war* and *MID* measure the (weighted) sum of wars and Militarized Interstate Disputes, respectively, between a country pair during the period of 1816–1945. The latter variable *MID* uses the exporter's hostility level as weights, with five levels of hostility: 1 = No militarized action, 2 = Threat to use force, 3 = Display of force, 4 = Use of force, and 5 = War. $^\dagger F$ test of excluded instruments in the first stage

Table 4: PPML/IV estimation results for aggregate trade flows.

	PPML	IV PPML	IV PPML	IV PPML	PPML	PPML	PPML
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
PS_{ijt}	1.212***	1.986***	1.535***	1.541***	1.164***	0.889***	
	(0.282)	(0.468)	(0.388)	(0.389)	(0.293)	(0.279)	
PS_{ijt-1}							1.266***
							(0.319)
ΔPS_{ijt}							0.735***
							(0.227)
$LogDist_{ij}$	-0.722***	-0.721***	-0.667***	-0.660***	-0.832***	-0.947***	-0.718***
	(0.067)	(0.066)	(0.066)	(0.063)	(0.068)	(0.072)	(0.068)
$ComLang_{ij}$	0.561***	0.529***	0.444***	0.427***	0.571***	0.258	0.561***
	(0.140)	(0.145)	(0.146)	(0.139)	(0.153)	(0.161)	(0.141)
$ComLeg_{ij}$	0.119	0.083	0.169*	0.167*	0.089	0.270***	0.102
	(0.100)	(0.105)	(0.095)	(0.094)	(0.099)	(0.100)	(0.102)
$Exheg_{ij}$	0.115	0.160	0.132	0.132	0.009	0.462***	0.131
	(0.146)	(0.146)	(0.139)	(0.139)	(0.173)	(0.152)	(0.150)
$Imheg_{ij}$	-0.055	-0.046	-0.112	-0.106	-0.023	0.646***	-0.051
	(0.211)	(0.220)	(0.214)	(0.213)	(0.253)	(0.190)	(0.202)
$Comcol_{ij}$	0.500*	0.601**	0.504*	0.505*	0.642**	0.690***	0.552*
	(0.272)	(0.291)	(0.280)	(0.280)	(0.253)	(0.226)	(0.282)
$Border_{ij}$	0.043	-0.001	0.172	0.167	0.183	-0.541**	-0.005
	(0.174)	(0.173)	(0.171)	(0.171)	(0.160)	(0.235)	(0.176)
PTA_{ijt}	0.380***	0.377***	0.393***	0.402***	0.239**	0.175	0.388***
	(0.107)	(0.108)	(0.107)	(0.105)	(0.114)	(0.112)	(0.108)
GSP_{ijt}	0.206	0.234	0.117	0.102	0.239	0.145	0.149
	(0.149)	(0.152)	(0.161)	(0.157)	(0.149)	(0.122)	(0.152)
$ComCur_{ijt}$	0.331*	0.236	0.164	0.186	0.151	0.683***	0.340*
	(0.191)	(0.198)	(0.193)	(0.182)	(0.189)	(0.206)	(0.203)
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y
Observations	2,467	2,467	2,467	2,467	2,323	1,815	2,041
Sample	Full	Full	Full	Full	no war after WWII	no war/MID after WWII	Full
Instrumental Variables		PS^c_{ijt}	PS^c_{ijt} war	PS^c_{ijt} war MID			
Hansen J-statistic			1.889	1.916			
χ^2 p-value			0.169	0.384			

Note: Standard errors are clustered by (asymmetric) country pairs.

Table 5: Arellano and Bond (1991) dynamic panel estimation.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$PS_{ij,t-1}$	0.475	0.616	0.731*	0.537	0.425	0.563	0.687*	0.511
	(0.442)	(0.394)	(0.376)	(0.366)	(0.441)	(0.392)	(0.373)	(0.364)
ΔPS_{ijt}	0.884**	0.853**	0.945***	0.863**	0.802**	0.769**	0.877**	0.811**
	(0.395)	(0.359)	(0.346)	(0.336)	(0.392)	(0.356)	(0.343)	(0.334)
$\ln x_{ij,t-1}$	0.332***	0.330***	0.330***	0.325***	0.315***	0.313***	0.313***	0.310***
	(0.036)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
$\ln x_{ij,t-2}$					-0.022	-0.023	-0.024	-0.024
					(0.028)	(0.028)	(0.028)	(0.028)
PTA_{ijt}	0.073	0.075	0.079	0.074	0.060	0.062	0.068	0.063
	(0.094)	(0.093)	(0.093)	(0.092)	(0.092)	(0.092)	(0.092)	(0.091)
GSP_{ijt}	-0.125	-0.131	-0.106	-0.129	-0.160	-0.166	-0.136	-0.157
	(0.217)	(0.213)	(0.212)	(0.210)	(0.215)	(0.211)	(0.210)	(0.209)
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Lags included in the IVs†	1	2	3	4	1	2	3	4
Observations	1,665	1,665	1,665	1,665	1,662	1,662	1,662	1,662

Note: Both $PS_{ij,t-1}$ and ΔPS_{ijt} are allowed to be endogenous. The one-step GMM estimator is used. Standard errors are conventionally derived variance estimator for generalized method of moments estimation. †The IVs used for the first-differenced equation are: $\ln x_{ij,t-2}$ and higher-order lagged trade flows; $PS_{ij,t-2-L}$, and $\Delta PS_{ij,t-1-L}$ for $L = 1, \ldots, 4$. Data on trade flows for 1995–2014 are used.

Table 6: PPML estimation results for disaggregate trade flows (BEC classification).

	PPML	PPML	PPML	PPML	PPML
	(1)	(2)	(3)	(4)	(5)
$PS_{ij,t-1}$	0.676***	1.188***	0.565**	0.662**	4.152***
	(0.197)	(0.315)	(0.229)	(0.284)	(0.975)
ΔPS_{ijt}	0.565***	0.769***	0.591***	0.370*	1.243
	(0.151)	(0.201)	(0.190)	(0.217)	(1.462)
$LogDist_{ij}$	-0.910***	-0.699***	-1.103***	-0.797***	0.043
	(0.044)	(0.078)	(0.047)	(0.050)	(0.252)
$ComLang_{ij}$	0.360***	0.280**	0.466***	0.362***	-0.590
	(0.081)	(0.126)	(0.090)	(0.111)	(0.399)
$ComLeg_{ij}$	0.175***	0.203**	0.073	0.339***	0.063
	(0.063)	(0.086)	(0.070)	(0.079)	(0.261)
$Exheg_{ij}$	0.119	-0.085	0.265*	0.164	0.193
	(0.115)	(0.218)	(0.136)	(0.152)	(0.331)
$Imheg_{ij}$	-0.173	0.235*	-0.093	-0.171	0.489
	(0.130)	(0.132)	(0.155)	(0.170)	(0.468)
$Comcol_{ij}$	0.518***	0.317	0.589***	0.385*	3.994***
	(0.190)	(0.315)	(0.191)	(0.201)	(0.700)
$Border_{ij}$	0.088	-0.067	0.020	0.220	0.946**
	(0.097)	(0.150)	(0.099)	(0.144)	(0.479)
PTA_{ijt}	0.336***	0.516***	0.333***	0.247***	0.944***
	(0.064)	(0.135)	(0.069)	(0.079)	(0.314)
GSP_{ijt}	0.046	-0.435***	0.151	0.069	-1.477***
	(0.082)	(0.151)	(0.093)	(0.117)	(0.477)
$ComCur_{ijt}$	0.096	-0.103	0.166	-0.006	-0.975*
	(0.116)	(0.163)	(0.129)	(0.163)	(0.549)
Exporter-Sector-Year FE	Y	Y	Y	Y	Y
Importer-Sector-Year FE	Y	Y	Y	Y	Y
BEC Classification	All	C	I	K	U
Observations	1,383,632	281,394	776,922	83,159	5,274
R^2	0.916	0.802	0.930	0.922	0.982

Note: The types of goods refer to: (C) consumer goods, (I) intermediate goods, (K) capital goods, and (U) not classified by the BEC classification.

Table 7: PPML estimation results for disaggregate trade flows (Rauch classification).

	PPML	PPML	PPML	PPML
	(1)	(2)	(3)	(4)
$PS_{ij,t-1}$	0.816***	0.321	0.564**	0.940***
	(0.206)	(0.492)	(0.240)	(0.229)
ΔPS_{ijt}	0.555***	0.551	0.426**	0.556***
	(0.162)	(0.441)	(0.171)	(0.180)
$LogDist_{ij}$	-0.901***	-1.445***	-0.978***	-0.789***
	(0.045)	(0.095)	(0.042)	(0.052)
$ComLang_{ij}$	0.386***	0.822***	0.286***	0.318***
	(0.086)	(0.157)	(0.104)	(0.103)
$ComLeg_{ij}$	0.162**	-0.448***	0.074	0.310***
	(0.065)	(0.110)	(0.070)	(0.074)
$Exheg_{ij}$	0.147	0.885**	0.355***	-0.006
	(0.114)	(0.394)	(0.120)	(0.124)
$Imheg_{ij}$	0.015	-0.210	-0.294**	0.090
	(0.129)	(0.188)	(0.147)	(0.149)
$Comcol_{ij}$	0.365*	1.166***	0.085	0.298
	(0.196)	(0.300)	(0.204)	(0.233)
$Border_{ij}$	0.111	0.154	0.042	0.161
	(0.109)	(0.160)	(0.117)	(0.127)
PTA_{ijt}	0.336***	0.387***	0.462***	0.260***
	(0.066)	(0.123)	(0.074)	(0.075)
GSP_{ijt}	0.053	0.428***	-0.066	0.004
	(0.089)	(0.156)	(0.111)	(0.109)
$ComCur_{ijt}$	0.088	-0.048	0.462***	0.060
	(0.120)	(0.203)	(0.159)	(0.131)
Exporter-Sector-Year FE	Y	Y	Y	Y
Importer-Sector-Year FE	Y	Y	Y	Y
Types of Goods	All	O	R	D
Observations	359,668	43,569	85,693	230,406
R^2	0.915	0.943	0.839	0.913

Note: The types of goods refer to: (O) goods traded on an organized exchange, (R) reference-priced goods, and (D) differentiated products. We adopt the Rauch 'conservative' classification that minimizes the number of commodities that are classified as either (O) or (R).

Table 8: Characteristics of countries included in the pseudo world.

	(a)	(b)	(c)
year	no. of countries in the pseudo world	GDP share of the pseudo world	Import share of the pseudo world
2005	190	0.996	0.978
2006	190	0.996	0.977
2007	191	0.996	0.980
2008	190	0.995	0.979
2009	190	0.995	0.976
2010	191	0.995	0.975
2011	191	0.995	0.974
2012	190	0.996	0.978
2013	191	0.996	0.976
2014	184	0.989	0.968

Note:
(a) refers to the number of countries in the pseudo world after the iterated adjustment (described in the Appendix) to ensure that every country has positive expenditure and internal trade.
(b) refers to the total GDP of the countries in the pseudo world relative to the actual world GDP reported by WDI.
(c) refers to the total imports of the countries in the pseudo world relative to the actual world imports reported by DOTS.

Table 9: Major shifts in country image.

	A. George W. Bush Effects			B. Donald Trump Effects			C. Senkaku-Islands Dispute Effects: China			D. Brexit Effects			E. Good-Boy Canadian Effects		
Evaluating Country	PS_{2011}	PS_{2007}	ΔPS	PS_{2011}	PS_{2017}	ΔPS	PS_{2012}	PS_{2013}	ΔPS	PS_{2014}	PS_{2017}	ΔPS	PS_{2010}	PS_{2017}	ΔPS
Brazil (BRA)	0.64	0.29	-0.35	0.64	0.42	-0.22	0.48	0.54	0.06	0.45	0.33	-0.12	0.60	0.71	0.11
Canada (CAN)	0.40	0.34	-0.06	0.40	0.34	-0.06	0.53	0.29	-0.24	0.80	0.73	-0.07	x	x	x
China (CHN)	0.33	0.28	-0.05	0.33	0.33	0.00	x	x	x	0.39	0.73	0.34	0.54	0.82	0.28
France (FRA)	0.46	0.24	-0.22	0.46	0.37	-0.09	0.38	0.25	-0.13	0.72	0.63	-0.09	0.79	0.92	0.13
Germany (DEU)	0.37	0.16	-0.21	0.37	0.22	-0.15	0.42	0.13	-0.29	0.51	0.35	-0.16	0.73	0.63	-0.10
India (IND)	0.42	0.30	-0.12	0.42	0.40	-0.02	0.30	0.36	0.06	0.43	0.33	-0.10	0.24	0.37	0.13
Israel (ISR)	.	.	.	.	.	.	.	.	.	0.50	.	.	.	.	.
Japan (JPN)	0.36	.	.	0.36	.	.	0.10	0.05	-0.05	0.47	.	.	0.40	.	.
Pakistan (PAK)	0.16	.	.	0.16	0.24	0.08	0.76	0.81	0.05	0.39	0.20	-0.19	0.11	0.26	0.15
Russia (RUS)	0.38	0.19	-0.19	0.38	0.07	-0.31	0.46	0.42	-0.04	0.44	0.24	-0.20	0.44	0.36	-0.08
South Korea (KOR)	0.74	0.35	-0.39	0.74	.	.	0.33	0.23	-0.10	0.74	.	.	0.77	.	.
United Kingdom (GBR)	0.46	0.33	-0.13	0.46	0.33	-0.13	0.57	0.37	-0.20	x	x	x	0.62	0.94	0.32
United States (USA)	x	x	x	x	x	x	0.42	0.23	-0.19	0.81	0.79	-0.02	0.67	0.87	0.20
Australia (AUS)	0.45	0.29	-0.16	0.45	0.42	-0.03	0.61	0.36	-0.25	0.73	0.76	0.03	0.72	0.91	0.19
Chile (CHL)	0.62	0.32	-0.30	0.62	.	.	0.53	0.57	0.04	0.45	.	.	0.60	.	.
Ghana (GHA)	0.84	.	.	0.84	.	.	0.64	0.68	0.04	0.78	.	.	0.58	.	.
Greece (GRC)	.	.	.	.	0.30	.	.	0.34	.	.	0.42	.	.	0.70	.
Indonesia (IDN)	0.58	0.21	-0.37	0.58	0.27	-0.31	0.51	0.55	0.04	0.59	0.51	-0.08	0.37	0.32	-0.05
Kenya (KEN)	0.68	0.70	0.02	0.68	0.67	-0.01	0.75	0.58	-0.17	0.74	0.69	-0.05	0.55	0.54	-0.01
Mexico (MEX)	0.23	0.12	-0.11	0.23	0.29	0.06	0.37	0.31	-0.06	0.40	0.53	0.13	0.37	0.69	0.32
Nigeria (NGA)	0.76	0.72	-0.04	0.76	0.68	-0.08	0.89	0.78	-0.11	0.67	0.76	0.09	0.43	0.55	0.12
Peru (PER)	0.53	.	.	0.53	0.40	-0.13	0.50	0.53	0.03	0.41	0.41	0.00	.	0.42	.
Spain (ESP)	0.41	.	.	0.41	0.16	-0.25	0.39	0.13	-0.26	0.41	0.34	-0.07	0.54	0.59	0.05
Turkey (TUR)	0.35	0.07	-0.28	0.35	0.20	-0.15	.	0.32	.	0.39	0.34	-0.05	0.16	0.43	0.27
Mean			-0.19			-0.11			-0.09			-0.04			0.13
Median			-0.18			-0.09			-0.08			-0.07			0.13

Note: We have dropped Argentina, Iran, North Korea, and South Africa from this table since their entries are all missing for the years and the evaluated countries studied. Entries of self-evaluations are excluded from the analysis, and indicated by 'x'.

Table 10: Welfare effects of major shifts in country image.

	(1) Effects on welfare in %	(2) Gains from trade in %	(1)/(2) Significance in %	Effects on exports in %
Panel A. The George W. Bush Effects ($PS_{US,j,2011} \rightarrow PS_{US,j,2007}$)				
Scenario 1	-0.08	2.33	3.51	-3.68
Scenario 2	-0.16	2.33	6.73	-6.98
Scenario 3	-0.15	2.33	6.57	-6.87
Panel B. The Donald Trump Effects ($PS_{US,j,2011} \rightarrow PS_{US,j,2017}$)				
Scenario 1	-0.03	2.33	1.30	-1.43
Scenario 2	-0.08	2.33	3.28	-3.41
Scenario 3	-0.07	2.33	2.99	-3.14
Panel C. The Senkaku-Islands Dispute Effects: China ($PS_{CH,j,2012} \rightarrow PS_{CH,j,2013}$)				
Scenario 1	-0.15	6.36	2.42	-2.22
Scenario 2	-0.23	6.36	3.60	-3.31
Scenario 3	-0.22	6.36	3.49	-3.27
Panel D. The Brexit Effects ($PS_{UK,j,2014} \rightarrow PS_{UK,j,2017}$)				
Scenario 1	-0.02	4.06	0.55	-0.65
Scenario 2	-0.06	4.06	1.41	-1.51
Scenario 3	-0.09	4.06	2.20	-2.40
Panel E. The Good-Boy Canadian Effects ($PS_{CA,j,2010} \rightarrow PS_{CA,j,2017}$)				
Scenario 1	0.46	6.14	7.50	7.56
Scenario 2	0.50	6.14	8.17	8.20
Scenario 3	0.50	6.14	8.18	8.23

Note: The results are based on the dynamic panel estimate of γ (= 0.884) and an elasticity of substitution $\sigma = 5$. The set of countries included in the simulation are indicated in Table 8. In Scenario 1, importing countries not included in the BBC WOP as evaluating countries are assumed not to have changed their opinions towards the evaluated country. In Scenario 2, these countries are assumed to take on the mean change in the views towards the evaluated country, while in Scenario 3, the median change.

Table A.1: Blundell and Bond (1998) system dynamic panel estimation.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$PS_{ij,t-1}$	0.475	0.616	0.731*	0.537	0.425	0.563	0.687*	0.511
	(0.442)	(0.394)	(0.376)	(0.366)	(0.441)	(0.392)	(0.373)	(0.364)
ΔPS_{ijt}	0.884**	0.853**	0.945***	0.863**	0.802**	0.769**	0.877**	0.811**
	(0.395)	(0.359)	(0.346)	(0.336)	(0.392)	(0.356)	(0.343)	(0.334)
$\ln x_{ij,t-1}$	0.332***	0.330***	0.330***	0.325***	0.315***	0.313***	0.313***	0.310***
	(0.036)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
$\ln x_{ij,t-2}$					-0.022	-0.023	-0.024	-0.024
					(0.028)	(0.028)	(0.028)	(0.028)
PTA_{ijt}	0.073	0.075	0.079	0.074	0.060	0.062	0.068	0.063
	(0.094)	(0.093)	(0.093)	(0.092)	(0.092)	(0.092)	(0.092)	(0.091)
GSP_{ijt}	-0.125	-0.131	-0.106	-0.129	-0.160	-0.166	-0.136	-0.157
	(0.217)	(0.213)	(0.212)	(0.210)	(0.215)	(0.211)	(0.210)	(0.209)
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Lags included in the IVs†	1	2	3	4	1	2	3	4
Observations	2,038	2,038	2,038	2,038	2,035	2,035	2,035	2,035

Note: Both $PS_{ij,t-1}$ and ΔPS_{ijt} are allowed to be endogenous. The one-step GMM estimator is used. Standard errors are conventionally derived variance estimator for generalized method of moments estimation. †The IVs used for the first-differenced equation are: $\ln x_{ij,t-2}$ and higher-order lagged trade flows; $PS_{ij,t-2-L}$, and $\Delta PS_{ij,t-1-L}$ for $L = 1, \ldots, 4$. In addition, $\Delta \ln x_{ij,t-1}$, $\Delta PS_{ij,t-2}$, and $\Delta^2 PS_{t-1}$ are also used as IVs for the level equation. Data on trade flows for 1995–2014 are used.

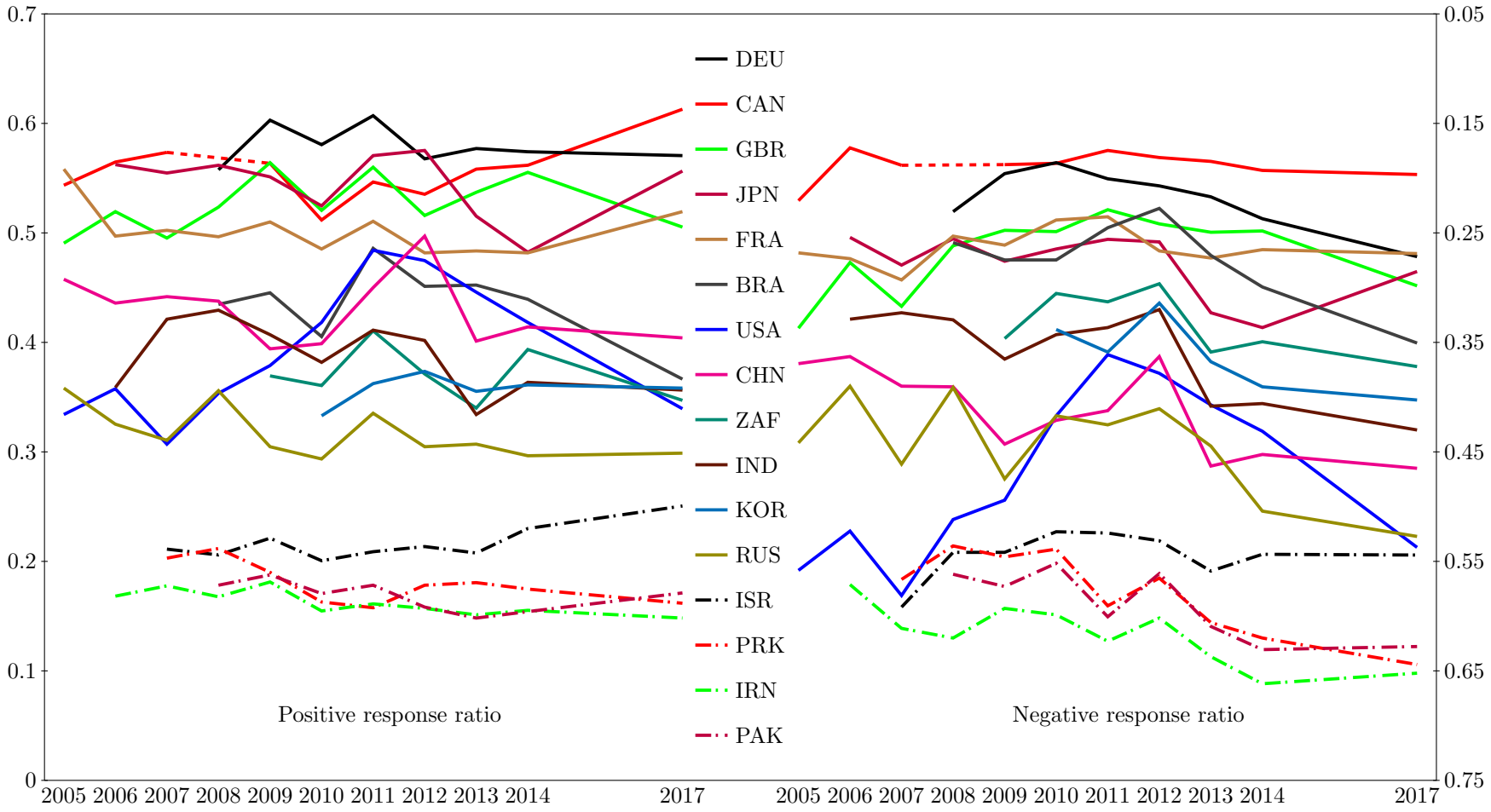


Figure 1: Average positive response ratio $\overline{PS}_{i\cdot t}$ and average negative response ratio $\overline{NG}_{i\cdot t}$. The data for Canada are missing in year 2008, hence the dashed line between 2007 and 2009. The data for all countries are missing for years 2015 and 2016. Average ratings exclude the target country's rating of itself.

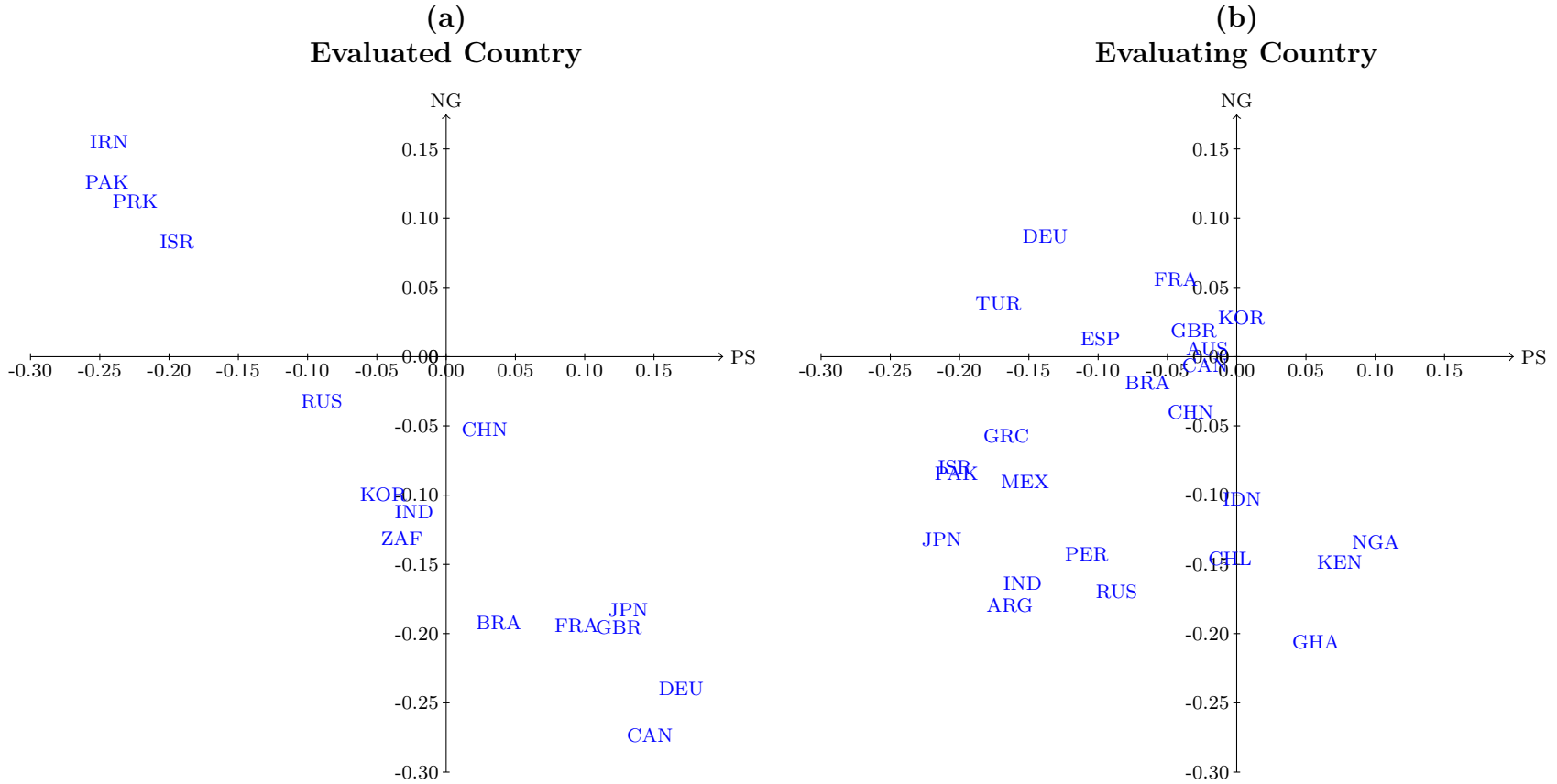


Figure 2: (a) Fixed effects for the evaluated countries (left) and (b) the evaluating countries (right) relative to the United States. The horizontal and vertical axes are the fixed effects for positive and negative response ratios, respectively.

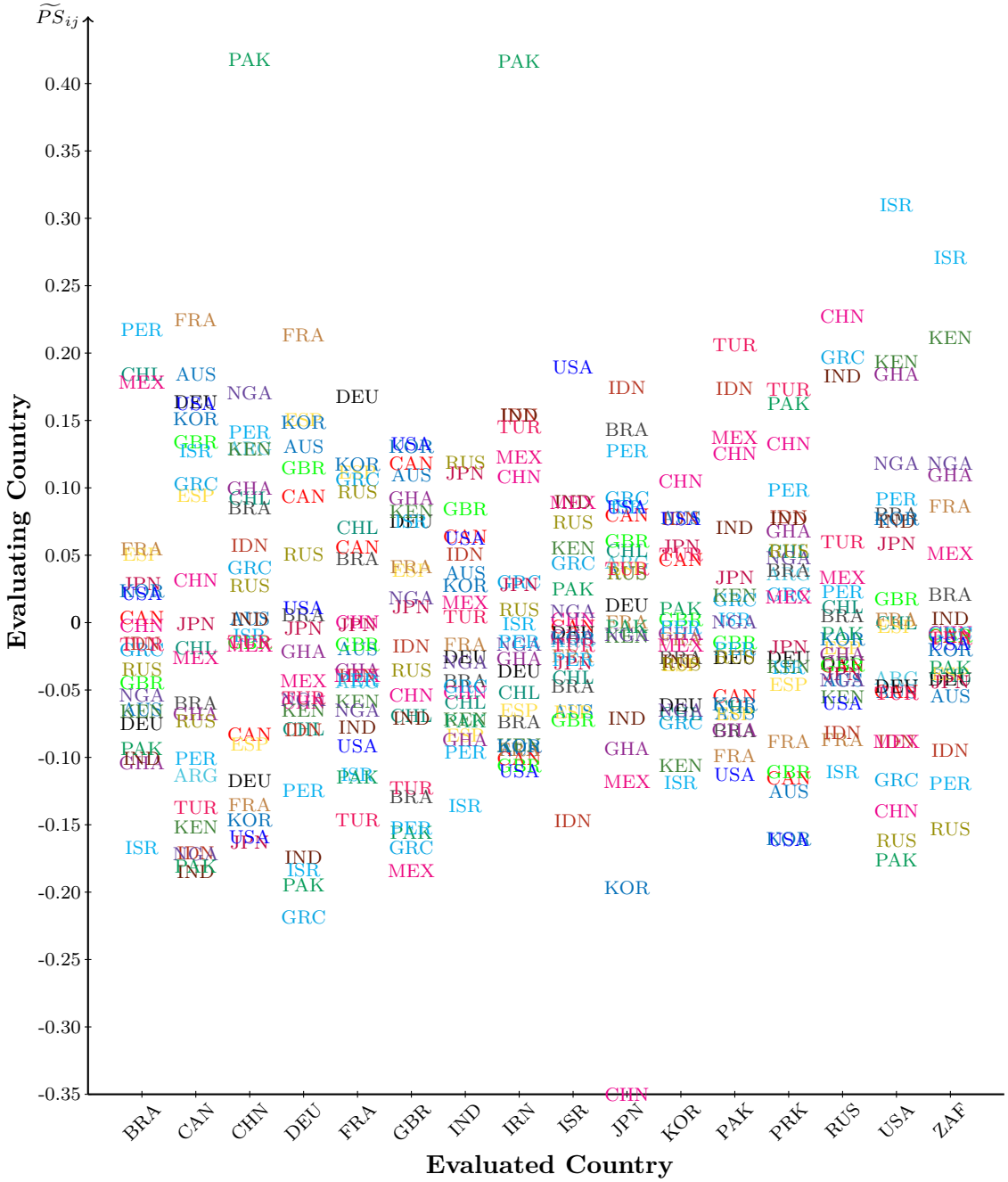
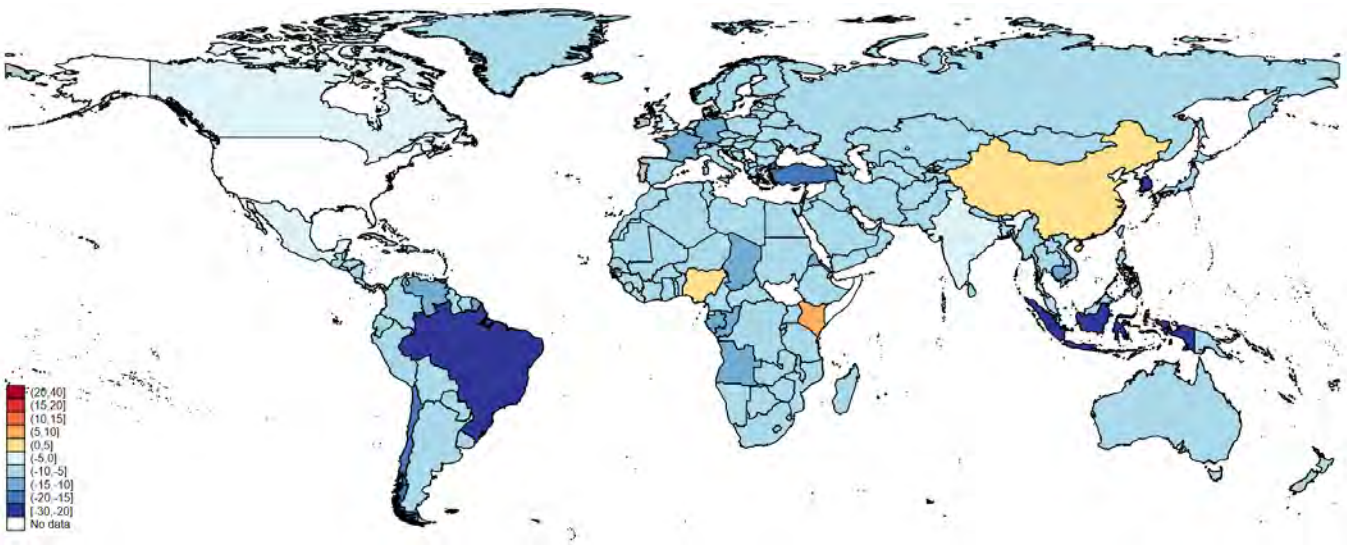


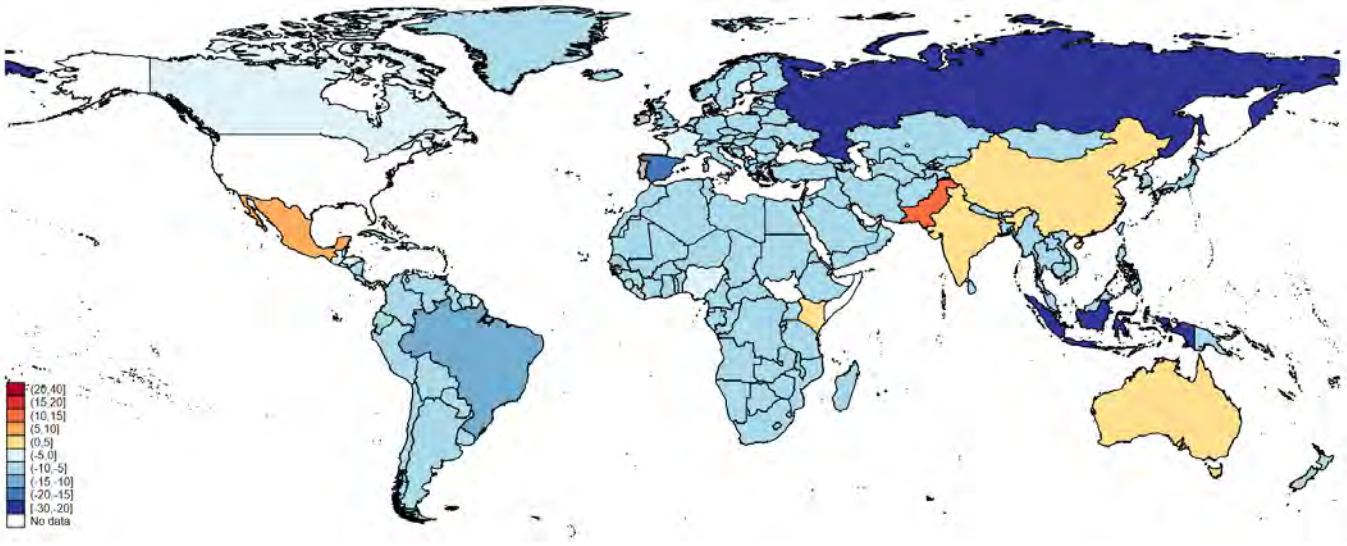
Figure 3: $\widetilde{PS}_{ij} \equiv (1/T)\sum_t \tilde{r}_{ijt}$ refers to the average positive response ratio across time after controlling for the evaluating-year and the evaluated-year fixed effects; i.e., $\tilde{r}_{ijt}$ is the residual from the regression: $PS_{ijt} = \mu_{it} + \nu_{jt} + r_{ijt}$. The horizontal axis indicates the countries evaluated and the vertical axis the residual positive response ratio $\widetilde{PS}_{ij}$ given by each of the evaluating countries.

Figure 4: The George W. Bush Effects on the US Bilateral Exports.



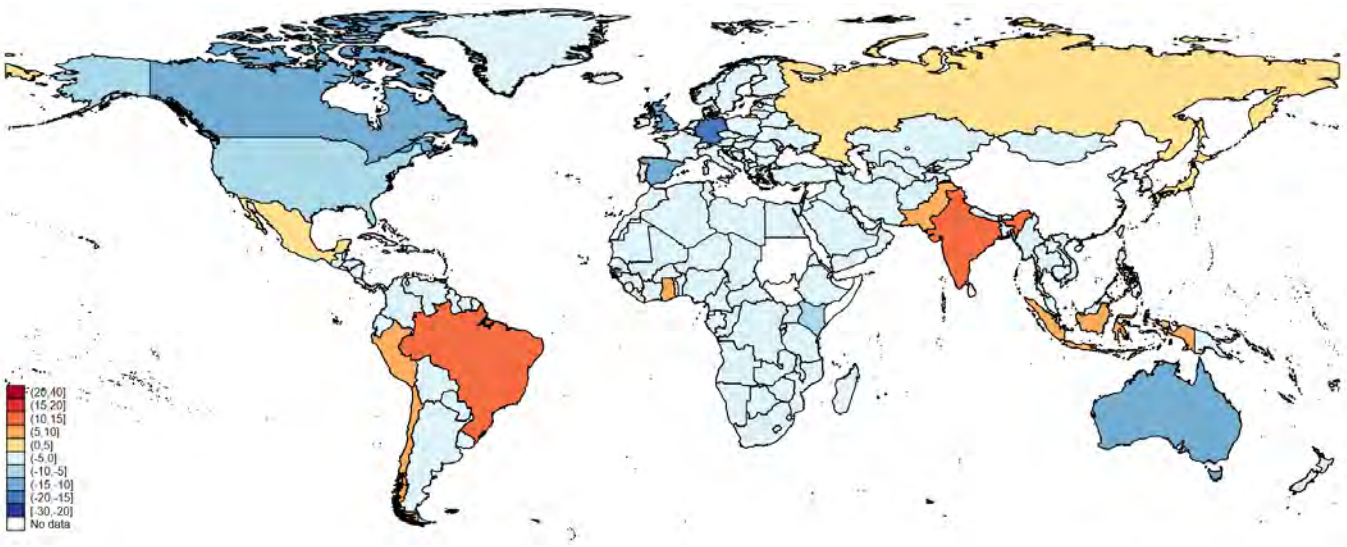
Note: Based on Scenario 2 counterfactual specifications.

Figure 5: The Donald Trump Effects on the US Bilateral Exports.



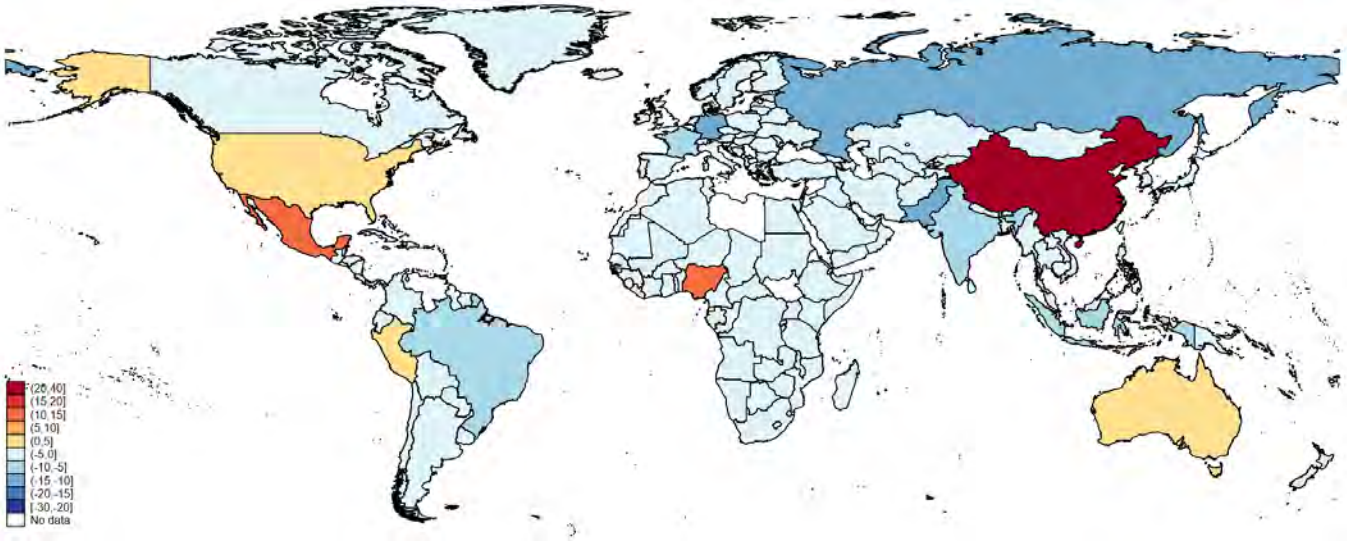
Note: Based on Scenario 2 counterfactual specifications.

Figure 6: The Senkaku-Islands Dispute Effects on the Chinese Bilateral Exports.



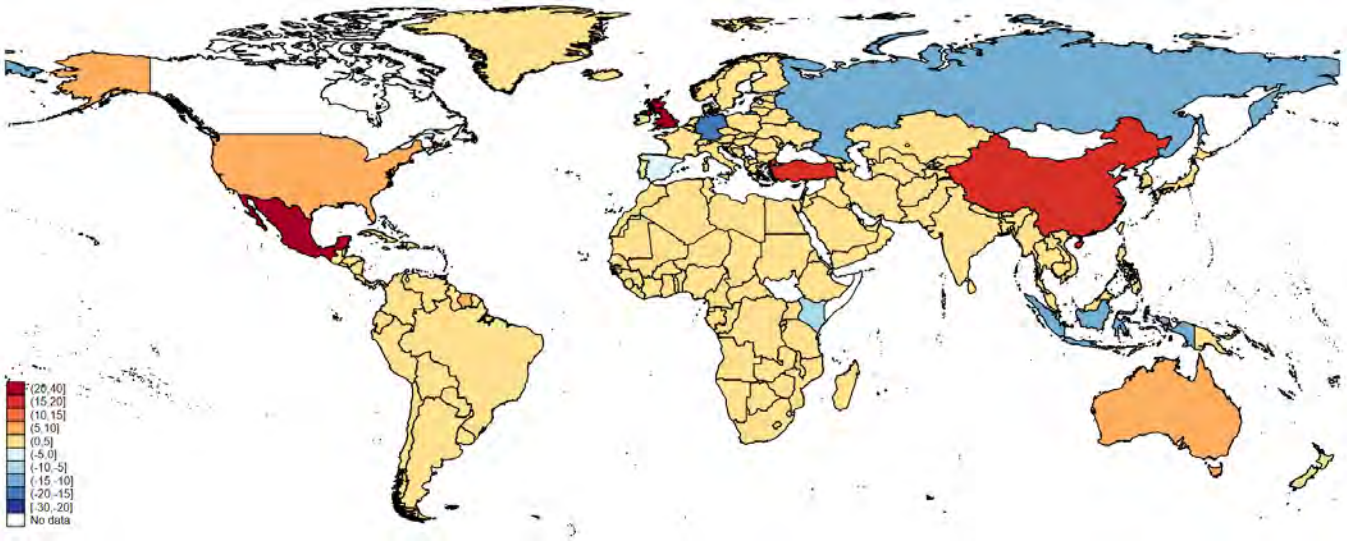
Note: Based on Scenario 2 counterfactual specifications.

Figure 7: The Brexit Effects on the British Bilateral Exports.



Note: Based on Scenario 3 counterfactual specifications.

Figure 8: The Good-Boy Effects on the Canadian Bilateral Exports.



Note: Based on Scenario 3 counterfactual specifications.