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Abstract

We investigate the role of trade imbalances in the rise of protectionism in the past 10 years. Bilateral as well as multilateral trade imbalances are robust predictors of protectionist attacks. This result is partly but not entirely driven by the US and the Trump years. We also find that countries that experience a bilateral real exchange rate appreciation launch more protectionist attacks. The role of trade imbalances in the rise of protectionism is confirmed when we use fiscal policies as instrumental variables for trade imbalances. Countries with more expansionary fiscal policies react to the ensuing trade imbalance by a more protectionist trade policy. The role of trade imbalances in the rise of protectionism is quantitatively important: in the G20, a one standard deviation increase in the bilateral and multilateral trade deficits of a country leads respectively to a 7% and 17% rise of protectionist attacks by this country.

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Trade Imbalances and the Rise of Protectionism*

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January 26, 2021

Abstract

We investigate the role of trade imbalances in the rise of protectionism in the past 10 years. Bilateral as well as multilateral trade imbalances are robust predictors of protectionist attacks. This result is partly but not entirely driven by the US and the Trump years. We also find that countries that experience a bilateral real exchange rate appreciation launch more protectionist attacks. The role of trade imbalances in the rise of protectionism is confirmed when we use fiscal policies as instrumental variables for trade imbalances. Countries with more expansionary fiscal policies react to the ensuing trade imbalance by a more protectionist trade policy. The role of trade imbalances in the rise of protectionism is quantitatively important: in the G20, a one standard deviation increase in the bilateral and multilateral trade deficits of a country leads respectively to a 7% and 17% rise of protectionist attacks by this country.

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1 Introduction.

Donal Trump tweets:

> May 2017: ”We have a MASSIVE trade deficit with Germany, plus they pay FAR LESS than they should on NATO and military. Very bad for U.S. This will change”
>
> April 2018 (About trade war with China): ”When you are already dollars 500 Billion DOWN, you can’t lose!”
>
> December 2018: ”I am a Tariff Man. When people or countries come in to raid the great wealth of our Nation, I want them to pay for the privilege of doing so. It will always be the best way to max out our economic power. We are right now taking in $ billions in Tariffs. MAKE AMERICA RICH AGAIN”

These tweets of President Trump point to trade imbalances as a potential origin to trade wars. This paper takes these tweets seriously and empirically tests the role of trade imbalances in the rise of protectionism. The following two graphs further illustrate and motivate our analysis. They use data from the Global Trade Alert (GTA) database to measure protectionist measures.[1] Figure 1 shows the evolution of the number of state acts announcing tariff increases.[2] It suggests that the rise in protectionist attacks by the US has preceded the Trump presidency. Figure 2 shows the simple correlation between the number of tariff increases announced by the USA in 2017 for each country and the bilateral trade deficit (as a share of US GDP and smoothed on the past 5 years) between the US and that country. It suggests that countries with a larger bilateral surplus (as a share of US GDP) were more targeted by the US, with China as a clear outlier.

We show that both bilateral and multilateral trade imbalances are robust predictors of protectionist attacks for a large set of countries. This is not only the case for the US although it is stronger for the US than for other countries. This was also the case before the Trump presidency and our results suggest that trade imbalances will continue to be a source of trade tensions after the Trump presidency. To our knowledge, this paper is the first to provide robust evidence on this relation. This result should be of interest for both trade economists and macroeconomists. The fact that multilateral trade imbalances cause protectionist attacks suggests that global imbalances is not only a concern because of macroeconomic reasons but also because of the trade tensions they can generate. As for bilateral trade imbalances, they are largely absent of macroeconomic analyses. We show that they can lead to protectionist attacks with their own macroeconomic impact and therefore we believe that they should be studied more in the macroeconomics literature. As for trade

[1] This database, described in detail below, provides information on bilateral protectionist interventions from 2009 onward (Evenett and Fritz (2018)).

[2] The precise description of the database and of the definition of the protectionist interventions is given in section 3.

Figure 1: Evolution of attacks

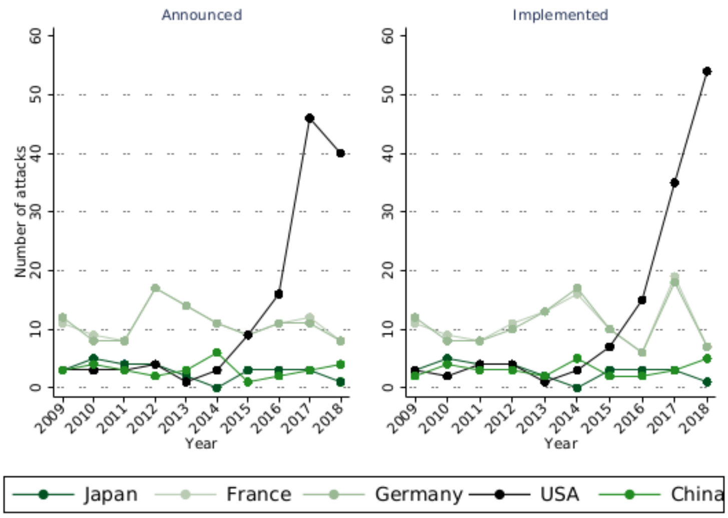
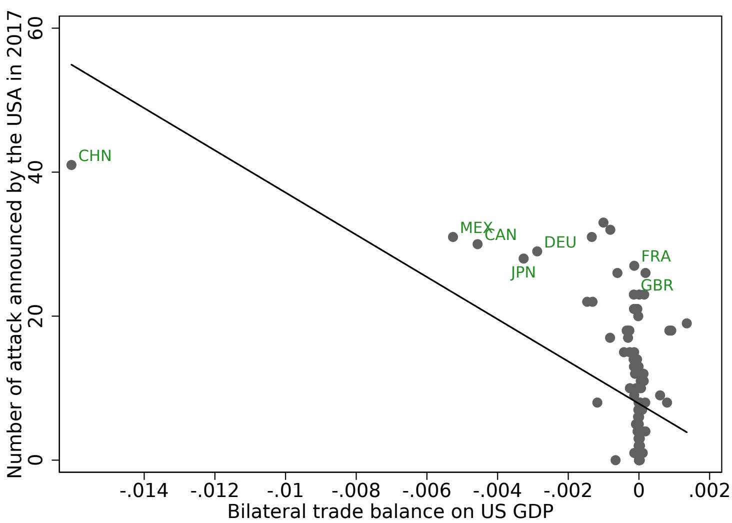


Figure 2: Protectionist attacks and bilateral trade balance



economists interested in the rise of protectionism, our results point to the macroeconomic origins of the issue. We also use budget imbalances as instruments for trade imbalances to strengthen our argument on the causal impact of trade imbalances on protectionism. The reduced form result that country-pairs with very large differences in fiscal policies are more prone to protectionist tensions is also interesting *per se*. We show that fiscal policies - measured by budget imbalances - and differences in fiscal policies, because they affect multilateral and bilateral trade imbalances, can be at the source of the protectionist attacks. The result that fiscal policies affect trade imbalances is of course standard in international macroeconomics but to our best of knowledge, our paper is the first to show empirically that fiscal policies can predict protectionist attacks. Hence, our results suggest that in the case of the US and Germany (and more generally the EU), the difference in fiscal policy between the two countries may at least partly be at the origin, through its impact on bilateral trade balances, of the protectionist attacks of the US. We also uncover what we call a collateral damage or insurance in the case of the EU: presumably because of the common trade policy, EU countries with larger (smaller) trade bilateral balances are less (more) attacked than what would be predicted if they were not in the EU. Hence, Germany with its large bilateral trade surplus with the US is less attacked than if it were outside the EU. Our finding that bilateral and multilateral trade imbalances is conducive to protectionist attacks is robust both in the cross-section dimension as well as in the panel dimension: our results are valid with and without country-pair fixed effects. We show that it is also robust to alternative measures of protectionism and present several robustness tests. In addition, past protectionist attacks and bilateral exchange rate depreciations also predict which countries will be targeted by protectionist measures. The quantitative impact of trade imbalances on the rise of protectionism is sizable: an increase of one standard deviation of the bilateral trade balance between two countries corresponds to a 7.3% increase in protectionist intervention between the two countries. A deterioration of one standard deviation of the multilateral trade balance of a country leads to a 16.6% increase in the protectionist attacks of this country.

To motivate our empirical exercise, we introduce a simple theoretical framework which assumes that policy makers are driven by the employment effects of their trade policies (more than by the price effects or tariff revenues) and show that a statistic that is close (but not equal) to the bilateral trade imbalance is one a determinant of the net employment gain or loss of a country, h to attack (through a tariff increase) another country i. Tariffs on bilateral imports from country i lead to an employment gain that is proportional to bilateral imports as a share of h GDP. However, employment losses due to potential retaliation are larger if exports to country i are a large share of GDP.

Our paper speaks to several strands of literature. In the trade literature, the focus has been put on the political economy dimension of protectionism. Trade policy decisions can be taken in response to internal balance of power among voters or interest groups with difference preferences over trade openness or protectionism (Grossman and Helpman, 1994). Recent empirical evidence using firm-level expenses in lobbying shows that decision whether to sign a free-trade agreement is influenced mostly by exporters (Blanga-Gubbay et al., 2020). The political economy of trade policy also includes the inter-national relations. Ossa (2014) shows how retaliations processes can lead to high level of tariffs. Davide et al. (2020) analyze the use of the temporary trade barriers and investigates whether these instruments are used for retaliatory purposes. They find that a one standard-deviation increase in the number of new investigations in a sector increases the number of investigation in the opposite direction by 2.5% in other sectors and that country are more likely to retaliate when their comparative advantage is targeted in the first place.

Most economists and international economic organizations view the focus on bilateral deficits and surpluses rather than aggregate trade imbalances as fundamentally flawed. The standard view in macroeconomics is that bilateral imbalances do not matter for a given country overall imbalance. Bilateral imbalances are largely linked to the respective industrial structures or value chain mechanisms and should not *per se* be a cause of grave concern. This is not the case for aggregate trade imbalances that may reflect macroeconomic imbalances signaling macroeconomic and financial risks. Obstfeld and Rogoff (2009) for example make the case that global imbalances and the Great Recession were ”intimately connected” and Caballero et al. (2008) also analyze how global imbalances emerge. More recently, international organizations such as the OECD, the IMF (IMF, 2020a) or the European Commission have viewed trade imbalances as risks for macroeconomic stability in connection also to the issue of excess global saving.

International trade and macro economists have analyzed the potential economic impact of protectionist attacks and trade policy is now at the core of macroeconomic academic and policy discussions. For example, Amiti et al. (2019) and Fajgelbaum et al. (2020) explore their impact on prices and welfare. Erceg et al. (2018) investigate the impact of such measures in a neo-keynesian model. In these discussions, protectionist policies are taken mostly as exogenous political shocks. Most economists also believe that tariffs and trade policies have very little effect on multilateral trade imbalances which are traced to macroeconomic movements in saving and investment. This is confirmed in a small open economy model by Barattieri et al. (2018) and empirically by Furceri et al. (2018). The analysis in this literature is centered on the consequences of trade policy on macroeconomics. Our paper investigates a related but different question: what are the macroeconomic determinants of these protectionist attacks and in particular the specific role of trade imbalances?

There is a literature on the macroeconomic determinants such as the business cycle or the real exchange rate of trade policy decisions. Bagwell and Staiger (1999) embed a game theory aspect within classical trade model to show the potential interest for politician not to pursue reciprocal tariff liberalization. One of the important takeaway of this model is that protectionism can be implemented as a counter-cyclical tool. More recently Rose (2012) shows this prediction does not seem to hold anymore and finds that tariff and non-tariff barriers do not rise systematically during cyclic downturns. The closest papers to ours is Bown and Crowley (2013) who estimate the impact of macroeconomic factors on import protection policies for the period 1988-2010 for five industrialized economies - the United States, European Union, Australia, Canada and South Korea. They find evidence of a strong countercyclical trade policy response in the pre-Great Recession period: increases in domestic unemployment rates, real appreciations in bilateral exchange rates, and declines in the GDP growth rates of bilateral trading partners led to substantial increases in new temporary trade barriers. Our paper confirms some of these results in particular on the role of the exchange rate. Our main contribution is however to stress the empirical role of trade imbalances.

Section 2 presents our stylized model to generate simple testable predictions. Section 3 then describes the data we use and 4 the empirical strategy. In section 5 the baseline results are introduced followed in section 6 by the instrumental variable results. Robustness tests are described in section 7 and we provide a quantification of our main result for the G20 countries in section 8.

2 Conceptual framework: employment and trade policy

We present a simple model to clarify the role of trade imbalances as determinants of protectionist attacks. We assume that policy makers only care about employment of existing firms when deciding on protectionist policies and do not internalize (at least fully) the impact on consumer prices. Our analysis points to a trade off between employment gains for import competing firms and employment losses for export firms at risk of retaliation. This is an *ad-hoc* perspective but there is evidence by Di Tella and Rodrik (2019) that demand for trade protection is strong to respond to labor shocks. More recently, Fajgelbaum et al. (2020) focus on the political economy rational behind the rise of protectionism in the US. They show that import tariffs provided the most protection to sectors that tend to be geographically concentrated in Rust Belt states.

Firms in the manufacturing sector produce for the domestic and the foreign markets. The manufacturing sector will be taken as the whole tradable sector as we believe that determinants of protectionist attacks on the natural resources sector are different. The trade-off at work to decide whether and which country to target with a protectionist attack is the following: on the one hand, such a measure decreases foreign competition and increases employment N_h^D in country h in the manufacturing sector that produces for the domestic market but on the other hand it potentially hurts employment N_h^X for firms that export because one can expect possible retaliation from the targeted country. This trade-off is going to determine the countries which will be more likely targets of attacks. On the import side, Fajgelbaum et al. (2020) find large declines in imports when the US tariffs were implemented. Imports of varieties targeted by US tariffs fell on average 31.7% and imports of targeted products fell 2.5%. On the export side, they find that retaliatory tariffs to US protectionist attacks resulted in a 9.9% decline in US exports within products. The trade model we use to clarify this trade-off is standard monopolistic competition with Z countries where the number and location of manufacturing firms is fixed. Labor is the only production factor with productivity φ_h in country h. The elasticity of substitution between varieties is $\sigma > 1$. In this kind of model, manufacturing employment of country h producing for the domestic market is:

$$N_h^D = \gamma n_h p_h^{-\sigma} E_h P_h^{\sigma-1} \varphi_h^{-1} \tag{1}$$

where γ is the share of manufacturing in consumption, n_h is the number of manufacturing firms (which we take as constant) producing in country h, p_h is the price of the manufacturing good, E_h is total expenditure in country h and P_h is its manufacturing price index which itself is:

$$P_h = \left(\sum_{k=1}^{Z} n_k \left(p_k \tau_{hk} \right)^{1-\sigma} \right)^{1/(1-\sigma)} \tag{2}$$

where τ_{hk} is the bilateral iceberg trade cost between countries h and k which we take as the policy choice. An increase in this trade cost is what we call a protectionist attack. Because it raises the price index, it reduces foreign competition and increases production and employment of firms producing in h for the domestic market. The impact of an increase bilateral trade costs τ_{hi} between h and i on manufacturing employment producing for the domestic market in h is given by:

$$\frac{\partial N_h^D}{\partial \tau_{hi}} \frac{\tau_{hi}}{N_h^D} = (\sigma - 1) \frac{Imp_{h,i}}{E_h} \tag{3}$$

where

$$Imp_{h,i} = n_i \left(p_i \tau_{hi}\right)^{1-\sigma} E_h P_h^{\sigma-1} \tag{4}$$

is the value of total imports of h from i. Hence the gain in employment from attacking country i increases with the share of imports from this country in total expenditures. We assume that country h anticipates possible retaliation (a symmetric rise in τ_{ih}) from the protectionist attack towards country i so that it takes into account the negative impact on employment in the export sector. We assume the policy maker in h puts a probability $q_{h,i}$ that i will retaliate. Employment in firms that export from h to i is given by

$$N_{h,i}^X = n_h \left(p_h \tau_{ih}\right)^{1-\sigma} \varphi_h^{-1} E_i P_i^{\sigma-1} \tag{5}$$

where P_i the price index in country i is: $P_i = \left(\sum_{k=1}^{Z} n_k \left(p_k \tau_{ik}\right)^{1-\sigma}\right)^{1/(1-\sigma)}$. The expected impact of the protectionist retaliation of country i on employment in the manufacturing sector of h exporting in i is given by:

$$\frac{\partial N_{h,i}^X}{\partial \tau_{hi}} \frac{\tau_{hi}}{N_{h,i}^X} = -q_{h,i} (\sigma - 1) \left(1 - \frac{Exp_{h,i}}{E_i}\right) \tag{6}$$

There are two effects. The main negative direct impact on exports and employment comes from higher trade costs. However, this effect is mitigated because the price index in i increases due to higher trade costs from h. This mitigating effect is more important if a large share of the price index or of the expenditure in i is due to exports from h. Initiating a trade war with country i and anticipating possible symmetric retaliation therefore produces the following expected effect on total employment N_h in h:

$$\frac{\partial N_h}{\partial \tau_{hi}} \frac{\tau_{hi}}{N_h} = (\sigma - 1) \left[\frac{Imp_{h,i}}{E_h} \frac{N_h^D}{N_h} - q_{h,i} \left(1 - \frac{Exp_{h,i}}{E_i}\right) \frac{N_{h,i}^X}{N_h}\right] \tag{7}$$

The first positive term in the parenthesis measures the protection gained from increasing the price of goods imported from country i that compete with goods produced by h firms for the domestic market. Importantly, expenditures E_h is not proportional to GDP if the country runs a trade imbalance. Indeed, $E_h \equiv Gdp_h - TB_h$ where $TB_h \equiv Exp_h - Imp_h$ is the trade balance of country h. The second term measures the employment losses due to the fall in exports to the targeted country. Because we assume for simplicity that labor productivity is equal in all sectors we can transform equation 7 that gives a measure of the net manufacturing employment gain of attacking country i into:

$$\frac{\partial N_h}{\partial \tau_{hi}} \frac{\tau_{hi}}{N_h} = (\sigma - 1) \left[\frac{Imp_{h,i}}{Gdp_h} \left(\frac{Gdp_h - Exp_h}{Gdp_h - TB_h} \right) - q_{h,i} \frac{Exp_{h,i}}{Gdp_h} + q_{h,i} \frac{Exp_{h,i}}{Gdp_i - TB_i} \frac{Exp_{h,i}}{Gdp_h} \right] \tag{8}$$

The first two elements in the bracket highlight the opposite effects of a trade war: the positive impact of lower competition from lower imports from i and the negative impact of lower expected exports to i. The sum of these two elements is close but not equal to the bilateral trade balance between h and i as a share of the GDP of h. Note indeed that both imports and exports are weighted by a coefficient less than unity. On the former, lower imports reduce competition for the share of domestic expenditures ($Gdp_h - TB_h$) that is served by firms producing for the domestic market ($Gdp_h - Exp_h$).

An interesting implication from equation (8) is that countries with large overall exports (Exp_h) are less likely to attack countries for a given bilateral balance. The reason is that large exports imply that a lower share of domestic labor depends on the domestic market so that the gains of a protectionist attack are lower. An second implication, perhaps more surprising, is that a country with higher overall imports (Imp_h) will also be deterred from launching a single protectionist attack. The reason is that a large part of the employment gains of such an attack would leak to other countries from which it imports from. It would import less from i but more from others.

Exports from h to i are weighted by the probability of expected retaliation. These first two elements in the bracket are close enough to the bilateral trade balance that when we go to the data we will, in some regressions, approximate it by the bilateral trade balance. In other regressions, we will separate bilateral imports and exports. The last element reveals that when exports of h to i are a large share of expenditures (and therefore of its price index) in i, the loss of exports to that country is mitigated. Note therefore that, for a given bilateral trade imbalance, a country with a trade surplus ($TB_i > 0$) will more likely be a target of protectionist attacks.

If policy makers choose protectionist attacks based on employment gains, then the incentive for attack should be related to the gain expressed in equation (8).

The set of testable implications generated by our simple framework is therefore that the incentive for h to attack i increases if:

1. bilateral imports of h from i in fraction of h are large
2. bilateral exports of h to i are small
3. aggregate imports and total exports of country h are small
4. the probability of retaliation of i $q_{h,i}$ is small
5. the trade balance of i TB_i is in surplus

The role of GDP in these predictions is more complex. First, the size of GDP matters because it is the relative size of, for example bilateral imports to domestic production, that will indicate the potential production gain of reducing these imports. However, as explained above this effect is weighted by the ratio of net of exports GDP to net of trade balance GDP. Furthermore, the size of countries may also affect the probability of retaliation if smaller countries (for political reasons) are less able or inclined to retaliate than larger ones. Finally, GDP may also matter not in the cross-sectional dimension but also in the time dimension which will be important when we test the mechanism with country-pair fixed effects. The literature of the business cycle dimension of protectionism (Bagwell and Staiger (1999), Rose (2012) and Bown and Crowley (2013)) points to the importance of GDP movements which are not taken into account in our simple model. Hence, in most of the regressions we will introduce trade balances and GDP separately.

Remember that the positive impact of a protectionist attack on employment entirely goes through an increase in the price index captured in the first term of equation (8). Hence, if country h policy maker also cares at least partly about the cost for consumers of a protectionist policy (that increases the domestic price index) this will then reduce further the coefficient on this first term, the bilateral imports. Note also that intermediate goods and global value chains are absent from our framework. The trade-off would be affected by their presence. Tariffs on imported intermediate goods may decrease the competitiveness of exporters. However, this effect would not lower the incentive to attack a specific country if bilateral exports to that country are high (effect 2 above) but if aggregate exports of a country are high. This therefore would reinforce effect 3 above.

3 Description of data

We use the Global Trade Alert (GTA) database to measure protectionist measures. This database provides information on state interventions that affect global trade from 2009 onward (Evenett and Fritz (2018)). We focus on harmful protectionist interventions and leave liberalizing interventions aside. The GTA database classifies interventions depending on their nature (tariff, quotas, export subsidies, FDI related interventions...). Based on this classification we define four categories of protectionist attacks. Type 1 attacks are restricted to all tariff increases whatever the motive, including anti-dumping or anti-subsidy. Type 2 adds other non tariff measures such as anti-dumping measures, import quotas, local content and trade-balancing measures (see table 13 in appendix for a precise definition). Types 3 and 4 are even broader and include measures such as migration that we do not interpret as protectionist.[3] In the core of the paper, we choose the most restrictive definition of protectionist attacks (type 1 or tariff increases) and use the broader definitions only for robustness checks. Following the GTA methodology, a protectionist intervention is defined as an announcement by a government body from country h of a change of policy instrument

[3]For a analysis of the different measures of protectionism since 2009, see Evenett and Fritz (2018)

resulting in a restriction of trade with country i. For the remaining of the paper, we define the variable att_{hit} as a protectionist intervention announced by country h toward country i at time t. The year recorded to count a protectionist attack is the year of announcement not of implementation. However, if an announced intervention is not observed to be implemented in our data we do not count it. Finally, if a measure announced and implemented is then reversed later on, we count a protectionist attack the year of announcement but do not record any change when it is reversed[4].

This way of measuring protectionism does not take into account the amount of trade at stake. However, an attack between two countries is considered as an attack by GTA only if the exporting country exports more than USD 1 million of at least one HS6 product affected by the intervention. Our measure does not take into account the number of products (tariff lines) affected by the intervention even though an attack can potentially affect several products. Finally, several countries can be affected by one attack. For instance, on March 23 2018, President Trump imposed tariffs on steel and aluminum under the "national security" provision of US trade law (section 232).[5] 74 countries exported at least 1 million USD of steel products and were therefore counted by GTA as affected by the measure. In this example, not all countries were affected for the same products: 9 products exported by France were affected by the US decision while Hungary was affected by the measure for only one HS6 product. Malta, however, was de jure affected the US decision as a member of the European Union but is not considered as affected by the measure on steel since it exports less than USD 1 million to the US. In this example, Malta is not considered as attacked by the USA but France and Hungary are considered as equally affected and face one attack from the US on that date.

Table 1: Descriptive statistics

	Mean	Median	sd	Min	Max	Obs
Intervention (dyad X year)						
Full sample	0.12	0.00	0.69	0.00	50.00	481,083
G20	2.56	1.00	3.78	0.00	49.00	3,420
Intervention (dyad X year) | attack						
Full sample	1.75	1.00	2.07	1.00	50.00	32,068
G20	3.41	2.00	4.01	1.00	49.00	2,566
Nb of country by intervention						
Full sample	50.66	6.00	60.83	1.00	167.00	899,739
G20	10.67	14.00	6.54	1.00	18.00	95,716

Note : Data from Global Trade Alert. Number of attacks is annual for a dyad.

In order to take into account the intensive margin of protectionist intervention, two

[4]The number of attacks can therefore only be positive or null.

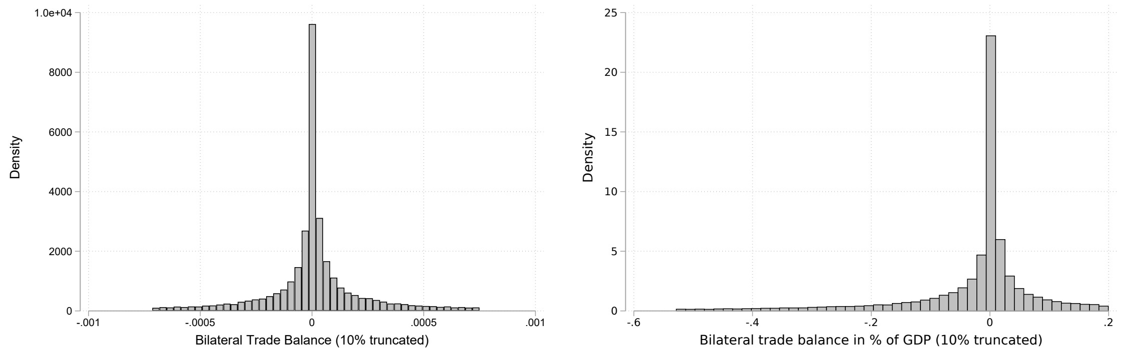
[5]https://www.whitehouse.gov/presidential-actions/presidential-proclamation-adjusting-imports-aluminum-united-states/

alternative measures of protectionism are constructed in this paper. Protectionist attacks are also recorded as the number of HS6 affected by changes in their trade regime ("product level") or by the amount of bilateral trade impacted by policy changes ("amount"). However, the reason we choose to focus on the number of interventions per country pair and year is that our focus in on the macroeconomic determinants of these (political) interventions. However, we report these alternative measures of protectionist attacks for robustness checks.

Table 1 presents descriptive statistics both for the full sample of countries (234 countries and territories) and for the G20 countries. The first line is for interventions (as defined above as tariff measures) per dyad and year. For a given pair of countries and year the average number of attacks is low (0.12) in the full sample but is much larger when we restrict the sample to G20 countries (2.56). The same is true for the standard deviation. The second line gives the same statistics but conditional on the observation that one attack has taken place. We also report the number of countries affected by each intervention.

Bilateral trade balances are based on the BACI database designed by the CEPII and the UN COMTRADE department using bilateral flows of goods at the HS6 level for years 2008-2018 (Gaulier and Zignago, 2010). The bilateral trade balances are therefore limited to goods and exclude services. As highlighted by figure 3, most bilateral trade balances are close to zero. The mean of the absolute value of bilateral trade balance is USD 1.2 billion. Large bilateral trade imbalances occur mostly between large economies. The average standard deviation of trade balance is only USD 0.1 billion for the whole sample but reaches USD 0.8 billion for OECD countries and close to USD 3 billions among G20 countries. Expressed in percentage of the attacking country h, the distribution of bilateral trade balance is negatively skewed. The standard deviation of bilateral trade in percentage of GDP is only 0.08% of GDP for the whole sample and 0.8% of GDP when restricting to G20 economies. In the remaining of the paper, we test the impact of bilateral trade balances both in level and in percentage of GDP. However, because countries are more similar in size and because there is more "action" across G20 countries both for protectionist attacks and bilateral trade imbalances we concentrate on this sub-sample when attempting to quantify the effect of trade imbalances on the rise of protectionism.

Figure 3: Bilateral trade balance distribution (working dataset). Source: BACI (CEPII)



(a) Level

(b) % of attacking country's GDP

Some gravity-like controls (distance, contiguity, common language) are added in our regressions to control for dyadic-specific characteristics but we do not view our empirical exercise as embedded in a standard gravity structure because our conceptual framework does not predict that protectionist attacks should have a gravity structure. However, Cunat and Zymek (2019) show that for a given level of multilateral imbalances, bilateral imbalances can be driven by a gravity type structure even though Davis and Weinstein (2002) argue that bilateral trade imbalances are larger than predicted by a gravity-type structure. It therefore makes sense to control for these gravity factors as they may also affect protectionist tensions. GDPs are taken from the World Development Indicators of the World Bank. Exchange rates movements are added to the empirical analysis as controls. One reason is that tariffs and exchange rate wars may be related as analyzed by Auray et al. (2019). The real exchange rate (RER_{ih}) is calculated based on the Consumer Price Index and the nominal exchange rates available on the World Bank database. An increase means a depreciation of h currency with respect to i.

Finally, we exclude from our analysis countries for which more than 80% of their total exports are natural resources based on UNCTAD database. The reason is that the trade-off between imports and exports that we analyze would not be valid for natural resources.

4 Empirical strategy

Our outcome variable of interest is count data, the number of trade attacks from one country to another in a given year. Hence, following Bown and Crowley (2013) we use the Poisson Pseudo Maximum Likelihood regression model (Silva and Tenreyro, 2006). The count-data variable is always positive or null. Its distribution is left-skewed with a mass point at 0, as figure 4 shows. This argues in favor of a count-data model such as the Poisson or negative binomial estimators. We favor the Poisson over the negative binomial as the former is not subject to incidental parameter problem (Cameron and Trivedi, 2013).

The Poisson estimator is also not subject to bias when re-scaling or changing the units of measurement fro the dependent variable (Bosquet and Boulhol, 2014). In all specifications we use year fixed effects to account for the potential cyclicality or year-specific particularities. PPML estimation allows for more fixed effects, and in some specifications we will add dyadic (country-pair), destination-year and origin-year fixed effects.

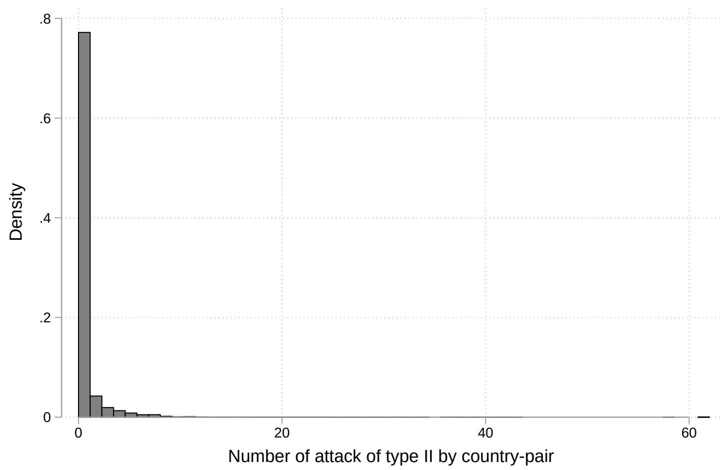


Figure 4: Distribution of the number of attacks

Our theoretical model provides some guidance for our estimation but no structural equation to test. Hence, we test several forms. Our main equation has the following:

$$\#att_{hit} = \alpha + \beta TB_{hit} + \gamma X_{hit} + \mu_t + (\eta_h + \eta_i + \delta_{hi} + \lambda_{ht} + \lambda_{it}) \tag{9}$$

where TB_{hit} is the bilateral trade balance, the difference between exports of country h (the attacking country) to country i (the attacked country) minus import of h from i. In some regressions we separately introduce bilateral exports and imports given that equation 8 also suggests that imports and exports enter with a different coefficient. We also add GDPs of both countries. There are three reasons. First, equation 8 predicts that they are direct determinants of the incentive to attack. Second, the size of countries may matter for the probability of retaliation as large countries may be more immune to retaliation than smaller countries. Finally, cyclical factors (although not in our model) can also affect the incentive to attack. For example, Bown and Crowley (2013) argue that a model with dumping predicts that an importer will impose trade restrictions against those trading partners that are experiencing negative demand shocks in their own markets. Hence, in all regressions we will include GDP of both countries as separate controls. In all regressions, we include year fixed effects. In some, we will also introduce country-pair (dyadic) fixed effects and in the most demanding specifications, we will have country-pair, destination-year and origin-year fixed effects. We also control for three standard gravity controls (common language, contiguity and distance). In most regressions, we also add lagged and simultaneous attacks of country i against h so as to control for the retaliation motive. All standard errors are clustered at the dyadic level. In our quantification exercise, we will use the bilateral trade as a share of GDP of the attacking country because the ratio is easier to interpret than dollars.

5 Baseline results

Table 2 displays the baseline results. In the first column, the main variable of interest is the bilateral trade balance between h and i (positive when country h has a bilateral surplus with i). The sign of the coefficient indicates that a bilateral surplus of h vis-à-vis i decreases the number of attacks of h against i. In the second regression, more controls are added. In all regressions thereafter, gravity controls (common language, contiguity and distance) are added but their coefficients are not reported. The variable $attacks_{i,h}$ indicates a lagged or simultaneous attack of i against h to control for the retaliation motivation. In all regressions, we indeed find that the retaliation motive is present but the less than unitary coefficient shows that countries typically under-react to an attack. We also control for both GDPs. As explained above, this comes directly from our framework but also from country-size effects that may affect retaliation incentives as well as cyclical factors. Real bilateral exchange rates are added and we confirm the result of Bown and Crowley (2013) that a bilateral depreciation of the exchange rate of i with respect to h predicts an attack by h on i. The fact that the bilateral trade balance remains significant suggests that the mechanism through which bilateral trade imbalances generate protectionism is not entirely driven by real exchange rate movements.[6]

In the third column, we analyze how being part of the EU - with its common trade policy - affects the likelihood and the determinants of being attacked. A tariff imposed on one EU country is, de jure, imposed on all other countries even though, as explained above, we take into account that some countries may not be affected, de facto, if their bilateral exports are too small. However, bilateral trade imbalances with the non EU countries are very different from one country to another. Hence, being an EU member can act both as a collateral damage or as a collateral insurance mechanism. If, for example, an EU country runs a bilateral deficit with the US but other EU countries run a bilateral surplus, then the first country may suffer from collateral damage at the same time as the second country benefits from collateral insurance. We add a dummy for countries that are in the EU and find that EU countries are less attacked than others: being in the EU protects all countries. However, the collateral damage/insurance effect is present as the interaction term between EU membership and the bilateral trade imbalance between h and i is positive: countries in the EU with a bilateral trade surplus are less attacked than if they were not in the EU;

[6]Note that the link between exchange rate and tariffs can go both ways Indeed, theoretically (see the recent analysis of Costinot and Werning (2019) and Itskhoki (2019)) the imposition of tariffs can lead to a bilateral real exchange rate appreciation. Empirically, Furceri et al. (2019) find that this prediction holds in the short-run.

countries with a bilateral deficit are more attacked.[7] This suggests that EU common trade policy offers collateral protection for bilateral surplus countries and collateral damage for bilateral deficit countries. The large trade surpluses of Germany or Netherlands *vis-à-vis* the rest of the world are not only a macroeconomic issue but also a trade issue for EU countries.

In regression (4), we replace the bilateral trade deficit by bilateral exports and imports. This is indeed closer to equation (8). Both are significant and with the predicted sign. Note also that the coefficients on exports and imports are similar (with an opposite sign) so that the approximation of taking the bilateral trade deficit as determinant of protectionist attacks is validated.

Table 2: Baseline

	(1) Nb att$_{h,i}$	(2) Nb att$_{h,i}$	(3) Nb att$_{h,i}$	(4) Nb att$_{h,i}$
Bilat. trade balance	-0.00939*** (-7.34)	-0.00440*** (-3.33)	-0.00457*** (-3.33)	
attacks$_{i,h}$		0.0599*** (10.76)	0.0634*** (10.82)	0.0620*** (10.85)
GDP$_h$		0.0000843*** (21.88)	0.0000868*** (21.37)	0.0000866*** (23.40)
GDP$_i$		0.0000739*** (10.98)	0.0000664*** (9.45)	0.0000759*** (11.40)
log RER$_{i,h}$		-0.0427*** (-8.08)	-0.0298*** (-5.49)	-0.0429*** (-8.13)
1=Origin is a EU member			-0.307*** (-5.30)	
i in EU $\times$ Bilat TB$_{h,i}$ / GDP$_h$			13.30*** (3.15)	
Export of h to i				-0.00575*** (-4.84)
Import of h from i				0.00423*** (3.48)
Year-FE	Yes	Yes	Yes	Yes
Dyad-FE	No	No	No	No
Country X Year-FE	No	No	No	No
Pseudo R2	0.01	0.13	0.13	0.13
Cluster	Dyad	Dyad	Dyad	Dyad
Observations	72,116	57,187	57,169	57,187

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note : The dependent variable is the number of trade attacks of attacking country h toward affected country i. GDPs and trade balances are expressed in billions USD. Bilat TB_{hi} is the bilateral trade balance of country h with respect to i. All columns are Poisson Pseudo Maximum Likelihood estimation. Regressions control for contiguity, distance and common language.

Table 3 introduces country-pair fixed effects in addition to year fixed effects. In these

[7] Remember that the bilateral trade is computed as the difference between exports of h to i and the imports of h from i.

regressions, the identification strategy relies on changes over time in macroeconomic variables within each dyad of countries whereas, the identification in the previous tables was mostly cross-sectional. In regression (1), we see that an increase in the bilateral trade deficit of country h with respect to i predicts an increase in the number of bilateral attacks of h towards i in the year. Note that the interpretation of the coefficient on GDP is different in tables (2) and (3). In table (2), which identification is mostly cross-sectional, the interpretation is that larger countries launch more attacks, whereas in table (3) the interpretation is that attacks are launched by countries that are doing relatively well. Hence, tariff increases, similarly to Lake and Linask (2016), are pro-cyclical in the past ten years whereas the evidence before the Great Financial Recession was that protectionism was counter-cyclical (see Bown and Crowley (2013) for example).

In regression (2) and (4), in addition to country pair fixed effects, country-year fixed effects are added, similar to classical gravity regression models. This demanding specification controls for all time invariant dyadic factors as before but also for time varying factors for the attacking and attacked countries. These factors can be both of economic and political nature. With this specification (column 2), bilateral trade imbalances changes over time within a country-pair remain significant predictors of protectionist attacks[8]. In column (3), we introduce bilateral exports and imports separately rather than the bilateral trade balance. Both bilateral exports and imports enter with the right sign (negative and positive respectively). Hence, an increase in bilateral imports lead to more protectionist attacks whereas larger bilateral exports leas to less. With country pair fixed effects and country-year fixed effects (regression 4), the same message emerges, although exports lose significance.

[8]As pointed out by Weidner and Zylkin (2020), three-way fixed-effect PPML gravity models can suffer from asymptotic incidental parameter problem. Table 14 in appendix shows the results obtained with the destination-year, origin-year and dyadic fixed effects after using the analytic bias correction from Weidner and Zylkin (2020). The effect remains of a very similar magnitude and significance.

Table 3: Country fixed effects

	(1)	(2)	(3)	(4)
	Nb $att_{h,i}$	Nb $att_{h,i}$	Nb $att_{h,i}$	Nb $att_{h,i}$
Bilat. trade balance	-0.0150***	-0.00821***		
	(-4.09)	(-2.69)		
GDP_h	0.000266***		0.000271***	
	(10.90)		(10.74)	
GDP_i	-0.0000103		-0.00000627	
	(-1.13)		(-0.66)	
$attacks_{i,h}$	0.00763**	0.00212	0.00786***	0.000976
	(2.57)	(0.56)	(2.65)	(0.27)
log $RER_{i,h}$	-0.0548		-0.0544	
	(-1.23)		(-1.22)	
Export of h to i			-0.0169***	-0.00334
			(-4.53)	(-1.06)
Import of h from i			0.0135***	0.0127***
			(3.67)	(4.49)
Year-FE	Yes	No	Yes	No
Dyad-FE	Yes	Yes	Yes	Yes
Country X Year-FE	No	Yes	No	Yes
Pseudo R2	0.40	0.48	0.40	0.48
Cluster	Dyad	Dyad	Dyad	Dyad
Observations	42,138	45,323	42,138	45,323

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note : The dependent variable is the number of trade attacks of attacking country h toward affected country i. GDPs and trade balances are expressed in billions USD. Bilat TB_{hi} is the bilateral trade balance of country h with respect to i. All columns are Poisson Pseudo Maximum Likelihood estimation. Regressions control for contiguity, distance and common language.

In Table 4, we test how the impact of bilateral imbalances differs across periods and samples. Regression (1) of table (3) with year and dyadic fixed effects serves as the point of comparison. Because the US is often considered at the origin of the recent return of protectionism we restrict, in regressions 1 and 2, the sample to this country either as attacking or attacked country. As suggested by figure 1 in the introduction, US protectionist attacks are indeed strongly driven by bilateral trade imbalances. However, the comparison of columns 1 (restricted to years 2017 and 2018) and 2 (all years) shows that even though protectionist attacks have risen with the Trump presidency (see Figure 1 in introduction) the role of bilateral trade deficits on protectionist attacks is not very different before and after Trump. Our general results are partly but not fully driven by the US This is not very surprising in particular given that the US has the largest absolute trade deficit in the world. When we exclude the US, in column (3), the coefficient is reduced but remains negative and significant although only at the 10% level. Excluding China or the EU does not change the results drastically. This is important because the China tense relation with its trade partners has been most salient in the news but is not at the source of our general result. The result that the factors predicting Trump attacks are not very different from pre-Trump attacks must be taken with caution given the small number of observations but suggests that trade imbalances are a structural determinant of US protectionist policies. Finally the last column shows a similar pattern in the sample to G-20 countries a group which we return below when we attempt to provide a quantitative interpretation of our results.

Table 4: Different Samples

	(1)	(2)	(3)	(4)	(5)	(6)
	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$
Bilat. trade balance	-0.0140**	-0.0116**	-0.00618*	-0.0117**	-0.0157***	-0.0118***
	(-2.12)	(-2.55)	(-1.69)	(-2.10)	(-4.15)	(-2.74)
attacks$_{i,h}$	0.0118	-0.0393***	0.00787**	0.00641**	0.00725**	0.00663
	(1.00)	(-5.65)	(1.96)	(2.05)	(2.39)	(1.34)
log RER$_{i,h}$	-0.148	-0.580**	-0.108**	-0.0308	-0.0104	-0.235
	(-0.83)	(-1.98)	(-2.28)	(-0.66)	(-0.22)	(-1.27)
GDP$_h$			-0.0000163	0.000435***	0.000253***	0.000281***
			(-1.07)	(22.41)	(10.13)	(5.01)
GDP$_i$			-0.00000810	-0.00000470	-0.0000134	0.0000145
			(-0.72)	(-0.28)	(-1.40)	(0.57)
Year-FE	Yes	Yes	Yes	Yes	Yes	Yes
Dyad-FE	Yes	Yes	Yes	Yes	Yes	Yes
Country X Year-FE	No	No	No	No	No	No
Pseudo R2	0.53	0.50	0.37	0.40	0.40	0.37
Sample	USA 2017-18	USA	W/o USA	W/o CHN	W/o EU	G20 only
Cluster	dyad	dyad	dyad	dyad	dyad	dyad
Observations	1,593	2,334	40,222	40,354	40,338	2,280

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note : The dependent variable is the number of trade attacks of attacking country h toward affected country i. GDPs and trade balances are expressed in billions USD. Bilat TB_{hi} is the bilateral trade balance of country h with respect to i. All columns are Poisson Pseudo Maximum Likelihood estimation. Regressions control for contiguity, distance and common language.

In table 5 we investigate the respective role of bilateral trade balances and multilateral trade balance variables. The prediction of our model, is that for a given level of bilateral trade imbalance, larger multilateral exports and imports should both reduce the incentives to launch a protectionist attack on a given country. The intuition is that large multilateral exports imply that less domestic jobs are dependent on foreign competition. Large multilateral imports imply that a given reduction of bilateral imports (following a protectionist attack) will benefit other foreign exporters rather than domestic workers. In regressions (1) and (2), we first report results without the multilateral trade balance (with and with dyadic country pair fixed effects) so as to facilitate the comparison. In columns (3) and (4), we add total imports and total exports of the attacker country as well as the trade balance of the attacked country. We find that countries with large exports attack less as predicted by the model. However, contrary to the theoretical prediction, countries with large overall imports attack more for given bilateral imbalances. Note also that countries with large current surpluses are more attacked. Hence, global imbalances are conducive to the rise of protectionism.

Table 5: Multilateral trade balances

	(1)	(2)	(3)	(4)
	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$
Export of h to i	-0.00575***	-0.0169***	-0.00335***	-0.00324
	(-4.84)	(-4.53)	(-2.90)	(-0.86)
Import of h from i	0.00423***	0.0135***	0.000864	0.00749**
	(3.48)	(3.67)	(0.84)	(2.49)
GDP$_h$	0.0000866***	0.000271***	-0.0000312	0.000337***
	(23.40)	(10.74)	(-1.63)	(14.09)
GDP$_i$	0.0000759***	-0.00000627	0.0000869***	-0.0000224**
	(11.40)	(-0.66)	(12.61)	(-2.03)
attacks$_{i,h}$	0.0620***	0.00786***	0.0696***	0.00918***
	(10.85)	(2.65)	(10.84)	(3.10)
log RER$_{i,h}$	-0.0429***	-0.0544	-0.0333***	-0.0663
	(-8.13)	(-1.22)	(-6.63)	(-1.44)
Total export (h)			-0.000419***	-0.00342***
			(-6.36)	(-17.53)
Total import (h)			0.00135***	0.00147***
			(7.37)	(9.24)
Total trade balance (i)			0.000811***	0.000278*
			(8.85)	(1.90)
Year-FE	Yes	Yes	Yes	Yes
Dyad-FE	Yes	Yes	Yes	Yes
Country X Year-FE	No	No	No	No
Pseudo R2	0.13	0.40	0.14	0.40
Cluster	Dyad	Dyad	dyad	dyad
Observations	57,187	42,138	57,187	42,138

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note : The dependent variable is the number of trade attacks of attacking country h toward affected country i. GDPs and trade balances are expressed in billions USD. Bilat TB_{hi} is the bilateral trade balance of country h with respect to i. All columns are Poisson Pseudo Maximum Likelihood estimation. Regressions control for contiguity, distance and common language.

6 Instrumental variables and the role of fiscal policy

Our analysis so far points to the role of trade imbalances as determinants of protectionist actions. There are two logical questions that come next. First, tariffs could themselves affect trade imbalances and therefore our results may be biased by reverse causality. Second, we are ultimately interested by the macroeconomic determinants of protectionism but trade imbalances, especially bilateral ones, may be determined by other factors (such as comparative advantage of countries) than macroeconomic factors. Hence, in this section we attempt to answer these two questions and do so by analyzing the role of fiscal policies as a macroeconomic determinant of protectionism. First, we use budget balances and a transformation of bilateral differences in budget balances as instrumental variables of multilateral and bilateral trade imbalances. One reason to use IVs is reverse causality: it is possible that tariffs reduce both bilateral and multilateral imbalances (see for example Boz et al. (2018)). In this case, our estimated coefficient would be biased downward. In some cases, the impact could go in the opposite direction if for example the announcement of a future tariff increase prompts firms to increase their imports to avoid the tariff jump. In this case, the coefficients we estimated may be biased upward. For the Trump tariffs Fajgelbaum et al. (2020) find evidence that tariffs did lead a to a fall in imports but no anticipatory effects implying that importers did not shift purchases forward.

What would be good instruments for trade imbalances? It has long been recognized that macroeconomic factors and especially fiscal policy drive trade imbalances. This is for example the position of the IMF (see World Economic Outlook (IMF (2020b)) and also IMF (2020a)) that point to the tight fiscal policy in Germany as a contributor to its large trade surplus or the expansionary fiscal stance of the US as a factor of its trade deficit. This the "twin deficit" result that the traditional Mundell-Fleming model and the New Open Economy Macroeconomics would generate. Monacelli and Perotti (2010) find for example, using a VAR methodology, that for OECD countries a government spending shock leads to a deterioration of the trade balance. This is also the case Bluedorn and Leigh (2011) who find that that a 1 percent of GDP fiscal consolidation raises the current account balance-to-GDP ratio by about 0.6 percentage points in OECD countries. Recent papers by Bussiere et al. (2010), Corsetti and Müller (2014), Chinn and Ito (2019) also confirm the role of fiscal policies in trade imbalances. Hence, as an instrument for the multilateral trade balance of country h we choose to use the budget balance of country h, BB_h.

The literature on the determinants of bilateral trade imbalances is much thiner with Davis and Weinstein (2002) and Cunat and Zymek (2019) as notable exceptions using a gravity structure. Bilateral exports and imports (see equations 5 and 4) in any trade model with a gravity structure predict that shocks on expenditures of country i and h, E_i and E_h, will affect bilateral exports and imports. If expenditures levels in both countries increase by the same amount this should not affect the bilateral trade balance. But if E_i increases more than E_h then the bilateral trade balance of h will improve as bilateral exports will increase more than bilateral imports. Equations 5 and 4 also show intuitively that the impact of a differential shock on expenditures should be reduced as bilateral trade costs ($\tau_{i,h}$), such as bilateral distance, increase. We use these properties of the gravity model to construct an instrument for bilateral trade imbalances. We take the difference in the budget balance of country h and i as the shock on the differential in domestic expenditures. A larger budget balance in h than i (a more contractionary fiscal stance in h than i) would increase total expenditures more in i than h and therefore would improve the bilateral trade balance of h vis-à-vis i as imports of i from h would increase more than imports of h from i. To take into account that this expenditure shock impact on bilateral exports and imports, and therefore on bilateral trade balances, is attenuated with bilateral distance, we divide it by the log of bilateral distance.[9] Hence our instrument for the bilateral trade balance between

[9] We also tried with simple distance but the instrument becomes weaker.

h and i is defined as: $\frac{BB_h - BB_i}{log(dist_{h,i})}$ and we expect it has a positive impact on the bilateral trade balance $TB_{h,i}$. Because our instruments for multilateral and bilateral trade imbalances are linearly related we cannot use them together so we present separate IV regressions to analyze their role in protectionist attacks. Our assumption for these instruments to be valid is that budget imbalances affect protectionism only through the impact they have on trade imbalances. We also present reduced form regressions because the direct impact of fiscal policies on protectionism is interesting in itself. The debates on the importance of international cooperation in fiscal policies indeed allude to the possibility to abate protectionist tensions by fiscal policies that would help reduce trade imbalances.

The first stage regressions are shown in Table 6. Regression (1) shows that with dyad fixed effects an increase in our instrument increases the bilateral trade balance as expected. The instrument for the total trade balance, the budget balance, also has the expected sign.[10]

Table 6: First stage with fiscal balance as IV

	(1) Bilat. trade balance	(2) Total trade balance (h)
Budget balance diff./ distance (log)	1.131***	
	(5.22)	
GDP_h	-0.0000163	0.0188***
	(-0.19)	(14.96)
GDP_i	-0.0000119	-0.000828***
	(-0.11)	(-3.13)
$attacks_{i,h}$	0.0389	-0.0375
	(1.56)	(-0.33)
log $RER_{i,h}$	0.0537***	4.973***
	(3.56)	(10.82)
Budget balance (h)		21.90***
		(16.42)
Year-FE	Yes	Yes
Dyad-FE	Yes	Yes
Country X Year-FE	No	No
R2 (within)	0	0
Model	IV bilat (1S)	IV bilat (1S)
Cluster	Dyad	Dyad
Observations	61,267	73,535

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note : The dependent variable is bilateral trade balance of country h with respect to i. GDPs, trade balances and budget balances are expressed in billions USD. All columns are OLS estimation. Regressions control for contiguity, distance and common language.

Table 7 shows the OLS regressions (regressions 1, 3 and 5 for comparison purposes) as well as the second stage of the IV regressions. Regression 2 suggests that the impact of the bilateral trade balance on attacks is causal. The same applies for the multilateral trade balance of the attacker countries h. Contrary to what we found in Table 5, and in the OLS regression (column 5 of Table 7), the IV regression does not confirm that countries with

[10] We have checked that the following results are qualitatively similar when these dyad fixed effects are omitted.

larger trade surpluses are more attacked.

Table 7: OLS and IV

	(1)	(2)	(3)	(4)	(5)	(6)
	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$
Bilat. trade balance	-0.0543***	-0.375**				
	(-3.41)	(-2.14)				
GDP$_h$	0.000277***	0.000374***	0.000343***	0.000545***	0.000273***	0.000249***
	(7.60)	(6.13)	(8.81)	(8.62)	(7.24)	(6.61)
GDP$_i$	-0.0000148	0.0000405	-0.00000267	-0.0000161	-0.0000101	0.0000747
	(-0.87)	(0.88)	(-0.13)	(-1.26)	(-0.50)	(1.56)
attacks$_{i,h}$	0.0310***	0.0236*	0.0224***	0.0124**	0.0248***	0.0174**
	(3.73)	(1.85)	(2.81)	(2.21)	(3.01)	(2.01)
log RER$_{i,h}$	0.000544	0.0445***	0.00482	0.0636***	-0.000511	-0.0224
	(0.07)	(3.08)	(0.64)	(5.66)	(-0.07)	(-1.38)
Total trade balance (h)			-0.00418***	-0.00738***		
			(-9.92)	(-5.75)		
Total trade balance (i)					0.000390*	-0.00219
					(1.80)	(-1.14)
Year-FE	Yes	Yes	Yes	Yes	Yes	Yes
Dyad-FE	Yes	Yes	Yes	Yes	Yes	Yes
Country X Year-FE	No	No	No	No	No	No
F-stat	13	9	21	18	12	13
Model	OLS-bilat	2SLS-bilat	OLS-multilat (h)	2SLS-multilat (h)	OLS-multilat (i)	2SLS-multilat (i)
Cluster	Dyad	Dyad	Dyad	Dyad	Dyad	Dyad
Observations	89,600	61,267	89,820	73,535	89,820	75,170

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note : The dependent variable is the number of trade attacks of attacking country h toward affected country i. GDPs, trade balances and budget balances are expressed in billions USD. Bilat TB_{hi} is the bilateral trade balance of country h with respect to i. All columns are OLS or 2-SLS estimation. Regressions control for contiguity, distance and common language.

Table 8 shows the reduced form regressions. Regression 1 suggests that the difference in fiscal policy between two countries (weighted down by their bilateral distance) is strongly correlated to protectionist attacks. During years in which countries have more (less) restrictive fiscal policy than their trade partners they launch less (more) attacks. This fits the narrative of the US and Germany or more generally the EU countries on the period. Regression 2 also shows that in years when countries choose more expansionary fiscal policies they are more prone to protectionist attacks presumably because the fiscal expansion generates a trade deficit. However, regression 3 suggests that countries with more restrictive fiscal policies are not more attacked in general although (regression 1) they are by countries with more expansionary policies.

Table 8: Reduced form with budget balance

	(1)	(2)	(3)
	Nb $att_{h,i}$	Nb $att_{h,i}$	Nb $att_{h,i}$
Budget balance diff./ distance (log)	-0.421**		
	(-2.23)		
GDP_h	0.000380***	0.000407***	0.000249***
	(6.86)	(7.34)	(6.64)
GDP_i	0.0000449*	-0.0000100	0.0000281
	(1.94)	(-0.79)	(1.21)
$attacks_{i,h}$	0.00901	0.0127**	0.0222***
	(1.54)	(2.26)	(3.09)
log $RER_{i,h}$	0.0245***	0.0269***	-0.00791
	(2.66)	(3.47)	(-0.78)
Budget balance (h)		-0.162***	
		(-6.23)	
Budget balance (i)			-0.0312
			(-1.13)
Year-FE	Yes	Yes	Yes
Dyad-FE	Yes	Yes	Yes
Country X Year-FE	No	No	No
R2 (within)	0	0	0
Model	RF-bilat	RF-multilat (h)	RF-multilat (i)
Cluster	Dyad	Dyad	Dyad
Observations	61,374	73,535	75,170

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note : The dependent variable is the number of trade attacks of attacking country h toward affected country i. GDPs and trade balances are expressed in billions USD. Bilat TB_{hi} is the bilateral trade balance of country h with respect to i. All columns are OLS estimation. Regressions control for contiguity, distance and common language.

7 Robustness

We first check how robust our results are to the definition of protectionist attacks. In table 9 we perform the same regression as in table 3 (hence with dyad fixed effects) but with the four different types of protectionist attacks defined by GTA (see appendix table 13 for details on the definition). As we go from type 1 to type 4 attacks, we enlarge the definition of a protectionist attacks from tariff measures only (type 1) to measures that include import quotas and anti-dumping measures (type 2) to technical barriers and public procurement restrictions (type 3) and to export restrictions or migration measures (type 4). Column (1) reproduces for comparison regression (1) of table 3 where the coefficients of controls (except attacks from the destination country) are not reported. Whereas the sign on the bilateral trade balance remains the same for all types, the size of the coefficient is reduced as expected as we go from type 1 to type 4 measures. Whereas trade imbalances are a clear potential driver of tarif increases or import quotas this is much less so for export restrictions. The coefficient remains significant except for these type 4 attacks. We have also checked that our other results are robust to enlarging our definition of protectionist attacks to type 2 measures. Our restrictive definition of protectionist attacks is sensible and robust to enlarging it to measures that are close to the common definition of protectionism such as anti-dumping measures but not to measures (such as migration) which are not directly affecting bilateral imports.

Table 9: Type of attacks

	(1)	(2)	(3)	(4)
	Nb att$_{h,i}$	Nb att$_{h,i}$ 2	Nb att$_{h,i}$ 3	Nb $att_{h,i}$ 4
Bilat. trade balance	-0.0150***	-0.00692***	-0.00227***	-0.00136
	(-4.09)	(-2.61)	(-2.80)	(-0.94)
attacks$_{i,h}$	0.00763**			
	(2.57)			
attacks$_{i,h}$ 2		0.00390**		
		(2.11)		
attacks$_{i,h}$ 3			0.000758	
			(0.73)	
attacks$_{i,h}$ 4				-0.000778
				(-1.01)
Year-FE	Yes	Yes	Yes	Yes
Dyad-FE	Yes	Yes	Yes	Yes
Country X Year-FE	No	No	No	No
Pseudo-R2	0	0	1	1
Cluster	Dyad	Dyad	Dyad	Dyad
Observations	42,138	44,785	51,168	56,761

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note : The dependent variable is the number of trade attacks, of a certain category, of attacking country h toward affected country i. GDPs and trade balances are expressed in billions USD. Bilat TB_{hi} is the bilateral trade balance of country h with respect to i. All columns are Poisson Pseudo Maximum Likelihood estimation. Regressions control for contiguity, distance and common language.

Another robustness check concerns the level of granularity of protectionist attacks. Our main measure simply counts the number of attacks (defined as tariff increases) that affect a country that exports more than USD 1 million of at least one HS6 product affected by the change. In table 10, we test the robustness of our results to other measures of protectionist attack. Columns (1) and (2) in table 10 reproduce our main results (with country pair fixed effects and with country-year fixed effects and country-year fixed effects respectively) for comparison purposes. In columns (3) and (4), we use as the dependent variable the amount of trade in USD affected by change in tariffs. This measure is more sensible to country size and to countries idiosyncratic characteristics. The bilateral balance is not significant with dyad fixed effects but is when country-year fixed effects are added (column 4). We also test a definition of attacks at the product-level. In columns (5) and

(6), the number of protectionist attacks is the number of affected tariff lines rather the number of announced policy changes resulting in a tariff increase. With this definition of protectionism, the bilateral balance comes with the right sign and is significant only when country-year fixed effects are added.

Table 10: Alternative measures of protectionism

	(1) intervention	(2) intervention	(3) amount	(4) amount	(5) Nb products att	(6) Nb products att
Bilat. trade balance	-0.0150***	-0.00821***	-0.000922	-0.00174**		
	(-4.09)	(-2.69)	(-0.91)	(-2.20)		
GDP_h	0.000266***		0.0000291***		0.000203***	
	(10.90)		(3.25)		(3.43)	
GDP_i	-0.0000103		0.0000467***		-0.00000532	
	(-1.13)		(6.03)		(-0.28)	
$\text{attacks}_{i,h}$	0.00763**	0.00212	-0.00271	0.00155	0.00256*	0.00400***
	(2.57)	(0.56)	(-1.33)	(0.97)	(1.93)	(4.81)
log $\text{RER}_{i,h}$	-0.0548		-0.0394		-0.703***	
	(-1.23)		(-0.93)		(-3.22)	
Export of h to i					-0.0181***	-0.00622*
					(-4.24)	(-1.92)
Import of h from i					-0.00212	0.00779***
					(-0.56)	(2.89)
Year-FE	Yes	No	Yes	No	Yes	No
Dyad-FE	Yes	Yes	Yes	Yes	Yes	Yes
Country X Year-FE	No	Yes	No	Yes	No	Yes
Pseudo R2	0.40	0.48	0.98	0.99	0.77	0.94
Variant	Intervention	Intervention	Amount	Amount	Tariff lines	Tariff lines
Cluster	Dyad	Dyad	Dyad	Dyad	Dyad	Dyad
Observations	42,138	45,323	57,139	71,767	24,409	28,178

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note : The dependent variable is either the number of trade attacks of attacking country h toward affected country i, or the amount of trade affected by an attack or the number of products attacked. Bilat TB_{hi} is the bilateral trade balance of country h with respect to i. GDPs and trade balances are expressed in billions USD. All columns are Poisson Pseudo Maximum Likelihood estimation. Regressions control for contiguity, distance and common language.

Table 11 presents an alternative to the PPML regression specification used in the paper. In the first three columns, we perform the following estimations: 1) PPML but without any fixed effects, 2) a negative binomial regression and 3) OLS without fixed effects. Our main result on the bilateral trade balance is very robust. In columns 4 and 5, we add year and dyad fixed effect to the PPML and OLS regressions respectively. Again, our result is robust. Finally in columns 6 and 7, in addition to country pair fixed effects, country-year fixed effects are added, similar to classical gravity regression models. In column 6 (that reproduces column 2 of table 3) the regression uses a PPML estimator as in our baseline estimations and in column 7 we use an OLS estimator. The sign of the bilateral trade balance remains negative and significant in all regressions.

Table 11: Alternative estimation method

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$
Bilat. trade balance	-0.0150***	-0.00437***	-0.00255***	-0.0153***	-0.0642***	-0.00821***	-0.0476***
	(-4.09)	(-6.44)	(-2.90)	(-23.09)	(-3.61)	(-2.69)	(-2.88)
GDP$_h$	0.000266***	0.0000843***	0.0000826***	0.000103***	0.000377***		
	(10.90)	(30.93)	(31.94)	(49.73)	(7.54)		
GDP$_i$	-0.0000103	0.0000742***	0.000101***	0.0000920***	-0.00000832		
	(-1.13)	(25.85)	(34.17)	(39.65)	(-0.38)		
attacks$_{i,h}$	0.00763**	0.0592***	0.157***	0.141***	0.0309***	0.00212	0.0212***
	(2.57)	(19.04)	(46.00)	(60.55)	(3.36)	(0.56)	(2.93)
log RER$_{i,h}$	-0.0548	-0.0426***	-0.0441***	-0.0280***	-0.0189		
	(-1.23)	(-17.49)	(-19.77)	(-18.39)	(-1.22)		
Year-FE	Yes	No	No	No	Yes	No	No
Dyad-FE	Yes	No	No	No	Yes	Yes	Yes
Country X Year-FE	No	No	No	No	No	Yes	Yes
Model	PPML	PPML	Neg Bin	OLS	OLS-FE	PPML-gravity	OLS-gravity
Pseudo R2	0.40	0.12	0.07			0.48	
R2 (within)					0.05		0.01
Cluster	Dyad	No	No	No	Dyad	Dyad	Dyad
Observations	42,138	57,187	57,187	57,187	57,165	45,323	71,958

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note : The dependent variable is the number of trade attacks, of a certain category, of attacking country h toward affected country i. Bilat TB_{hi} is the bilateral trade balance of country h with respect to i. GDPs and trade balances are expressed in billions USD. Columns (1), (2) and (6) are Poisson Pseudo Maximum Likelihood estimation, column (3) is a negative binomial regression and columns (4), (5) and (7) are OLS. Regressions control for contiguity, distance and common language. Standard errors are clustered at the dyad level for columns (1), (5), (6) and (7).

8 Quantification

In this section, we present a quantification analysis of our results. Our aim is to investigate the respective role of different macroeconomic variables such as bilateral and multilateral trade imbalances and real exchange rate movements. This requires a metric on trade imbalances that is easy to interpret and is comparable across countries. This is not the case for the measures we use (millions of dollars) in the regressions above. A better metric from this point of view are the bilateral and multilateral trade balance between h and i in percentage of country h GDP, the attacking country. This is also consistent with our theoretical framework. Remember that in the 2010s a large share of protectionist attacks are among G20 countries (see table 1) within which trade accounts for 38% of total trade in 2018. Restricting the sample to G20 countries also reduces the variance in country size which helps us with the quantitative interpretation of our results. Table 12 presents the regressions we use for our quantification. The first three columns test the impact of the bilateral trade balance in percentage of GDP. Expressed in share of GDP, bilateral trade balances remain negatively associated with the protectionists interventions implemented by G20 countries. This result is significant in a cross-section regression or in a regression containing all dyadic, origin-year and destination-year fixed effects. The result does not hold with a regression containing only dyadic fixed effects. This may be explained by the fact that the variable is now a combination of two variables: the bilateral trade balance and the GDP of country h. Adding the origin-year and destination-year fixed effects allows to better control for all country-year specific variables and therefore allows to identify more clearly the bilateral trade balance effect. We also include the multilateral trade balance in percentage of GDP for country h (column (4)) and separate total exports and total import, both in share of GDP (columns (5) and (6)). Column (4) and (5), where the effect of the multilateral component is controlled for, the coefficients of bilateral trade balance are respectively 9.5 and 9.7. In column 3, with both dyad and country-year fixed effects, the coefficient is a bit smaller (8.2). Therefore, an increase of the bilateral surplus by the attacked country by one percentage point is associated with approximately a 7.5% increase of protectionist interventions.[11]

The standard deviation of bilateral trade balance and multilateral trade among G20 countries are - in the between dimension - 0.8% and 6.3% of GDP respectively. We use the cross-country dimension for the quantification exercise. Using the coefficients of regression (4), we find that an increase of one standard deviation of the bilateral trade balance between two countries corresponds to a 7.3% increase in protectionist intervention between the two countries. A deterioration of one standard deviation of the multilateral trade balance of a country leads to a 16.6% increase in the protectionist attacks of this country. In comparison a one standard deviation appreciation of the real exchange rate is associated with 2.3% more protectionist measures. Hence, quantitatively trade imbalances have a sizable impact on protectionism.

[11] In a PPML regression, when the regressor is not logged, the elasticity can be obtained the following way : $(\exp(\beta) - 1) * 100$ %. For β close to zero, this is approximately $100 * \beta$%.

Table 12: G20

	(1)	(2)	(3)	(4)	(5)
	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$	Nb att$_{h,i}$
Bilat TB$_{h,i}$ / GDP$_h$	-15.57***	5.834	-7.598**	-9.550*	-9.726*
	(-2.68)	(1.10)	(-2.32)	(-1.77)	(-1.67)
attacks$_{i,h}$	0.0367***	0.00763	-0.00998**	0.0344***	0.0342***
	(8.33)	(1.52)	(-2.32)	(8.04)	(7.92)
log RER$_{i,h}$	-0.0686***	-1.064***		-0.0602***	-0.0601***
	(-6.70)	(-5.03)		(-6.07)	(-5.96)
Total TB h (share of GDP)				-2.888***	
				(-3.47)	
Tot exp. (share of GDP)					-2.793***
					(-3.34)
Tot imp. (share of GDP)					1.231
					(1.09)
Year-FE	Yes	Yes	No	Yes	Yes
Dyad-FE	No	Yes	Yes	No	No
Country X Year-FE	No	No	Yes	No	No
Pseudo R2	0.08	0.36	0.51	0.10	0.10
Cluster	Dyad	Dyad	Dyad	Dyad	Dyad
Observations	3,060	2,940	3,066	3,060	3,060

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note : The dependent variable is the number of trade attacks, of a certain category, of attacking country h toward affected country i. Bilat TB_{hi}/GDP_h is the bilateral trade balance of country h with respect to i divided by the GDP of country h. All columns are Poisson Pseudo Maximum Likelihood estimation. Regressions control for contiguity, distance and common language. Standard errors are clustered at the dyad level.

9 Conclusion

Our results suggest that trade imbalance are predictive of protectionist attacks. These factors have been present in the policy and media debates but to our knowledge our paper is the first empirical analysis of the role of trade imbalances in the rise of protectionism. Our paper does not have any direct normative implication but it suggests that if globalization, both in its trade and financial dimension, has generated more bilateral and multilateral trade imbalances, then it may also generate protectionist forces that may endogenously put a brake to globalization. Trade imbalances are also often seen as a source of concern because of their macroeconomic consequences in particular in terms of either foreign debt accumulation or demand deficit. Our results suggest that they have a further potential negative impact in aggravating trade tensions. Another implication of our results is that the lack of concern by economists on bilateral trade imbalances may be misguided. Bilateral trade imbalances (especially in the presence of global value chains) may not be indicative of real distortions that trade policies could or should address. However, our results suggest that the existence of bilateral trade imbalances may generate protectionist tensions with real distortions. Finally, international cooperation in macroeconomic policies (especially fiscal policies) has been viewed as important to reduce the possibility of a free-rider problem where countries with more restrictive fiscal policies (and larger trade surpluses) reduce global demand but benefit from other countries expansionary fiscal policies. This is for example a criticism addressed towards some EU countries by the US administrations and one interpretation of our analysis is that the issue will not disappear with the end of the Trump presidency. Our results suggest indeed that countries that act as ”consumers” of last resort through their fiscal policy and incur trade deficits as a consequence do retaliate via protectionist actions. Whether this retaliation is effective or not to alter the macroeconomic policy of targeted countries is a question we leave for further study.

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Appendix

Table 13: Classification of protectionist intervention based on Global Trade Alert

	type I	type II	type III	type IV
Tariff measures	✓	✓	✓	✓
Import monitoring		✓	✓	✓
Anti-dumping		✓	✓	✓
Anti-circumvention		✓	✓	✓
(Special) safeguard		✓	✓	✓
Local content measures		✓	✓	✓
Import quotas		✓	✓	✓
Import ban		✓	✓	✓
Import tariff quotas		✓	✓	✓
Import licensing requirement			✓	✓
(Phyto)sanitary measures			✓	✓
Technical barrier to trade			✓	✓
Anti-subsidy			✓	✓
Export subsidies or credits			✓	✓
Export related non-tariff measure			✓	✓
Public procurement access			✓	✓
Public procurement preference margin			✓	✓
Public procurement localisation			✓	✓
Capital control measures				✓
Internal taxation of imports				✓
FDI related restrictions				✓
Other subsidies				✓
Migration measures				✓
Intellectual Property				✓
Export restrictions				✓

Table 14: PPML bias

	original	bias	adjusted SEs	bias-corrected
Bilat. trade balance	-0.00821	0.00046	0.00332	-0.00867**
	(0.0030461)			(0.00332)
attacks$_{i,h}$	0.00212	0.0000389	0.0039532	0.00208
	(0.00378)			(0.00395)

Standard errors clustered by pair in parentheses, using a local de-biasing adjustment to account for estimation noise in the i-t and h-t fixed effects.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$