The Globalization of Production and the Politics of Dispute Initiation at the World Trade Organization

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Abstract
The aim of this article is to show how the degree of integration into so-called global value chains (GVCs) affects World Trade Organization (WTO) members' decision to initiate a dispute at the WTO. Many potential violations of WTO law remain unchallenged, raising the question under which conditions WTO members complain about particular allegedly-WTO-incompatible policies. Controlling for alternative explanations, we demonstrate that decision-makers are generally more likely to try and eliminate barriers to cross-border trade by tabling a WTO complaint, when they are facing pressures to do so by firms and sectors highly integrated into such GVCs, especially when these are multinational corporations with sourcing interests in the defendant country. We test our hypothesis by comparing data from trade barrier reports with actual dispute initiation data from the US and find that, all else equal, trade barriers are more likely to be filed as disputes at the WTO in sectors with US MNCs highly integrated into GVCs. In light of the anti-WTO rhetoric of the current US administration and its attempts to undermine its functioning and legitimacy, this analysis suggests that GVCs activate relevant societal actors that have an interest to uphold existing multilateral trade commitments, even in the efface of reluctance from their own political leaders.

Since the World Trade Organization (WTO) was established in 1995, judicial politics has become a key feature of international trade relations. As a result, scholarly growing attention to the politics of WTO dispute settlement should come as no surprise. The functioning of a governance system that regulates over €23 trillion in trade in goods and services on a yearly basis ultimately depends on its judicial arm's ability to prevent opportunistic behavior by its members, and on its ability to restore compliance when participants are found to violate WTO rules (Poletti and De Bièvre, 2016).

The existing literature has hitherto focused mainly on the political and economic conditions that affect WTO members' propensity to comply with adverse WTO rulings (for an overview of this literature see De Bièvre et al., 2017a). However, the question of how WTO members select their targets in WTO dispute settlement has received relatively little attention. Why do WTO members initiate formal disputes sometimes while refraining from activating the organization's dispute settlement system at other times? While understanding the politics of compliance in WTO disputes allows us to assess the effectiveness of WTO dispute settlement in inducing second-order compliance with the organization's rules, such analyses shed light on only a small part of the universe of empirical phenomena relevant to the questions of effective multilateral enforcement and first-order compliance in the WTO. An exclusive focus on the politics of compliance in formal WTO disputes neglects the fact that complaints filed for adjudication in the WTO dispute settlement mechanism (DSM) represent only a small fraction of policies in violation of WTO agreements (De Bièvre et al., 2017b; Young, 2009).

Many allegedly WTO-illegal trade barriers do not come to the surface in WTO dispute settlement because WTO members decide not to challenge them in the WTO DSM. Yet, many WTO members, especially large, democratic and advanced industrialized members, such as the US, the EU

and Japan do keep track of allegedly WTO-illegal trade barriers reported to them by internationally active firms. This creates a universe of empirically observable potential WTO disputes from which potential WTO complainants choose some to file them as actual dispute in Geneva.

Thus, rather than focusing only on how formal WTO disputes can incentivize compliance by defendants, we broaden the empirical scope of the analysis to all *potential* WTO disputes and then seek to uncover the political logic that leads policymakers to act upon some foreign trade barriers through legal means, while ignoring other potential disputes. We address this issue by focusing on the causal mechanisms that connect the increasing integration of US Multi-National Companies (MNCs) into Global Value Chains (GVCs) to the political logic of dispute initiation at the WTO. The increasing fragmentation of production processes around the globe, across many economic sectors, has become a key feature of the contemporary international economy, which has crucial implications for global trade relations (Jensen et al., 2015). We contend that the degree of integration of US MNCs into GVCs of firms and sectors that stand behind a potential WTO complaint affect the likelihood that such *potential* complaint will initiate a *formal* WTO dispute.

Decision makers in WTO complainant states act as gatekeepers for the demands advanced by exporters allegedly hurt by WTO-incompatible foreign trade barriers (Ryu and Stone, 2018; Shaffer, 2003). These policymakers act strategically when considering whether to initiate a formal dispute, balancing different sets of priorities. On the one hand, policymakers have an interest in catering to the demands of powerful domestic constituencies, which are instrumental to their chances for re-election or re-appointment (De Bièvre and Dür, 2005; Grossman and Helpman, 1994). Dispute initiation thus works as a signaling device that policymakers use to demonstrate their resolve to defend the interests of politically relevant domestic audiences (Allee and Huth, 2006). In this context, policymakers can be expected to prefer to initiate formal WTO disputes that are likely to result in swift compliance, as this allows them to further maximize political support by quickly delivering the policy desired by the constituencies they are acting on behalf of.

On the other hand, while policymakers thus have incentives to try and obtain compliance with international trade law, they must weigh the costs related to administrative burdens and the diplomatic frictions of the prospective dispute. Here, again, policymakers should privilege those disputes that they can expect to result swift compliance by defendants, as faster compliance entails lower administrative burdens, and a lower probability that the dispute generates harmful diplomatic relations.

We hypothesize that policymakers are more likely to respond to the demands to initiate a WTO dispute to remove foreign trade barriers that negatively affect the production activities of firms that sit at the center of GVCs, that is, multinational corporations (MNCs). When faced with a barrier that constrains the smooth operation of their networks, these transnational firms have strong incentives to

lobby for the removal of trade barriers via the WTO DSM rather than resorting to the costly option of disrupting their value chains and relocating production (Helpman et al. 2008). In addition to the significant political weight these firms have given the economic resources they command and the limited collective action problems they face (Eckhardt and Poletti, 2016), they can also play an active role in eliciting support for compliance in the targeted countries in which they operate (Dai, 2005). Indeed, vertically integrated MNCs can mobilize their foreign affiliates, to join a coalition of previously marginalized export-oriented constituencies in the defendant. This in turn is likely to tip the domestic balance of interests in the defendant in favor of swift compliance. These elements make the initiation of a formal WTO dispute against trade barriers that negatively affect the smooth operation of MNCs related trade within GVCs particularly attractive to policymakers.

We test our proposition with a dataset of potential US trade disputes against major trading partners. Since we are interested in the effect of GVC integration on the probability of dispute initiation, we exploit the wide variation across US sectors and firms that are active along value chains. In addition, we complement our dataset with US MNCs data and test the empirical implications of our argument at the firm level.

Our findings contribute to this special issue (Eckhardt and Poletti, 2018) by showing that GVCs generate systematic effects for the functioning and relevance of a global, and highly legalized international institutions such as the WTO. Indeed, the domestic and political motives of trade-related stakeholders to seek to uphold existing multilateral trade commitments that we have identified in this paper make it plausible that firms and sectors highly integrated into GVCs will continue to use interstate dispute resolution at the WTO to target foreign trade barriers, mobilizing politically to keep world markets relatively open to their own advantage, even in the face of reluctance from their own political leaders.

Existing literature on dispute initiation in the WTO

When governments initiate a WTO dispute, they work in close coordination with private organized interests, who represent a key 'enforcement constituency' in WTO dispute settlement (Iida, 2006). Actors thus engage in a "public-private partnership" based on resource interdependencies (Shaffer, 2003): private firms identify foreign WTO-inconsistent policies, helping governments to monitor and screen potential complaints while the government cooperates with private firms to protect their interests in the form of dispute resolution. Yet, governments do not always react to these pressures. The complaints filed in the WTO DSM represent only a small fraction of the total number of policies allegedly in violation of WTO agreements. Existing research suggests that less than 10 per cent of foreign trade barriers brought to the attention of policymakers in the EU and the US are litigated in the WTO (Young, 2009). The number of potential WTO disputes that are never litigated may be even larger

for developing countries, which face greater obstacles for the filing of cases (Davis, 2012). Thus, in the vast majority of cases, governments overlook domestic demands for the initiation of WTO disputes.

Several authors stress the importance of WTO members' legal capacity in explaining cross-national variance in member states' propensity to initiate disputes (Busch et al., 2009; Kim, 2008). Yet, this explanation cannot account for how *individual* members select their targets. Others have focused on 'gravitation effects', such as market size and depth of bilateral trade relations and on the retaliatory capacity of potential defendants (Sattler and Bernauer, 2011). However, there is a great deal of variation in WTO members' propensity to target countries with similar levels of gravitation dynamics or retaliatory capacity. Other existing analyses focus on the domestic political pressure exerted on policymakers in potential complainant states by powerful exporting constituencies demanding litigation (Davis, 2012; Ryu and Stone, 2018). Yet others have highlighted how leadership change argued to incentivize policymakers to initiate disputes, as they seek to represent other sectoral interests than the predecessor government (Rosendorff and Smith, 2018). These explanations, focusing on industrial, sectoral and firm-level characteristics and the incentives they provide for policymakers are better suited to illuminating the choices made by potential complainants with large legal capacity when deciding to target defendants with large markets and with whom they have a deep trading relationship. Yet, even in these cases governments must make a choice because they lack the resources to challenge *all* potential violations of WTO rules that substantially affect trade flows or entail negative distributive effects for powerful domestic constituencies (Johns and Pelc, 2018).

We rely on the literature on the political economy of GVCs to develop an argument that complements these explanations. Many studies have stressed the significance of the growing relevance of GVCs for the politics of trade: decreasing demands for protection during economic crises (Gawande et al., 2015); reducing political support for the imposition of anti-dumping measures (De Bièvre and Eckhardt, 2011; Eckhardt, 2015; Jensen et al., 2015) and generating greater support for trade liberalization through preferential trade agreements (PTAs) (Baccini et al., 2017; Chase, 2003; Eckhardt and Poletti, 2016; Manger, 2009). In the remainder of this article, we develop our argument on how the internationalization and fragmentation of global production organized around value chains of US MNCs influences the politics of WTO dispute initiation in the US.

Global value chains and WTO dispute initiation

The globalization of production has greatly changed the nature of the political economy of trade. In the past, producers in developed countries bought or produced the bulk of their products and inputs domestically, and then traded finished goods among themselves. Since the 1990s, these producers have redefined their core competencies and turned their attention to innovation and product strategy,

marketing and the highest value-added segments of manufacturing and services, while simultaneously outsourcing labor-intensive, less-value-added operations to lower income countries (Gereffi et al., 2005). The latter has been done through the creation of foreign subsidiaries – that is, with vertical foreign direct investment (FDI) by multinational corporations (MNCs) – or by relying on independent foreign suppliers (Lanz and Miroudot, 2011). These altered (production) structures, which have become particularly common in labor-intensive consumer goods industries, as well as the food industry, are usually referred to as global value chains (GVCs) (Gereffi 1999).

We expect these transformations to affect the politics of dispute initiation in the WTO. We assume that policymakers are concerned with securing the political support of powerful constituencies to increase their chances of re-election or re-appointment (Grossman and Helpman, 1994; Hiscox 2001). At the same time, policymakers are concerned about the financial and administrative burdens of litigation, which are significant even for WTO members least constrained by legal knowledge and resources (Brutger, 2017), as well as by the potential diplomatic externalities of the decision to initiate a dispute (Odell, 2000). Both sets of arguments suggest that policymakers should be more prone to select potential disputes supported by powerful domestic constituencies and that they can expect to result in swift compliance. Swift compliance allows policymakers not only to signal their support to powerful constituencies, but also confer on them concentrated benefits. At the same time, the swift resolution of a dispute allows policymakers to minimize the administrative and diplomatic costs of the prospective dispute. As we explain in detail, these arguments make it plausible that policymakers will be prone to initiate WTO disputes that target foreign trade barriers negatively affecting the production activities of firms that sit at the center of GVCs, namely, multinational corporations (MNCs).

The role of GVC-related trade interests in the politics of WTO dispute initiation From the perspective of the domestic political economy of trade, the most important implication of the increasing relevance of GVCs is that international trade flows are largely shaped by patterns of economic integration centered around MNCs, taking the form of both intra-firm trade flows, when they invest directly in foreign host countries, and two-way arms-length trade when they decide to source from unaffiliated parties. In 1999, US. parent MNCs accounted for 57 per cent of US exports of goods and 35 per cent of imports (Ramondo et al., 2013), with approximately 40 per cent of parent exports from affiliates and 44 per cent of parent imports from affiliates. The remaining 60 per cent of parent exports and 56 per cent of parent imports were undertaken at arm's length. More recent estimates suggest that GVCs have become even more central to international trade, showing that MNCs mediate more than 80 per cent of US exports and imports (Bernard et al., 2009). The increasing importance of GVCs has also led trade in intermediates, rather than finished products, to account for over two-thirds of total imports for the majority of OECD countries (Johnson and Noguera,

2012) and for about 90 per cent of exports of US parents in manufacturing to affiliates abroad (Ramondo et al., 2013).

This suggests that whenever complainants are highly integrated in GVCs, policymakers will have strong incentives to cater to the demands of this politically influential constituency favoring the removal of foreign trade barriers. This is likely to be all the more so when these benefits would be highly concentrated in the hands of a few very large and competitive firms. Thus, because they are only a few, large and very productive, these firms can be expected to mobilize politically more easily than traditional exporters (Osgood, 2017), but also relative to GVCs consisting of nominally independent suppliers and buyers trading at arm's length. While only 1 per cent of US firms both import and export (Bernard et al., 2009), MNCs account for a sizable share of economic activity in the US, representing more than 27 per cent of employment in 2000 and accounting for more than one-third of net job creation in the private sector from 1993 to 2000 (Jensen et al., 2015). They thus possess considerable domestic political clout and face less collective problems than other players in order to weigh in the trade policymaking process to see that their interests are taken into account by policymakers.

The formal initiation of a WTO dispute against foreign trade barriers that negatively affect them is often an attractive option for these politically influential trade-related interests. Organizing production activities with a particular trading partner entails significant costs for GVC-related firms, either because MNCs have created production facilities through their affiliates or because firms relying on independent foreign suppliers had to engage in costly coordination with their supply chain partners. Foreign trade barriers that constrain the smooth operation of trade-related activities between these actors within a chain could in principle be overcome by re-shoring production elsewhere. However, given the costs incurred to set up production and trade activities by these GVC-integrated firms, resorting to the WTO is often a far more attractive option (Oldenski 2015). This is why often these firms do not opt for relocation but seek help from their public authorities by reporting purported WTO-illegal government to them.

GVC-related trade interests and the political clout of foreign affiliates Because of their characteristics, policymakers in the complainant can also expect GVC-related firms such as MNCs to play a crucial role the domestic politics of the defendant trade partner in facilitating swift compliance. Recent research shows that when WTO disputes concern trade barriers that affect firms and sectors highly integrated in GVCs, the probability of swift compliance increases significantly (Yildirim et al., 2017). Moreover, transnational lobbying, that is, lobbying by firms on both sides of a WTO complaint has been shown to be quite prevalent in WTO disputes, particularly in those involving MNCs (Eckhardt and De Bièvre, 2015).

These observations suggest that complainant's GVC-integrated firms can play a key role in the domestic political process in the defendant, enhancing the political clout of the pro-compliance coalition and, ultimately, of the likelihood of compliance. This is especially likely in the case of MNCs, because of the direct control the parent firm can exert on the affiliate operating in the defendant market, but it should also be relevant in the case of independent suppliers – as they rely on trade with firms that operate in the complainant regardless of their contractual links. Whether firms in the defendant are vertically integrated partners of an MNC or arm's length enterprises, following the initiation of a WTO dispute they can actively stimulate the emergence of stronger constituency base that has a stake in reducing the barriers to trade that exist between their country and the complainant as much as possible, in order to accrue benefits stemming from the possibility of accessing cheaper imports (Manger, 2012). In short, the initiation of a formal WTO dispute by the complainant changes the domestic constellation of political conflict in the defendant, incentivizing greater political mobilization by these previously marginalized constituencies, as well as by exporters seeking to avoid decreased market access opportunities in the complainant's market as a result of the possible imposition of retaliatory measures in cases on non-compliance (Yildirim et al., 2017). These arguments suggest that policymakers should be relatively more prone to initiate WTO disputes against trade barriers that negatively affect GVC-related trade interests.

Research design

To test the expected relationship between GVC integration and the probability of dispute initiation, we rely on an expanded dataset of trade barriers enacted against the US, originally compiled by Christina Davis (2012). We extend this dataset originally covering the 1995–2004 period through 2012 and add information on trade in intermediates between the US and its trading partners, as well as trade between MNCs and their foreign affiliates. Our dataset includes all of the (reported) trade barriers raised against the US by Canada, Mexico, the EU, Brazil, India, Japan, Korea, Malaysia and Singapore, between 1995 and 2012. Although we recognize that recently raised trade barriers may bring additional variation to our analysis, we have reliable data only through 2012.

Our unit of analysis is the barrier-year. An observation enters our data set in the first year for which the US Trade Representative (USTR) receives an official complaint from a firm or sector about a non-WTO-compliant barrier having been erected by a trading partner, and remains until either a dispute is initiated at the WTO, the issue is resolved bilaterally, or the dataset ends. Our dependent variable is coded one in a given barrier-year if the US initiates a dispute over the barrier in question at the WTO during that year, and zero otherwise. After excluding cases with missing values, we are left with 2,369 observations. In addition to our variable of interest, we control for a number of relevant factors, outlined below.[1]

Our main independent variable is the affected sector's *GVC integration*, with respect to trade between the complainant and defendant. Thus, if the EU erects a trade barrier against US beef exports, we would be interested in the degree of integration for US agricultural trade with the EU.

Unfortunately, GVC integration is difficult to measure directly. Therefore, we rely on a series of proxy variables covering three general components of integration: trade in intermediates, vertical intra-industry trade (VIIT) and activities of multinational companies. We measure trade in intermediates using the OECD-WTO Joint Trade in Value Added Database (TiVA) (OECD-WTO 2015), which is the most comprehensive and reliable data source on GVCs compiled so far.[2] This measure is in line with literature that also considers trade in intermediate goods as both the most important GVC-related factor influencing the domestic politics of trade and the most straightforward measure of internationalization of production (Baccini et al., 2017; Amador and Cabral, 2014;). One drawback to the TiVA data is that they are available in 5-year blocks, reducing temporal coverage. We circumvent this issue by using linear interpolation for the years between observations.[3] To account for the diminishing marginal effect of increasing trade, we take the natural log of intermediate exports from the US to its trading partner.

Vertical intra-industry trade may also act as an effective proxy for integration. Following Manger (2009), we expect higher levels of VIIT to instigate fiercer political action from economic actors harmed by trade barriers. We calculate the relevant VIIT for a given dispute using the BACI database (Gaulier and Zignago, 2010). Following Manger (2012), for each sector, in each year, we first eliminate both one-way trade (i.e. trade for which flows from one side represent less than 10 per cent of the value of flows from the other) and horizontal trade (i.e. trade in which unit values differ by less than 25 per cent).[4] We then aggregate to sectors and apply the Grubel-Lloyd index to the remaining observations, in order to capture the degree of VIIT between the US and the potential defendant for a given sector-year.[5]

Finally, perhaps the most direct measure of integration relies on the analysis of the behavior of multinational firms. The nascent literature on GVCs has put forward ample evidence regarding the role of MNCs in shaping and advancing networks of production (Baccini et al., 2017; Johns and Wellhausen, 2016), and has pointed to an increasing mobilization by firms with respect to international economic policies (Osgood et al., 2017). Therefore, data on the activity of MNCs should enable us to examine the extent to which inter-firm linkages affect the likelihood of dispute initiation at the WTO. By using MNC data, we can analyze the incentive and the capacity of these international economic actors in exercising political clout to transform potential WTO disputes into actual ones. To this end, we use data on US Direct Investment Abroad from the Bureau of Economic Analysis.[6] We look at two features of MNC behavior: parent company transfers to foreign affiliates within the partner country and firm assets in the foreign country. We then aggregate the available data to the sector level. Exports to foreign affiliates account for the degree to which trade barriers harm the relevant firm, and should be related to incentives to lobby for dispute initiation. Foreign assets may tap the capacity of the firm, allowing us to proxy for its lobbying capacity. To account for diminishing returns to each of these variables, we take the natural log.

This provides us with four key independent variables, spanning three different models of dispute initiation. We expect each variable to proxy for integration in the same way. Therefore, we anticipate that all three operationalizations will be positively related to the probability of dispute initiation.

Control variables

In addition to our variables of interest, we control for several potentially confounding factors. First, following Sattler and Bernauer (2011), we take into account both the size of trade partners' bilateral trade and their relative economic scale. Large trade volumes might attract a disproportionate number of disputes because greater economic diversification increases the range of imported goods, and therefore the probability that trade partners will be negatively affected by restrictive trade measures. Additionally, market size affects potential gains from favorable WTO DS rulings. We operationalize this variable as the log of bilateral trade between the US and the potential defendant, using data from the UN's COMTRADE database. Economic size matters because out-of-court settlement of an issue may increase with larger power asymmetries, which increase the complainant's bargaining leverage (Guzman and Simmons, 2005). We capture the relative power of the two states by calculating the trade partner's share of dyadic GDP. As this value increases, we should be more likely to see recourse to the DSM.

Second, we take into account the electoral cycle in US presidential elections, since the US government might be more likely to file disputes to garner electoral support in upcoming elections (Pervez, 2015) – as when the Bush administration challenged the EU' Airbus subsidies during his 2004 electoral campaign. We operationalize this variable by coding the years during and immediately prior to a presidential election as one and all other years as zero. During these years, trade barriers should be more likely to become actual disputes. Third, following Johns and Pelc (2018), we consider whether trade barriers affect many WTO members or only a few – that is, whether they are concentrated or diffuse policies. The logic is that trade barriers that cause harm to more members are less likely to be challenged, as these cases engender collective action problems among the members. On the other hand, trade barriers that affect only a small sample of the WTO membership, or the US alone, should be more likely to be challenged, as litigation is more like a private good, allowing the US to benefit disproportionately from the removal of the trade barrier. We consider barriers to be *diffuse* if they involve an 'internal tax, subsidy, or other regulation that is nevertheless imposed on a most-favored-nation (MFN) conforming basis' and *concentrated* if they involve 'antidumping or countervailing duty or a preference scheme' that directly affects US producers (Bown and Reynolds, 2015, p. 146). We code concentrated barriers as one and diffuse barriers as zero.

Fourth, we control for the possibility that the level of political mobilization in the potential complainant might affect dispute initiation. In line with Davis' (2012) argument,

we expect that political contributions will have a substantial effect on trade policy. The most politically active sectors are likely to be the most highly mobilized, and most likely to get their preferred policy outcomes. We obtain data on political contributions from the Center for Responsive Politics (CRP), which includes industry-level contributions for each election cycle between 1990 and the present.[7] We make two adjustments to these data. First, since the data are not annual, but given over 2-year election cycles, we simply replicate the same value for both years in the cycle when necessary.[8] Second, since the industry values in the CRP data do not lineup exactly with the ISIC coding, we hand-code the corresponding ISIC industry value, where possible.

Fifth, consistent with Guzman and Simmons (2005), we expect that the United States will be better able to extract concessions from the trading partner when it relies less upon the partner as an export market. As the level of export dependence increases, we should be more likely to see dispute initiation at the WTO. We calculate export dependence as the ratio of exports from the US to the trading partner in a given year to the total value of US exports in that year. These data come from the COMTRADE database.

Finally, PTAs commonly contain enforcement mechanisms (Dür et al., 2014) that can potentially displace WTO dispute settlement. In this sample, the only relevant PTA is NAFTA. Therefore, we include a dummy variable that takes a value of 1 if the trading partner is Mexico or Canada and 0 otherwise.

GVC integration and trade barriers reported to the US authorities

A first look at the data on all foreign trade barriers reported by the US Trade Representative office between 1995 and 2012 reveals the frequency with which various sectors are reported to be affected by trade barriers. Figure 1 displays frequency values for eight of the most common categories. Clearly, trade barriers do get enacted in economic sectors characterized by substantial integration into global value chains, and an important part of the universe of potential WTO disputes comprises cases concerning highly integrated sectors. This stands in contrast to the argument that, by their very nature, firms active in these integrated sectors would internalize the elimination of trade barriers. Rather, it seems they alert their domestic government (the US) about their existence – along with an appeal to try to remove them – only after they are enacted.

Figure 2 further shows the same sectors with respect to the barriers that the US challenged in WTO disputes. In line with studies showing that agricultural interests traditionally have great influence in trade policymaking (Elsig and Stucki 2012), we see that initiated disputes are dominated by the agricultural sector. Beyond that, there are several sectors with substantial integration. For instance, transport equipment – a relatively integrated sector – is second only to agriculture in number of initiated disputes. Moreover, sectors like chemical and pharmaceutical production, food and beverages and information technology are also highly integrated into GVCs. Given the quantity of barriers involving those sectors (Figure 1), there are a considerable number of initiated disputes.
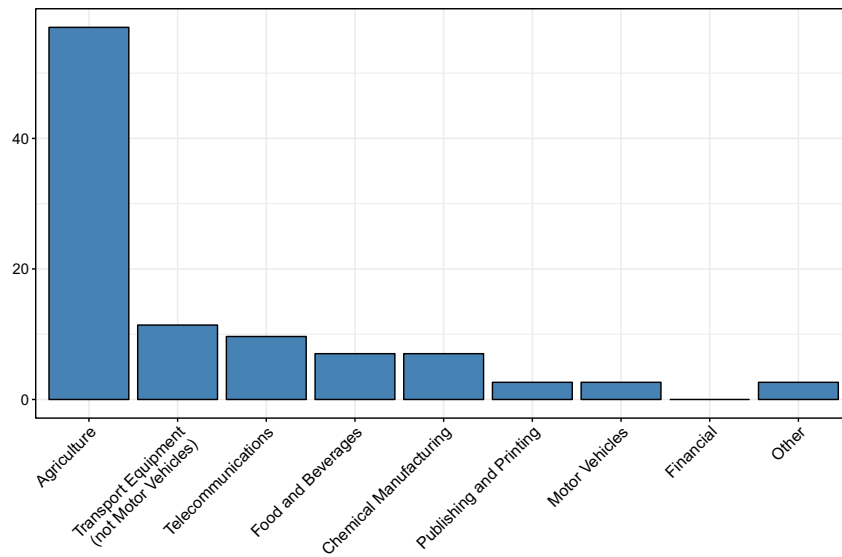
Analysis

We now turn to our regression analysis of dispute initiation. We examine whether reported trade barriers eventually become disputes. As the dependent variable is dichotomous, we estimate a standard logit model and take into account whether US authorities tabled reported trade barriers as disputes at the WTO DSM.[9]

Table 1 presents the results of our logit regressions across four different models. Column 1 gives the baseline model, in which we include only control variables. In columns 2 through 4, we add our measures of integration. We expect positive and significant coefficients for our variables of

Figure 1. Foreign trade barriers reported to the USTR by sector (in %).
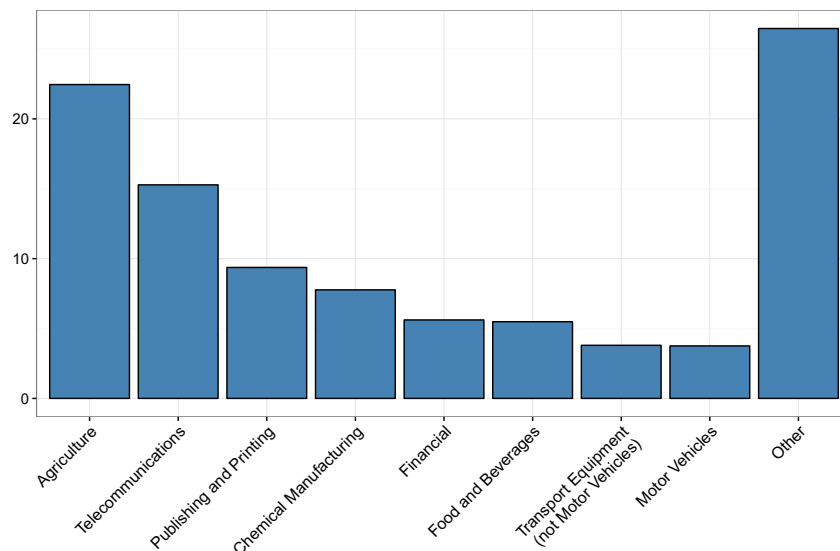
Figure 2. U.S.-initiated WTO disputes against foreign trade barriers by sectors (in %).

**Table 1.** Analysis of the probability of dispute initiation

	Baseline	Intermediate trade	VIIT	MNC
Total trade (logged)	−1.26***	−2.24***	−1.97***	−2.53**
	(0.32)	(0.43)	(0.60)	(1.09)
Economic power	7.51***	15.78***	12.17***	5.84
	(2.15)	(2.82)	(4.44)	(7.32)
Sector contributions (logged)	0.07	0.02	0.22	0.24
	(0.10)	(0.11)	(0.15)	(0.40)
Export dependence	6.55**	6.54*	9.77**	5.72
	(3.22)	(3.38)	(4.40)	(8.10)
Election cycle	0.05	−0.06	−0.14	0.22
	(0.20)	(0.22)	(0.30)	(0.53)
Concentrated	0.94***	0.62*	0.73*	0.91
	(0.28)	(0.32)	(0.38)	(0.72)
NAFTA	3.30***	6.28***	4.72***	4.72**
	(0.74)	(0.98)	(1.34)	(1.97)
Intermediate exports (logged)		0.04		
		(0.11)		
VIIT			−0.10	
			(0.83)	
Parent company exports (logged)				0.60***
				(0.21)
Foreign assets (logged)				0.14
				(0.33)
Constant	33.14***	62.45***	51.86***	65.90**
	(9.77)	(12.70)	(17.77)	(32.13)
Log likelihood	−404.58	−343.02	−181.85	−65.12
Number of observations	2331	1945	1000	507

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.
All tests are two-tailed tests.

interest. Reassuringly, our control variables generally behave as expected. Additionally, these measures tend to maintain their signs and levels of significance across the models. We see that, all else equal, the US is more likely to initiate disputes against Mexico, Canada, and economically weaker states, particularly for more concentrated issues, and it is less likely to initiate disputes against states with whom it trades significantly.

Figure 3. Effect of intermediate exports on probability of dispute initiation.
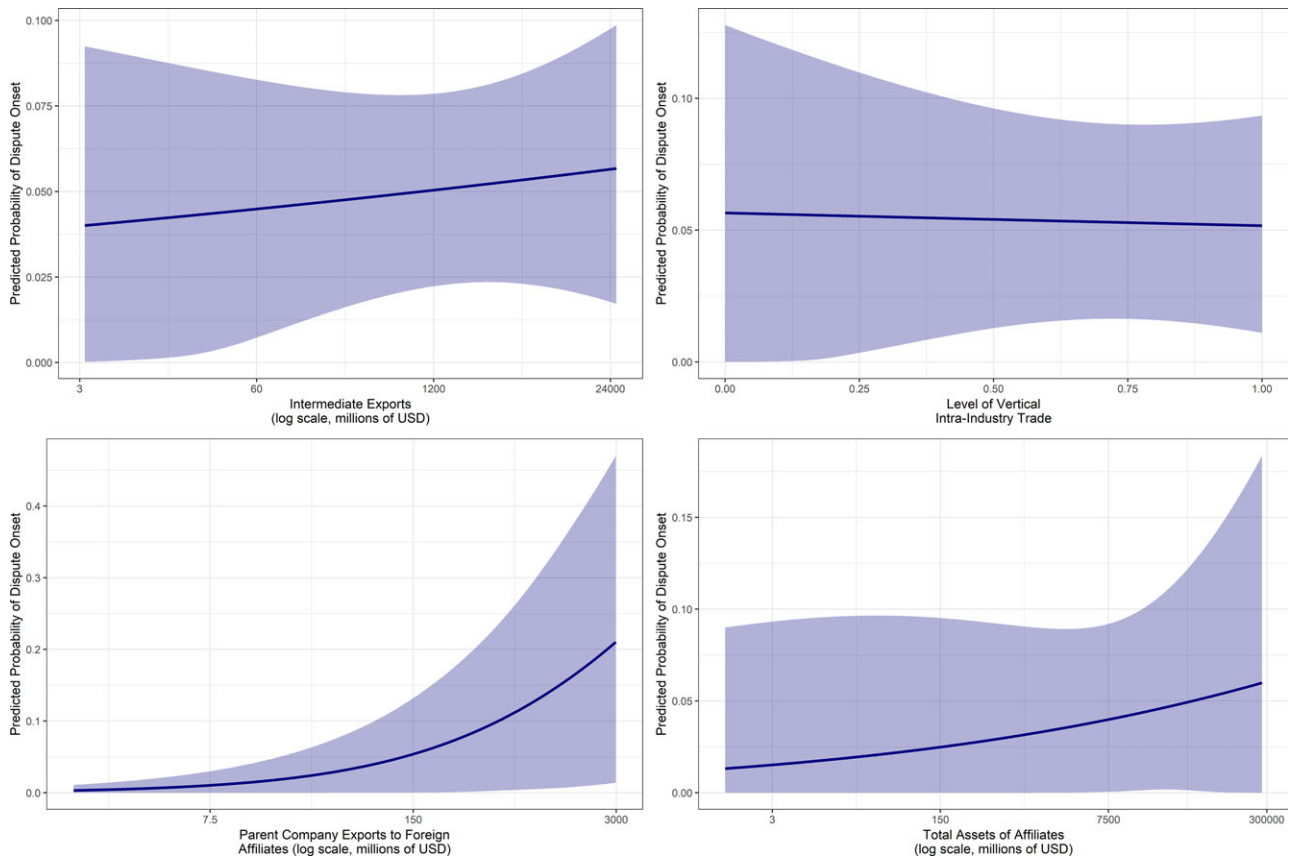
When we add our measures of GVC integration, we find significant effects in only one case. While our intermediate exports variable is signed correctly, it is not estimated with significant precision to reject the null hypothesis of no effect. Our measure of vertical intra-industry trade is actually improperly signed, but is also non-significant. When we turn to our estimation using characteristics of MNCs, however, we see that both variables are signed as expected, and we find a significant effect for exports from the parent company to the foreign affiliate. This suggests some support for the argument that GVC integration – at least as measured by MNC exports to foreign affiliates – is associated with a higher likelihood of dispute initiation.

In addition to examining the statistical effects of our variables of interest – particularly given the low levels of precision in their estimation – it is worthwhile to look at the substantive effects. We do this by calculating the average predicted probability of dispute initiation as we vary each of our factors of interest – presented in Figure 3. We use Hanmer and Kalkan's (2013) method for calculating average variable effects in both cases.[10] We vary both across the approximate empirical range in our data.

While we see wide 95 per cent confidence bands in all four panels, we see clear positive trends in three of the four, while the sole indicator with a negative estimated effect exhibits a substantive effect that is nearly flat, suggesting that the non-significance is not due exclusively (or even

largely) to imprecision. Our lone significant variable – parent company exports – shows a large effect, growing from a near-zero probability of initiation when transfers are low to a probability of greater than 0.2 when they are high. While the majority of our data points are to the left of the center point in the figure, approximately one-third of disputes involved sectors in which parent companies exported more than $150 million to affiliates during the year in question, suggesting that there still exists a significant cluster of data in the more strongly-convex portion of the graph. We also see a relatively strong substantive trend for quantity of foreign assets, rising from a probability of about 0.013 for firms with no foreign assets to 0.06 when assets exceed $270 billion. This is an increase of over 450 per cent. However, the large confidence intervals make statistical significance difficult to ascertain.

Overall, we see qualified support for our hypotheses. While we find that intermediate exports and vertical intra-industry trade appear to be largely unrelated to WTO dispute initiation, MNC behavior provides the greatest level of consistence with our expectations. Our analysis shows that parent company transfers significantly increase the likelihood that disputes occur, which suggests that the relationship between GVC integration and WTO dispute onset is real, but is especially evident when such GVCs are organized by MNCs. Lastly, we also run a Cox proportional hazard model to estimate the impact of GVC integration on the time until the US brought forth

trade barriers to the WTO. We report these results in our online appendix but note here that our results are consistent with our logit model.

Conclusions

In this article, we investigated the relationship between WTO dispute initiation and the prevalence of firms and sectors integrated into global value chain trade. Our main finding is that the degree of integration into global value chains is indeed an important political determinant of a member state's decision to table a formal complaint to the WTO's Dispute Settlement Body. More precisely, we have shown US-based parent MNCs with foreign affiliates appear to be the most active in mobilizing their domestic government to file.

Our findings have important implications for the debate on how GVCs can affect the functioning, stability and legitimacy of an international institution such as the WTO. We show that the high degree of MNC activity in an important number of economic sectors is associated with higher likelihood of dispute onset at the WTO. Thus, despite its decline as a negotiation forum for new and even further liberalization commitments, WTO dispute settlement is likely to continue to serve as a forum for domestic trade-related interests to tackle protective foreign trade barriers. Current developments in US trade policy – including the current administration's unwillingness to appoint a permanent of US representative to the WTO, its hostile rhetoric against the organization, and its deliberate attempts to block the appointment of expert panelists that serve at the WTO appellate body – threaten to undermine the legitimacy and the functioning of the WTO. However, such blatant actions to undermine the WTO system may be kept at bay as GVCs activate relevant societal actors (i.e. MNCs) that have an interest in targeting protective foreign trade barriers and enacting global trade rules.

Our results also indicate several avenues for future research. First, while our analysis here is limited to dispute selection on the part of US, future research could unpack the dynamics of WTO dispute initiation by not only theorizing policymakers and firms' calculus on the side of the potential complaint, but also on the side of the potential defendant in tandem. Second, we encourage researchers to utilize firm level data as it becomes increasingly available in order to better understand the role of MNCs and their affiliates in partner countries on dispute initiation – and more broadly on political mobilization over international economic policies.

Notes

1. Although our unit of analysis is the barrier-year, each complaint is uniquely associated with a trade partner. So we are able to distinguish between US and partner variables in each case.
2. For the TiVA dataset, see http://stats.oecd.org/Index.aspx?DataSetCode=TIVA2015_C1#.
3. Given two coordinates, (x_0, y_0) and (x_1, y_1), we compute any (x, y) between them as: $y = y_0 + (y_1 - y_0)\frac{(x-x_0)}{(x_1-x_0)}$.
4. Manger (2012) cites 25 per cent as the commonly-accepted threshold. Robustness checks at 15 and 35 per cent produce nearly-identical results.
5. For a given sector, year, the relevant Grubel-Lloyd index (GL_{it}) is constructed by calculating: $GL_{it} = 1 - \frac{|X_{it} - M_{it}|}{X_{it} + M_{it}}$, where X_{it} is the value of sector i's exports in year t and M_{it} is the value of sector i's imports in year t.
6. Data can be found at https://www.bea.gov/international/usdia2008r.htm
7. Data are available from https://www.opensecrets.org/industries/slist.php.
8. For example, contributions from construction firms in 1992 are coded as identical to contributions from construction firms in 1991. Using the preceding (rather than succeeding) even-numbered year, or interpolating between years makes no difference for our substantive results.
9. An additional analysis, using a Cox proportional hazard model is included in the Appendix. The results remain substantively similar.
10. Hanmer and Kalkan suggest averaging across all values in the data, which provides the average effect in the population, rather than the effect for a particular case.

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Supporting Information

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

Supplementary Appendix: The Globalization of Production and the Politics of Dispute Initiation at the WTO

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