

# The internationalization of production and the politics of compliance in WTO disputes

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**Abstract** In this paper we seek to advance the debate on the conditions under which the WTO Dispute Settlement Body can bring about trade-liberalizing policy change in WTO members. Under what conditions do WTO members change domestic policies or measures that are challenged in WTO litigation? Starting from the assumption that policymakers are political-support maximizers who seek to avoid the mobilization of political enemies, we argue that the degree of integration in Global Value Chains (GVCs) of the economic sectors affected by a WTO dispute influences members' propensity to change domestic policies when targeted in WTO litigation. The initiation of a WTO dispute against sectors highly integrated in GVCs engenders the emergence of a domestic coalition of pro-trade liberalization groups composed of exporters seeking to avoid the imposition of retaliatory measures and import-dependent firms wishing to exploit the opportunity to access cheaper imports. Under these circumstances, trade-liberalizing responses to WTO legal challenges are therefore more likely. We test this hypothesis by estimating a Cox proportional hazard model and find that GVCs positively impact states' propensity to comply with the WTO dispute settlement panel rulings.

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## 1 Introduction

International governance has witnessed a steady rise of legalization in recent years (Goldstein et al. 2000). Across a wide array of issue areas, states have increasingly subjected themselves to binding international legal constraints. In the most institution-alized forms of legalization, precise and obligatory legal commitments are backed up by effective and credible enforcement mechanisms.

The World Trade Organization (WTO) stands out as a prime example of strong legalization and delegation of authority in international politics (Bechtel and Sattler 2015). With the creation of the WTO, members strengthened the existing mechanisms for the enforcement of commonly-agreed-upon rules, replacing political-diplomatic dispute settlement model of the General Agreement on Tariffs and Trade (GATT) with a quasi-judicial model, characterized by automatic right to review, the formulation of legally binding obligations, a standing tribunal of justices, and the authority to authorize sanctions and even cross-retaliation against recalcitrant members (Goldstein et al. 2000; Zangl 2008; Poletti and De Bièvre 2015).

The literature on the institutional foundations of international cooperation suggests that the existence of mechanisms for the credible enforcement of agreed-upon rules is key to overcoming problems of cooperation that are typical of international trade relations (Keohane 1984; Martin 1992). For many different reasons, states face powerful, ever-present incentives to renege on trade liberalization commitments, either by failing to implement the rules they have negotiated or by raising new trade barriers, contravening the rules they have agreed upon.

A quasi-judicialized system of enforcement, such as the WTO Dispute Settlement Mechanism (DSM), should therefore be capable of performing the twofold function of preventing first- and second-order compliance problems: creating disincentives for policies incompatible with WTO rules being adopted in the first place, and compelling members to bring their policies back into compliance with WTO rules whenever their wrongdoing is ascertained by the adjudicative body (von Stein 2012).

In this paper, we seek to advance the debate on the conditions under which the WTO Dispute Settlement Body can bring about trade-liberalizing policy change in WTO members. What factors determine how WTO members react to formal requests by the adjudicative body? Under what conditions can we expect member states to meet their obligations by swiftly changing domestic policies or measures that are challenged in WTO litigation?

We contribute to this debate by stressing, for the first time, how a targeted sector's degree of integration into Global Value Chains (GVCs) can influence the politics of trade in WTO defendants and thus their propensity to comply in a timely manner. Previous work has shed light on plausible factors accounting for differences in compliance behavior *across WTO members*: domestic political institutions, legal and technical capacity, and vulnerability to complainant's retaliation. Despite their quality, these contributions cannot explain why individual WTO members' compliance behavior varies strongly *across disputes*, especially with regard to the time until compliance.

The literature has widely discussed high-profile cases of protracted non-compliance with WTO rulings, such as the European Union's (EU) refusal to lift its bans on imports of hormone-treated beef and genetically modified crops, or the US compliance problems in the WTO dispute on upland cotton export subsidies. To put it simply, while many of the most active users of the WTO DSM tend to comply with its injunctions, they also consistently experience second-order compliance problems (Davey 2005; Pauwelyn 2000).

Some of the studies that confront the challenge of accounting for such an observable variation have hitherto focused on the political role of domestic organized constituencies (Spilker 2012; Poletti and De Bièvre 2014; Sattler et al. 2014). These studies contend that the degree of politicization of a trade dispute affects government willingness and ability to cooperate with trading partners, making defendants more likely to resist their trade partners' demands when facing strong political opposition from influential domestic constituencies standing to lose from the weakening or removal of the trade-restricting policy at stake.

The argument developed in this article shares these latter assumptions about the nature of trade policy. We also conceive of policy makers as political support maximizers who seek to avoid the mobilization of political enemies and whose ability to commit to trade liberalization ultimately depends on the relative balance of influence of those who favor and those who oppose a further opening of the economy to foreign products (Schattschneider 1935; Magee et al. 1989; Grossman and Helpman 1994, 2001). However, we depart from these analyses by systematically discussing how the growing relevance of GVCs in the contemporary international economy affects the political economy of trade and, ultimately, WTO members' propensity to comply with WTO dispute settlement rulings.

Assuming imperfect mobility of factors of production, trade policy is traditionally expected to engender a political conflict pitting export-oriented against import-competing sectors (Hiscox 2001). The first set of actors stands to gain from the increased market access opportunities that trade liberalization can bring about, while the second stands to lose from it because of the greater exposure to foreign competition in domestic markets. We contend that this distinction no longer accurately reflects the reality of contemporary trade politics in either advanced or in many emerging economies. GVCs change the political economy of trade policymaking in crucial ways. In a world economy increasingly characterized by the emergence of these transnational chains of production, the preferences, patterns of political mobilization, and influence of firms and sectors that rely on income generated from the import of intermediate products for their production process need to be added to the equation (Jensen et al. 2015).

In line with a number of recent studies, we define this set of economic actors as import-dependent firms and sectors (Eckhardt 2011; Eckhardt and Poletti 2016). With the expansion of these transnational chains, multinational corporations and affiliated firms all over the world deliver goods and services that are "made in the world" (Elms and Low 2013). For firms and sectors operating in GVCs, trade liberalization simply leads to a reduction of variable costs of their imports. Whether they operate directly in a foreign country or simply import intermediate inputs from foreign suppliers is secondary here, as integrated firms benefit from cheaper imports in both cases (Manger 2012).

In short, when a country has many integrated firms and sectors, maximizing the benefits of trade also implies lowering domestic tariffs (Lanz and Miroudot 2011). This

has important implications for the analysis of compliance in WTO dispute settlement. When WTO disputes touch upon the interests of highly integrated firms and sectors, these actors' political preferences and mobilization can be expected to add to the political conflict that see import competitors and exporters confronting each other, potentially increasing the political weight of the domestic coalition favoring the removal of import-restricting trade barriers, and increasing the likelihood of compliance with WTO DSM rulings.

We test this argument by analyzing the responses to WTO dispute-settlement-authorized requests for the removal of member states' WTO-incompatible policies. We examine the effect of GVC integration on the time until compliance with the recommendations of WTO dispute settlement panels, using a Cox proportional hazard model, and controlling for a number of potentially-confounding factors.

Many previous researchers have stressed that the globalization of production has far-reaching implications for the political economy of trade policymaking. In addition to showing how the internationalization of production can act as a constraint against the rise of protectionist demands during economic crises (Milner 1987), scholars have stressed the importance of GVCs and import-dependent firms in decreasing the political support for the imposition of anti-dumping measures (De Bièvre and Eckhardt 2011; Jensen et al. 2015), and in promoting support for trade liberalization through Preferential Trade Agreements (PTAs) (Antràs and Staiger 2012; Baldwin 2012; Chase 2003; Kim 2015; Manger 2009; Orefice and Rocha 2014). The lack of attention to the implications of GVCs for the politics of trade in the WTO in general, and in the WTO dispute settlement body in particular, stands out as a surprising gap in the literature. The centrality of the judicial institutions of the WTO brought about by the increasing inability of the WTO to deliver significant negotiated trade liberalization and the internationalization of production represent two of the most important developments in contemporary international trade relations (Antràs 2010; Goldstein and Steinberg 2008). By shedding light on the systematic connections that exist between these two processes, our article significantly advances our understanding of the politics of multilateral trade relations.

The article proceeds as follows. The first section reviews the literature on WTO compliance and global value chains, while introducing alternative explanations for compliance. Next, we present a theoretical framework based on the GVC integration of affected sectors. We then present our research design and test our hypotheses empirically. Finally, we conclude with a summary of our findings.

## 2 Global value chains and the political economy of WTO dispute settlement

One of the key pillars of the WTO's governance system is the dispute settlement mechanism. The DSM helps WTO members to overcome disagreements about the particular meaning of WTO rules, thus serving as an information and rule-clarification device. More importantly, however, the DSM acts as a coercive mechanism that performs the crucial functions of maintaining and restoring compliance with multilateral trade liberalization commitments (Sattler et al. 2014).

The existing literature has shed light on different important aspects of the political economy of WTO dispute settlement, including the logic driving dispute initiation and escalation (Busch 2000; Davis 2012; Guzman and Simmons 2002; Sattler and Bernauer

2011), the politics of dispute settlement panel members' appointment and behavior (Elsig and Pollack 2014; Busch and Pelc 2010), the distributive effects of WTO disputes on non-litigants (Chaudoin et al. 2016; Bechtel and Sattler 2015), the effects of WTO litigation on the character of interest representation and patterns of state-society relations (De Bièvre et al. 2016; Poletti and De Bièvre 2016; Shaffer 2003), and how WTO litigation affects multilateral trade negotiations (Poletti et al. 2015).<sup>1</sup>

Despite the abundance and quality of this literature, systematic analyses of the dispute settlement mechanism's capacity to foster compliance are scarce. Existing research suggests that the DSM is quite effective in deterring countries from imposing policies that conflict with multilateral trade rules, particularly in containing otherwise probable protectionist responses to economic crises (Baccini and Kim 2012; Davis and Pelc 2015). But WTO members sometimes do impose policies that conflict with the organization's rules. This is because members are sometimes unable to resist the political pressures of domestic constituencies to impose WTO-incompatible policies or the temptation to use tariffs to improve their terms of trade. When member states believe that some of their trading partners have violated their WTO commitments, they can initiate a formal trade dispute to seek the removal of such violations. When can we expect WTO litigation to be successful in producing trade-liberalizing policy change in defendants? More specifically, whereas most disputes end in compliance, how can we account for the large variation in time until compliance? We argue that the degree of integration in GVCs of the sector affected by the dispute is key to understanding the politics of compliance in WTO dispute settlement.

## 2.1 WTO dispute settlement in brief

The WTO DS system is a legal system that unfolds in several discrete steps. The process begins when one or more members of the WTO file a formal complaint and request consultations on specific trade policy measures taken by another member. Consultations take place as confidential negotiations between the parties. If they fail to solve the issue at this stage, the complainant can request the Dispute Settlement Body establish a panel of experts. The panel members then prepare an interim report, about which the parties can negotiate during the process of writing. At this stage, the parties are encouraged to reach a mutually agreed upon solution. If they do not, the panel circulates its ruling in the form of an initial report (WTO 2004). Both parties may accept the ruling, in which case the dispute would end. However, the respondent and the complainant also have a chance to appeal to the ruling. If they do so, the dispute reaches the appeals phase, where the standing Appellate Body (AB) reviews the dispute. The AB then issues a final ruling on the dispute, in which it may overturn or uphold the panel ruling in part or in its entirety. In disputes where the AB sides with some or all of the accusations of the complainant, the dispute moves to the implementation phase. At this stage, the respondent party is asked "to bring the measures into conformity" with WTO law and is asked to notify the DSB of its implementation. In

<sup>1</sup> For a more comprehensive review of these various literatures see Bernauer et al. (2014) and De Bièvre et al. (2017).

case of enduring non-compliance, the DSB can authorize the complainant to put in place retaliatory measures against the defendant.

Two features of the DSM are key to understanding the political-economic dynamics that underlie its functioning. First, member states are the only enforcers of WTO contracts. While governmental representatives crucially depend on information provided by private industry, they are the only ones who can trigger WTO adjudication, not the Secretariat of the WTO in the role of a supranational prosecutor, nor private actors (Hoekman and Mavroidis 2000).<sup>2</sup> Second, the DSM remains largely a bilateral and decentralized enforcement mechanism, as the ultimate remedy in enduring cases of non-compliance with a WTO ruling comes in the form of retaliation by the complainant.

## 2.2 The political economy of compliance

Many factors may explain why some WTO members are more prone to comply when acting as defendants in WTO litigation. Compliance can be affected by characteristics of defendants' political regimes, such as the presence of democratic institutions or the number of domestic veto players (Milner and Moravcsik 2009; Poletti and De Bièvre 2014; Slaughter 1995), the type of domestic electoral institutions (Rickard 2010), or the state's technical capabilities and legal capacity (Chayes and Chayes 1993; Weiss and Jacobson 1998). These factors can account for variation in compliance behavior across *WTO members* but tell us little about why individual WTO members' compliance behavior varies strongly across disputes, especially with regard to the time until compliance. Given the decentralized nature of the DSM as an enforcement mechanism, one important source of variation in how individual WTO members respond when challenged in WTO litigation is the degree to which complainants can credibly threaten to impose costs through the adoption of retaliatory measures. Complainants with larger markets can more credibly threaten to impose costly retaliation on defendants in the form of market closure in cases of enduring non-compliance (Bown 2004; Guzman and Simmons 2005). Greater credibility of the retaliatory threat leads to a greater probability of compliance as it encourages exporters in the defendant state to mobilize and exert pressures on government representatives to comply and avoid incurring the costs that retaliatory measures might bring about (Goldstein and Martin 2000; Goldstein and Steinberg 2008).

Although these contributions are important, they shed light on only a small part of the empirically-observable patterns of WTO dispute settlement compliance behavior. Empirical research on WTO disputes shows with great clarity that the overwhelming majority of WTO dispute settlement cases involve democratic defendants with large administrative and legal capacity confronting complainants with credible retaliatory capacity (Horn et al. 2011). In order to account for the observable variation in WTO members' responses across disputes involving complainants with similar degrees of retaliatory capacity, some authors have focused on the political role of domestic constituencies. The point here is quite simple: defendants find it more difficult to comply when the dispute touches upon issues that trigger the mobilization of politically influential domestic constituencies. Disputes are more likely to generate political

<sup>2</sup> On the private-public partnership in WTO dispute settlement, see Shaffer (2003).

mobilization when they target policies or measures that shield politically influential domestic producers from foreign competition, as their removal would generate significant and concentrated costs (Sattler et al. 2014; Spilker 2012). In these circumstances, WTO disputes are likely to engender a high degree of politicization which in turn reduces the ability and willingness of survival-maximizing government representatives to cooperate with their trading partners.

### 2.3 GVCs and compliance

The political economy of WTO dispute settlement compliance cannot be fully understood without an analysis of the effects of GVCs on the politics of trade policymaking. In line with traditional political economy approaches to trade policy that assume that factors of production are not perfectly mobile across sectors (Hiscox 2001), existing studies focus on two sets of domestic interests: import-competitors and exporters. The politics of compliance is seen as a battle between import-competing sectors who lobby their government representatives to keep the import-restricting policy in place, to protect themselves from foreign competitors in the domestic market (Bown 2004), and exporters who mobilize to ask for compliance to avoid the imposition of retaliatory measures, which may harm their access to the complainant's market.

The globalization of production has changed the nature of this political conflict. 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 to the highest value-added segments of manufacturing and services. At the same time, they have outsourced labor-intensive, lower-value-added operations to lower-income countries (Gereffi et al. 2005:79). The latter has been done through the creation of foreign subsidiaries—that is, by vertical foreign direct investment (FDI)—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).<sup>3</sup> From the perspective of the domestic political-economy of trade, the most important implication of the increasing relevance of GVCs in the world economy is that international trade flows are no longer almost exclusively about trade in finished goods, but also largely about trade in intermediate goods. Illustratively, today trade in intermediates accounts for over two thirds of total imports for the majority of OECD countries (Johnson and Noguera 2012)<sup>4</sup> while it is estimated that more than 80% of merchandise exports and imports of pivotal international economic players now takes place within global networks of production and distribution (see Bernard et al. 2009).

The emergence of GVCs, and the related relevance of trade in intermediates, changes the political economy of trade in significant ways. As firms internationalize their production, the demand for trade protection decreases (Jensen et al. 2015). Whether sourcing firms operate directly in a foreign country or simply import

<sup>3</sup> See, in particular, Gereffi (1999) and Burch and Lawrence (2005) for the expansion of such global linkages in the food industry.

<sup>4</sup> See also, OECD (2014).



intermediate inputs from foreign suppliers, firms operating within GVCs can expect to accrue benefits from cheaper imports (Manger 2012). We define firms and sectors as GVC integrated if they are goods-producing firms for which imports play a pivotal role in the production process (Eckhardt 2015). When a country is highly integrated into GVCs and thus has many import-dependent firms, trade liberalization will be welcomed not only because it increases opportunities to access foreign markets, but also because it lowers the costs for imported inputs (Lanz and Miroudot 2011). In short, because the internationalization of production makes companies increasingly dependent on imports of intermediate goods for their production process, lowering domestic trade barriers for intermediate goods becomes a valued political objective that can significantly decrease production costs.

In addition to having clear-cut preferences for trade liberalization, firms highly integrated into GVCs can also be expected to be capable of mobilizing politically. Import-dependent firms can anticipate with relative certainty the distributive effects of eliminating and/or lowering tariff barriers to trade with countries with which they are already in a trading relationship (Eckhardt and Poletti 2016).<sup>5</sup> What is more, as a result of mergers, acquisitions, and vertical integration, many sectors dominated by highly integrated firms (e.g., textiles and clothing, footwear, consumer electronics) have undergone a dramatic move toward increased market concentration in the last decade and a half (Eckhardt 2015).

The implications of these developments for the politics of DSM compliance are substantial. The initiation of a formal trade dispute against a WTO member immediately triggers the political mobilization of potentially-affected domestic constituencies. When the trade dispute touches upon a sector that is not, or is only weakly, integrated into GVCs, the political conflict will be of the kind traditionally depicted by studies focusing on the political economy of trade in finished goods (i.e., between import-competitors and exporters). Assuming that government representatives are mostly concerned with their chances of being re-elected or re-appointed, we can expect their decision to be dependent on the relative political weight of these two sets of groups—which depends, in turn, on the relevance of the economic stakes involved—on the certainty with which such distributive effects can be calculated in advance, on the number of actors that have to act collectively, and on the presence of organizational structures that can support collective action (Hathaway 1998; Olson 1965).<sup>6</sup> Irrespective of these factors, what matters in this context is that trade policymakers must steer a course between the import-competing firms that aim to safeguard their domestic production by upholding trade barriers, and export-led firms that seek to avoid foreign market closure following the imposition of retaliatory measures (Bown 2004).

The political conflict changes in nature when a dispute touches upon a sector that is highly integrated into GVCs, and thus also concerns trade in intermediate goods. In addition to import-competitors and exporters, the political conflict includes those that oppose such policy measures because such goods are critical components of their production processes. Indeed, when more GVC-related trade takes place in the sector affected by a WTO dispute, there is a greater probability that compliance, next to generating costs for import-competing firms operating in that sector, would also bring

<sup>5</sup> For a detailed overview of exporting sectors and the collective action dilemmas they face, see Dür (2010).

<sup>6</sup> We follow Grossman and Helpman (2001) and consider policymakers to be self-interested actors.



about benefits for the large amount of import-dependent firms that can be expected to operate in such sector. This means that a WTO dispute can be expected to generate a different political conflict: one in which relevant import-competing groups operating in the sector targeted by a WTO dispute confront a stronger pro-trade coalition composed of both the import-dependent firms that also operate in such sector due to its high levels of integration in GVCs, and exporters threatened by potential retaliation. The latter are likely to mobilize as the prospect of retaliation in case of non-compliance would entail significant distributional costs for them. This retaliatory threat could be implicit or explicit, and exporter mobilization is expected to add to that of GVC-integrated firms in either case. Firms and sectors explicitly targeted in WTO retaliation via market closures would mobilize in favor of compliance in order to restore their market access. However, even before particular products are targeted as part of retaliatory measures in cases of non-compliance, “an undercurrent of potential retaliation is inherent in every dispute” (Bown 2009:131), which incentivizes exporters to advocate the avoidance of non-compliance in the first place. Therefore, an adverse panel ruling, which creates an implicit threat of retaliation, serves as the first step toward concentrated losses for exporters, which is likely to spur them into action (Dür 2010).

In sum, the removal of WTO-incompatible trade barriers will not only be supported by those exporters that fear foreign market closure through retaliation in other sectors, but also by those who wish to exploit the opportunity to access imports of intermediate goods more cheaply. Other things being equal, one should therefore expect a dispute targeting sectors highly integrated into GVCs (mostly affecting trade in intermediate goods) to engender a political dynamic that is more prone to result in more timely compliance than a dispute targeting sectors only weakly integrated into GVCs (mostly affecting trade in finished goods).

In order to make our argument as systematic as possible, three further specifications are in order. First, our argument does not assume away the possibility that governments erect trade barriers that then elicit WTO disputes, even in sectors highly integrated into GVCs. This is so because at that early stage, import-competing firms, also in highly integrated sectors, are not yet confronted with the twin coalition of both import-dependent firms suffering losses and exporters fearing retaliation. Indeed, absent a WTO dispute, whether government officials adopt an import-restricting measure depends on the relative balance of power between import-competing and import-dependent groups. The initiation of the dispute, however, strengthens the ability of import-dependent firms to affect the policy making process because it generates a stronger free-trade coalition by incentivizing the mobilization of exporters potentially affected by the imposition of retaliatory measures. This explains why some WTO members may adopt import-restricting policies and measures affecting highly-integrated sectors, and subsequently dismantle such measures once challenged in WTO litigation.

Second, our argument does not hold equally at all stages of WTO disputes. The ultimate shift in the domestic political balance in favor of trade liberalization that we describe is more likely to emerge after a DSB ruling is issued. While import-dependent firms with a stake in the removal of WTO incompatible trade barriers may mobilize before a dispute escalates to the panel stage, the likely success of their mobilization is greater once the dispute escalates to the panel stage, since they are joined by exporters galvanized into action against potential retaliation. Dispute escalation is a device that governments in complainant WTO members use to signal their commitment to defend the interests of

domestic constituencies (Davis 2012). As the empaneling of disputes thus serves the complainant's purpose of sending a credible signal of resolve to impose costs on the defendant for misbehavior, incentives for collective action by trade-related interests in the defendant should also increase. This increases the likelihood that exporters, fearing the imposition of retaliatory measures, mobilize politically, thus increasing import-dependent firms' expectations that their lobbying effort will be successful. In short, our argument about how WTO disputes may trigger the emergence of stronger domestic pro-trade coalitions, composed of import users and exporters, in cases in which WTO defendants are highly integrated in GVCs, should hold more strongly when complainants credibly signal their resolve by escalating disputes to the panel stage.

Finally, the logic of our argument should not depend significantly on whether trade in intermediates is characterized by high or low levels of intra-industry trade (IIT). IIT trade is a result of product differentiation, motivated both by economies of scale and consumers' taste for variety (Krugman 1981). Baccini et al. (2015) argue that support for trade liberalization should be high in the presence of low levels of IIT in trade in intermediates, while it should decrease with increasing levels of IIT. They suggest that low levels of IIT mean that intermediates are relatively homogeneous and can therefore be equally used by all domestic import-dependent firms, while high levels of IIT mean that intermediates are more differentiated, making it difficult for domestic downstream industries to switch to new varieties of intermediates, and ultimately decreasing political support for trade liberalization among import-dependent firms. However, while it may be true that support for trade liberalization should decrease, opposition is also likely to decrease. Precisely because high levels of IIT imply high levels of product specialization and strong buyer-relationships between domestic producers of intermediates, downstream industries, and consumers, domestic import-dependent firms that cannot enjoy the benefits of cheaper access to intermediates should not be particularly worried about being driven out of business. In other words, while trade in intermediates due to high levels of GVC integration varies significantly depending on levels of IIT, we do not expect this variation to affect the likelihood of compliance in WTO disputes to a significant degree.

## 2.4 A brief empirical illustration

The political dynamics underpinning the WTO dispute on US definitive safeguard measures imposed on certain steel products (WTO DS 248) nicely illustrates the logic of our argument. In March 2002, the United States imposed a number of safeguard measure on steel imports, in an attempt to satisfy demands from the steel industry, an industry characterized by an increasingly poor international competitive position but also traditionally powerful both within and outside of Congress. As the onset of the 2000 economic downturn in the US economy exacerbated the industry's perilous position and risked forcing a number of steel plants located in the old industrial states of Ohio, Pennsylvania, and West Virginia to close, intense political pressures by labor unions, employers, and industry associations, such as the American Iron & Steel Institute, convinced President Bush and the Republican Party to support their demands, particularly as the November 2002 mid-term elections approached.<sup>7</sup>

<sup>7</sup> For an extensive overview, see Read (2005).

While providing support to US domestic steel producers, these measures also increased production costs for steel-consuming firms. The imposition of safeguard measures on steel imports thus generated significant political opposition by organizations representing import-dependent firms such as the Consuming Industries Trade Action Coalition (CITAC), who successfully persuaded the House Ways and Means Committee to request an International Trade Commission (ITC) investigation into the impact of safeguards on steel consumers, with support from over fifty members of the U.S. House of Representatives (USITC 2003). CITAC members included global automotive manufacturing firms, such as Delphi and Metaldyne, along with many other small and mid-sized enterprises, who pleaded for the safeguard measures to be removed.<sup>8</sup>

Such lobbying efforts alone, however, proved insufficient to convince President Bush to lift the measures and the safeguards were immediately targeted by a number of WTO members. The most forceful reaction came from the EU, which immediately tabled a request for consultations with the United States on March 7, 2002, and shortly thereafter, announced its intention to impose retaliatory measures targeting imports of steel and other products (CEC 2002). While the actual imposition of such retaliatory measures was suspended as a result of partial concessions by the US and the need to await formal authorization by the DSB, the problem was only postponed, as in July and November 2003 the Panel and Appellate Body respectively issued reports upholding EU claims and authorizing retaliatory action. The WTO ruling spurred further activism by US steel users and consumers; the President of CITAC urged swift compliance, complaining that “for the sake of the US manufacturing sector, it’s time to end the tariffs now,” while other car part manufacturers, such as Metaldyne and Textron, also demanded the lifting of the safeguard measures.<sup>9</sup>

At the same time, the decision mobilized US exporters. Indeed, the cleverly-designed EU retaliatory measures targeted important US exports such as Florida citrus, Louisiana rice, California nuts, and North Carolina pajamas, which were politically-organized sectors, located in states important to the upcoming presidential election in 2004 (Jacobs 2016). As a result, the trade-liberalizing preferences of GVC-integrated actors were now seconded by exporters who wanted to avoid EU countermeasures, and thus shared the same policy objectives in achieving the removal of safeguard measures.

The WTO DS ruling and the threat of retaliatory measures by the EU thus changed the domestic constellation of mobilized interests, confronting President Bush with a coalition of both import-users and exporters favoring the removal of restricting measures on steel imports and compliance with WTO rules. On 4 December 2003, USTR Robert Zoellick announced that the US steel Safeguard Measures were to be lifted on the grounds that the Action had worked, that the US economic situation had improved,

<sup>8</sup> See: the proceedings of the *Impact of the Section 201 Safeguard Action on Certain Steel Products*. Hearing before the U.S. House of Representatives Committee on Ways and Means Subcommittee on Trade, March 26 2003.

<sup>9</sup> Tonya Vinas “DDayFor Steel,” *Industry Week*, December 21, 2004. Accessed on May 12, 2016 via: <http://www.industryweek.com/none/d-day-steel>. See also: “U.S. Disagrees with the WTO steel Ruling,” *The World Trade Review*, 15 December 2003. Accessed via: <http://www.worldtradereview.com/news.asp?pType=N&iType=A&iID=72&siD=23&nID=12206>.

and that the domestic costs of the measures now outweighed their benefits.<sup>10</sup> As Read puts it, “The United States avoided a major potential trade war and the possible electoral consequences of EU retaliation in favor of adhering to the international rules on trade. In so doing, The President was forced to eschew the unilaterally protectionist sentiments of the domestic steel lobby” (Read 2005:169).

### 3 Research design

This illustration in hand, we move now to a broader test of our theoretical claims. In order to test our argument empirically, we rely on a novel dataset of WTO trade disputes (which includes the EU as a single entity). We examine every WTO dispute that resulted in an adverse panel ruling between 1995 and 2010.<sup>11</sup> Although we recognize that recently-litigated disputes may bring additional variation to our analysis, we have reliable data only through 2010. As a result, our dataset includes 124 observations, after dropping cases with missing values. We use these data to examine the effect of GVC integration on the time it takes for defendants to implement WTO panels’ recommendations. In addition to our variable of interest, we control for a number of relevant factors, drawn from the literature, which we outline below.

#### 3.1 Data

We measure our dependent variable, *time until compliance*, by calculating the number of months that it took defendants to implement adverse panel rulings. The universe of cases we consider is thus the set of WTO disputes in which a Panel or the Appellate Body issued an explicit and legally-binding injunction for the defendant to bring domestic policies into compliance with WTO rules. In doing so, we largely follow those works defining compliance as domestic policy change (Hudec 1993; Davey 2005; Busch and Reinhardt 2003), and complement this with taking into account how long it took violators to change their domestic policies (Brewster and Chilton 2014; Spilker 2012; Sattler et al. 2014; Yildirim 2016). Because we assume that politicians are interested in both obtaining support from politically relevant constituencies to enhance their chances of being re-elected or re-appointed (De Bièvre and Dür 2005; Olson 1965; Grossman and Helpman 2001), and in gauging the effects of the dynamics of political mobilization of trade-related organized interests on the politics of compliance in WTO disputes, we believe this measure effectively allows us to capture the logic that underlies our argument. Indeed, variation in the extent to which governments swiftly correct their illegal behavior or use delay tactics—acting as suppliers of such protectionist policies in the form of prolonged

<sup>10</sup> See: Press Briefing by US Trade Representative Zoellick on Ending the Temporary Steel Safeguards. Washington: The White House Office of the Press Secretary Available at: <http://iipdigital.usembassy.gov/st/english/texttrans/2003/12/20031204164450yessedo0.718197.html#ixzz45cv7YfiB> Accessed on April 12, 2016.

<sup>11</sup> Relevant data are missing for a subset of WTO defendants, including Thailand, Egypt, Guatemala, Argentina, Colombia, Chile, the Dominican Republic, and the Philippines. Collectively, these defendants account for 17 cases, which are omitted from our first model due to data limitations. However, in our second model, we conduct two separate analyses using alternative data sources, which can include most of these missing disputes. They reveal substantively similar results.

violations of WTO obligations at the WTO DSM—can be thought of as a reliable measure of the dynamics of political mobilization and coalition formation of domestic organized interests favoring or resisting the removal of protectionist policies. Changes in the composition of domestic coalitions should thus affect policymakers' willingness to comply in a timely manner. Since we contend that a high degree of integration of the targeted sector in GVCs crucially influences such domestic political dynamics of political mobilization, by increasing the size of the domestic pro-trade liberalization coalition, it is plausible to expect time until incentives for policymakers to supply delay tactics should also decrease, ultimately increasing the likelihood of timely compliance.

We track the domestic policy result of the dispute and consider the ruling to be complied with if WTO-inconsistent measures are withdrawn or modified to be in line with WTO law. In the cases in which the Panel rulings were appealed, we consider the AB report as the final ruling that clarifies the extent of the violation and calculate the time from the circulation of the AB panel report to compliance by the defendant.<sup>12</sup> In cases where the defendant modified the relevant policy, instead of withdrawing it, and such modification was opposed by the complainant and taken to the compliance panels, we assess each compliance panel decision on its own. If the compliance panels found no evidence of violation (which means the defendant did indeed implemented the panel ruling(s) in good faith), we do not take into account the compliance panel stage when calculating the time until compliance. However, if the compliance panels ruled that there was non-compliance and the defendant was required to further change the modified measure(s), then we calculate the time from the appellate body report until the final modification that corrected the WTO-inconsistent measure(s). In the [appendix](#) we provide examples of our approach and a corresponding chart that gives details of the different stages of the WTO panel process.<sup>13</sup>

Some scholars have previously tried to measure DSM compliance by taking trade flows as a proxy (Bown 2004; Peritz 2016). There are several reasons why this measure is unreliable, as trade volumes are heavily affected by other factors—economic shocks, newly ratified Preferential Trade Agreements (PTAs), armed conflicts, sanctions between WTO members, and the economic growth of disputants over the course of a long dispute—making an assessment of whether the WTO-illegal measures were modified a

<sup>12</sup> We start the clock to calculate 'time until compliance' from the AB report because the extent of a violation, and therefore the extent of policy change required to bring about compliance, is only clarified for the defendants after a final ruling is delivered by the AB. As a robustness check, however, we run separate analyses in our supplementary appendix in which we calculate the 'time until compliance' from the original panels' report. Our results are substantively similar.

<sup>13</sup> Four additional details warrant attention. First, in cases where there were multiple complainants in a dispute, we distinguish each pair and count them as separate disputes. This decision is consistent with a number of works in the field (e.g., Horn et al. 1999; Bagwell et al. 2004) and was made so that we can observe the impact of additional WTO members in a dispute. Second, our sample does not include disputes that targeted horizontal measures, since these disputes did not target specific sectors. Although some horizontal measures may involve certain sectors more than others, we only examine responses to litigation if there is a sector whose import dependence can be measured. Third, a few disputes resulted in compliance around the same time there was a panel ruling. Even though the defendants in these disputes did not comply with a panel ruling per se, they demonstrated domestic policy change after a panel composition, in which the clarity of violations were most likely made before the circulation of panel reports. Finally, in certain disputes, defendants notified the WTO DSB of compliance, but we could not find the corresponding domestic legislation. These cases are coded "complied with" and we rely on WTO Members' notification to the DSB and official WTO records to consider the extent of compliance.

more reliable measure (Bown 2004: 814). Moreover, firms and sectors in complainants' economies may well adapt and substitute their markets when faced with market-restricting barriers. Additionally, the use of changes in trade volumes between complainants and defendants inherently assume that all disputes are about market access. This is not necessarily the case (Bown and Reynolds 2014:152).

Our main independent variable is the *targeted sector's level of GVC integration*. We operationalize this variable by using four different available measures, all of which focus on the role of imports in a sectors' final output. We focus on the role of imports for several reasons. First, our argument concentrates on the effects of GVCs on the domestic politics of trade; *in casu*, on how different levels of GVC integration affect the politics of compliance in WTO disputes. Our approach is in line with a large body of literature, which also considers trade in intermediate goods to be both the single most important GVC-related factor influencing the domestic politics of trade, and the most straightforward measure of internationalization of production (Baccini et al. 2015; Eckhardt and Poletti 2016; Amador and Cabra 2014, 19). Most importantly perhaps, our operationalization allows us to make effective use of the two most comprehensive and reliable data sources on GVCs that have been compiled so far: the European Commission-funded World Input-Output Database (WIOD) (Timmer et al. 2015) and the OECD-WTO Joint Trade in Value Added Database (TiVA) (OECD-WTO 2015). Despite existing differences, these two datasets are both based on the assumption that mapping trade in intermediate goods is crucial to generating an empirical measure of how GVCs affect contemporary trade policy. We thus rely on these two different data sources to measure our independent variable. First, we identify the sector(s) targeted in the disputes by examining original WTO documents submitted as part of the panel process. After identifying the targeted sectors in a dispute, we check our designation with the data collected by Horn and Mavroidis (2008) and cross-reference it with the International Standard Industrial Classification (ISIC) and European Union Classification of Economic Activities (NACE). Second, we use the European WIOD dataset, which includes detailed data on each sector's value-added trade and intermediate consumption between 1995 and 2012 (Timmer et al. 2015). We calculate targeted sectors' intermediate consumption as a percentage of their total output and use this import-dependence measure as the first measure of our independent variable.<sup>14</sup>

Next, and in order to demonstrate the robustness of our results, we duplicate our analysis using three alternative measures drawn from TiVA: the sectors' *total import dependence*, *import dependence for intermediate goods*, and *foreign value added share of gross exports*. These alternative measures tap into different components of GVC integration, including the sector's reliance on imported foreign products. We show that the results are substantively similar across all four operationalizations.<sup>15</sup>

Drawing on the existing literature, we also include a number of control variables. We start by accounting for the possibility that patterns of compliance in WTO dispute settlement are affected by differences in complainants' retaliatory capacity. First, following Bown (2004), we examine the defendant's dependence on the complainant as an export market. We measure the credibility of the retaliatory threat as the percentage of the defendant's total exports to the complainant's market. Data on

<sup>14</sup> For the World Input Output Database, see: [http://www.wiod.org/new\\_site/database/wiots.htm](http://www.wiod.org/new_site/database/wiots.htm)

<sup>15</sup> For the TiVA dataset, see [http://stats.oecd.org/Index.aspx?DataSetCode=TIVA2015\\_C1#](http://stats.oecd.org/Index.aspx?DataSetCode=TIVA2015_C1#).



*defendant export dependence* are drawn from the UN COMTRADE database. Second, we consider the *defendant's share of FDI stocks* in the complainant's market out of total FDI stocks. This should place additional pressure on the defendant to comply, in order to avoid potential retaliatory actions undertaken by the complainant in the form of discriminatory measures against defendant FDI's.<sup>16</sup>

We also control for the possibility that the level of political mobilization engendered in the defendant by the WTO dispute might affect compliance. Ideally, and following Olson (1965), we would use measures that assess both whether a dispute touches upon an economically-important sector and whether the potential for political mobilization in such sector is high. The Herfindahl-Hirschman Index (HHI), which measures the level of concentration within a market, would nicely capture the logic that underlies this hypothesis.<sup>17</sup> Unfortunately, data to construct this measure across all considered disputes are not available. Other measures of the “political importance” of WTO disputes that have been proposed so far include the level of sector employment and whether the dispute targeted the agricultural sector.<sup>18</sup> We use the *targeted sector's value added* as a share of the defendant's GDP as a proxy for political mobilization because the literature on interest groups clearly suggests that sectoral value added largely predicts the intensity of lobbying (Messer et al. 2011; Berkhout et al. 2015).

We account for the political importance of the dispute by looking into the nature of the disputed issues. Some analyses have shown that disputes over *complex* issues are less likely to be settled during the consultation stage of WTO litigation and are more likely to be empaneled Guzman and Simmons (2002); Sattler et al. 2014). Scholars have also shown that certain measures challenged at the WTO – such as complex behind-the-border regulatory measures – are more difficult to comply with (Brewster and Chilton 2014) since they cannot be partially negotiated for settlement and would require significantly longer administrative procedures for modification (Wilson 2007). High levels of issue complexity could therefore decrease the likelihood of a swift compliance by defendants following Panel or Appellate Body rulings. In line with the existing literature, we consider targeted measures as “non-complex” if they are quotas or subsidies, which can be corrected much more easily in comparison to complex issues such as administrative regulations and other behind the border measures (Guzman and Simmons 2002). Our (non-)complexity measure takes a value of 0 if the issue is complex and 1 if it is simple.

In addition, we take into consideration arguments that point to the importance of domestic institutions in determining WTO members' adherence to their international trade commitments (Mansfield et al. 2002). First, we control for the *level of democracy of the defendant* in each dispute relying on the widely-used Polity IV dataset (Marshall and Jaggers 2002). We also account for the number of domestic *veto players* in the defendant state, as they are considered a critical factor in influencing the general propensity of a political system to move away from the status quo (Tsebelis 2002). For non-EU countries, we rely on the Political Constraints (PolCon) database compiled

<sup>16</sup> The data on FDI stocks were collected from the OECD where available and EUROSTAT for the EU. For the data on developing WTO members, we utilized UNCTAD. The closest year available was used if data were missing for certain years.

<sup>17</sup> See OECD (1993), for an overview on HHI index and sector concentration.

<sup>18</sup> Sector employment is used as a proxy for political importance by Hoffman and Kim (2009). In addition, Spilker (2012) and Sattler et al. (2014) consider agricultural sectors to be politically important.

by Henisz (2011). We use Henisz's method to compile a separate veto player score for the EU as a whole. This allows us to use a single variable that is consistent across disputes for all WTO members. Our calculation and the coding method for the EU can be found in the [appendix](#).

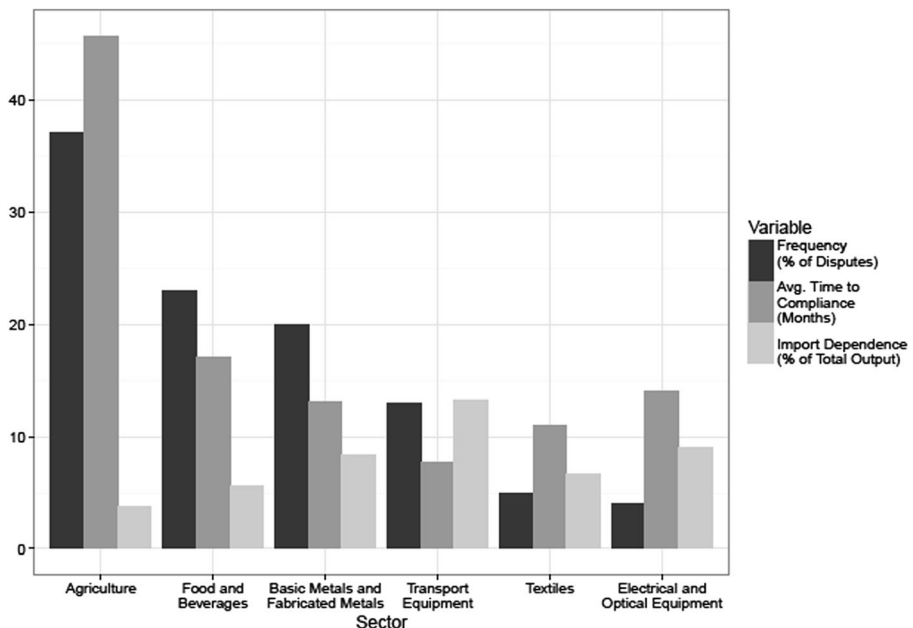
Finally, we include separate dummy variables for whether the *US* or the *EU* are involved as defendants, to ascertain whether the results hold in cases in which these two particularly powerful trading entities are involved in a dispute.

## 4 Analysis

We begin our investigation by examining the data on all WTO disputes between 1995 and 2010. Figure 1 summarizes three important variables, with respect to the six main economic sectors. The black bars, which depict the percentage of disputes that come from each sector, show that the most frequently targeted industries come from Agriculture, Manufacturing of Food and Beverages, and Manufacturing of Metals. This is not necessarily surprising as targeted sectors tend to be those that have traditionally been protected, such as farming or steel manufacturing.

The dark gray bars provide information on the average time until a country brings itself into compliance, following a violation in a given sector. Here, we see a general correlation with frequency, with especially long delays for agricultural disputes. Interestingly, disputes over metals tend to be resolved more quickly than those concerning electronics.

Finally, the light gray bars depict average levels of GVC integration across these sectors, as measured by level of import dependence. We note that the level of integration is, in general, negatively correlated with the frequency of disputes,



**Fig. 1** Descriptive statistics by sector

suggesting that disputes tend to arise around sectors that have lower levels of integration. This suggests that states are generally less likely to implement policies that conflict with WTO rules in sectors that are heavily integrated.

Table 1 provides additional descriptive statistics on the relevant features of disputes at the WTO (excluding dummy variables). Our dependent variable ranges from immediate compliance to holdouts of more than 14 years. Our key independent variable ranges from dependence levels of 1.68% to nearly 40% (though 95% of observations remain under 16% integration).<sup>19</sup> Other variables show relatively broad ranges, with reasonable levels of variation.

Having briefly examined the data, we turn to our analysis. As our variable of interest is represented by the time until the defendant complies, we analyze the data using a semiparametric Cox proportional hazards model. The Cox model is advantageous in that it does not require specification of the baseline hazard function and that estimation of the partial likelihood function with random right censoring of observations remains efficient (Efron 1977). It is also useful in that it can incorporate predictable time-varying covariates, provided that they enter into the model linearly.

Table 2 presents the results of our Cox regression across six different models. Columns 1–3 represent different model specifications for the WIOD dataset, while columns 4–6 use three different operationalizations of GVC integration from the TiVA data. Examination of the Schoenfeld residuals across all six models suggests that the proportional hazards assumption is satisfied in each case (Box-Steffensmeier et al. 2003). Interpretation of the results is straightforward: positive values indicate that the variable is related to a higher probability of failure (i.e., compliance). Thus, factors with positive coefficients are associated with a shorter time until compliance. Column 1 depicts the baseline model, including all relevant covariates except for GVC integration. The results suggest that time until compliance is driven by issue complexity and EU membership, both of which are negatively related to time until compliance. The model in column 2 incorporates GVC integration through our proxy variable, import dependence. When we include this measure, we find that it also significantly reduces time until compliance. Additionally, we find significant effects for several other factors: democracy, which makes compliance more likely, and veto players and sectoral value added, both of which increase the time to compliance. The effects of the previously-marginally-significant EU variable vanish. The effects of integration remain in our third model—where we include dummies for the year in which the dispute is initiated—as does sector value added. In addition, we see a marginal effect for US as a defendant. Accounting for time allows us to control for changes in the international system or in the nature of the disputed issues, as well as for institutional changes that might affect willingness to settle, such as the expiration of Article 13 of the WTO's Agriculture Agreement in 2004 (Goldstein 1996; Poletti et al. 2015). The inclusion of time dummies increases the magnitude of most coefficients, including GVC integration. We also find a consistently significant result for issue complexity, suggesting that simpler issues are resolved more quickly than are complex issues.

<sup>19</sup> Results remain substantively similar when omitting outliers.

**Table 1** Descriptive statistics for relevant variables

Variable	Minimum	Maximum	Mean	Std. Dev.
Compliance (months)	0	178	25.88	38.48
GVC integration (WIOD)	1.68	39.19	7.39	5.55
Defendant Polity score	-7	10	8.17	4.88
Defendant export dependence	0.02	88.60	12.90	20.67
Sector value added (logged)	0.00	4.42	3.36	0.94
Veto players	0.00	0.87	0.74	0.26
FDI share	0.00	60.18	10.15	16.29

Columns 4–6 of Table 2 use the most complete specification from the WIOD model (column 3), and three different operationalizations of our key independent variable: import dependence, intermediate import dependence, and foreign exports. The results from the TiVA data suggest that our results are not the result of the particular GVC proxy used in columns 1–3. Our general results remain robust, with our GVC measures reaching statistical significance at the  $p < .05$  level in each model. We find this

**Table 2** Results from Cox proportional hazard model

	WIOD Data			TiVA Data		
	Baseline	Integration Included	Time Included	Import Dependence	Intermediate Import Dependence	Foreign Exports
Defendant	0.13 (0.08)	0.16** (0.08)	0.13 (0.09)	0.09 (0.07)	0.13* (0.07)	0.21*** (0.08)
Def. Export Dependence	-0.01 (0.01)	-0.01* (0.01)	-0.02 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Issue Complexity	1.02*** (0.23)	1.18*** (0.24)	1.21*** (0.27)	0.97*** (0.24)	1.07*** (0.25)	0.96*** (0.24)
Sectoral Value Added	-0.09 (0.10)	-0.29** (0.12)	-0.41*** (0.14)	-0.11 (0.12)	-0.16 (0.11)	-0.17 (0.11)
Veto Players	-2.59 (1.63)	-3.25** (1.59)	-2.64 (1.92)	-1.35 (1.46)	-2.47 (1.52)	-2.90* (1.54)
Share of FDI Stocks	-0.00 (0.01)	-0.00 (0.01)	-0.01 (0.01)	-0.02** (0.01)	-0.02** (0.01)	-0.02** (0.01)
EU Defendant	-0.55* (0.33)	-0.29 (0.34)	-0.38 (0.42)	-0.39 (0.51)	-0.06 (0.52)	-0.98* (0.52)
US Defendant	-0.40 (0.30)	-0.33 (0.29)	-0.71* (0.38)	-0.59 (0.43)	-0.51 (0.42)	-0.46 (0.41)
Import Dependence		0.06*** (0.02)	0.07*** (0.02)	0.01** (0.01)		
Int. Import Dependence					0.04*** (0.02)	
Foreign Exports						0.06*** (0.01)
R <sup>2</sup>	0.21	0.29	0.37	0.33	0.34	0.38
Num. obs.	125	124	124	132	132	132

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Standard errors in parentheses; all tests are two-tailed tests

robustness check to be especially encouraging.<sup>20</sup> Moreover, we find a relatively small yet significant negative impact of FDI stocks on time to compliance. This is an interesting and a counterintuitive finding. We expected that defendants would comply faster in the presence of significant complainant investment in the defendant's economy, as it would allow the complainant to threaten the defendant with credible retaliation. Yet, our results indicate the opposite. This may be due to complainants facing a 'hold up' scenario (Klein et al. 1978), where sectors in the defendant refuse to cave in to demands, knowing that complainants' exit options are limited since their investments cannot be withdrawn without significant costs. We also note that the estimated effect of democracy increases substantially when we use the measure 'foreign value added share of exports'. This result is consistent with our argument. Among the different measures of GVC integration we use, the measure 'foreign value added share of exports' is the one that most directly captures the extent to which firms belonging to a value chain have a stake in both accessing cheaper imports and exporting to foreign markets. Other operationalizations tend to measure firms that are part of a chain but have little interests in exporting (importers of parts and components or final product that are integrated into a value chain but sell primarily to domestic markets). Because producers integrated into value chains that have a higher export orientation can be expected to care more about potential retaliation by complainants than firms that predominantly sell in the domestic market, the overall domestic propensity to comply in a timely manner should be stronger in the former case. This effect should be felt more strongly when domestic institutions are relatively more responsive to such domestic demands (i.e., within democratic states).

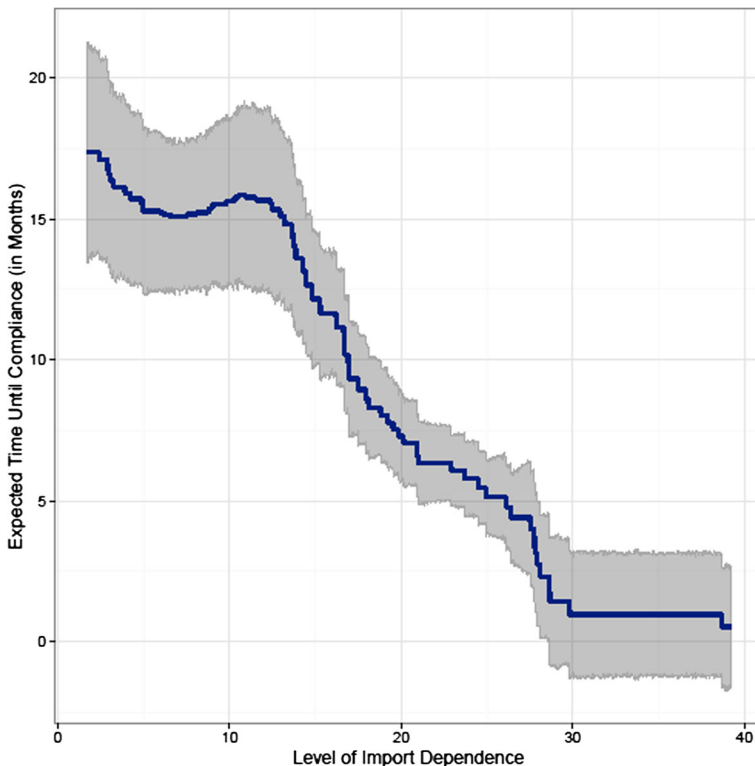
The results in Table 2 can be interpreted relatively easily in terms of effects on the underlying hazard ratio. However, given the potential complexity of the hazard function and the semiparametric nature of the model, the true substantive implications of our results can be difficult to grasp from examining a table. For this reason, it is instructive to examine the average expected duration of a dispute, given a change in levels of integration. We employ a technique proposed by Kropko and Harden to calculate expected durations for counterfactuals of a number of specific cases, and use Hanmer and Kalkan's procedure to generate the average effect of a change in GVC integration (Kropko and Harden n.d.; Hanmer and Kalkan 2013).

Figure 2 depicts the average expected duration of a trade dispute as we vary import dependence from its empirical minimum to its empirical maximum, using the results from the model in column 3. The solid line indicates the predicted value, while the shaded region gives the bootstrapped 95% confidence interval. The downward trend in time until compliance is obvious and consistent with both the findings above and our hypothesized relationship. On average, for very low levels of integration, we would expect settlement to take between about 13 months and two years. For a relatively high level of integration (around 15%), we predict that settlement would occur within about a year. At a very high level of integration (around 40%), we expect the parties to settle almost immediately. The shape of the curve suggests that the marginal return to additional import dependence is limited until about 12%, but it grows rapidly (in absolute terms) once more from about 12% to 29%, after which the effect levels off.

<sup>20</sup> More information on the specifics of the TiVA data and the substantive effects can be found in the appendix.

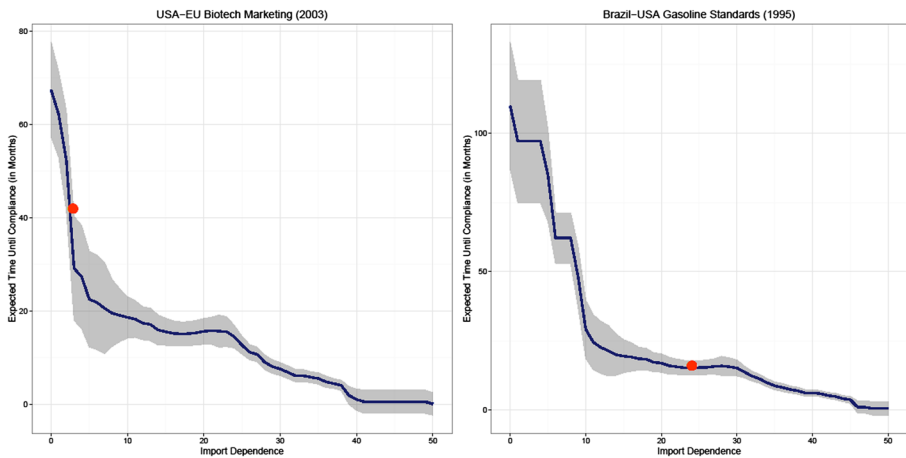
Figure 2 is useful because it shows the average substantive effect of the variable of interest. However, in the real world, we do not simply observe cases with average attributes. Rather, we observe effects that depend upon specific conditions. Therefore, it is instructive to examine the predicted effects for actual cases from the data, which can give an understanding of what we might see in actual WTO dispute cases. Given the estimation above, we can use our results to generate counterfactuals for real disputes. Figure 3 shows two such counterfactuals. We plot predictions for two representative cases from our data set: one for which the level of integration was especially low and one for which it was relatively high. The left panel comes from a 2003 dispute brought by the US over EU member state marketing and import bans on biotech products that had been approved for import by the European Community. The panel on the right is a 1995 case in which Brazil brought forth a complaint against the United States over the regulation of gasoline from South American exporters. In each, the solid line provides our prediction for the case at various values of import dependence, and the large, red dot gives the true values of the integration and comply time variables in that instance.

In the first case, import dependence is low (2.86%), and the dispute lingers for nearly three and a half years. Our model's prediction at this level of import dependence is fairly accurate, and we predict that, had integration increased, the time to compliance would have fallen dramatically. By 10% integration, we would have expected time to compliance to have dropped by more than half. In the rightmost panel, by contrast,



**Fig. 2** Average expected dispute duration





**Fig. 3** Predicted durations for cases in the data

import dependence is high (24.07%) and compliance is relatively fast (sixteen months). Again, our model performs accurately. We estimate that the time to compliance would have increased rapidly, had integration been lower, lasting nearly a decade at levels as low as those seen in the biotech dispute.

Our analysis suggests that GVC integration plays a powerful role in a defendant's willingness to comply in WTO disputes. In addition to finding that the effect is statistically significant across over one hundred cases, we find large substantive effects, both on average, and when applied to specific instances. We also demonstrate that the marginal effect of import dependence is largest at low-to-moderate levels, suggesting that changes in integration have the greatest role to play at when states are becoming integrated into the world market. This is especially relevant, as some of the most widely-disputed sectors—agriculture, food and beverages, and textiles—tend to have relatively low levels of import dependence. Increasing integration in these areas would likely lead to faster compliance with WTO rulings.

## 5 Conclusion

In this paper, we analyzed the international political economy of WTO dispute settlement. We investigated the political and economic sources of (non-)compliance with adverse panel rulings in nearly all WTO disputes between 1995 and 2010. We proposed that when defendants at the WTO face litigation targeting a sector that is highly integrated into production networks, the trade liberalizing preferences within the sector lead them to comply more quickly. This is because the initiation of such disputes brings about the political mobilization of a coalition of domestic groups favoring compliance, composed not only of exporters seeking to avoid the imposition of retaliatory measures, but also of highly-integrated firms and sectors wishing to access cheaper imports.

The survival analysis we conducted reveals that the defendant's propensity to comply with adverse rulings in WTO dispute settlement is indeed crucially affected by the level of GVC integration of the targeted sector. Our findings suggest that defendants are faster in bringing about trade-liberalizing domestic policy change in the face of adverse panel

rulings at the WTO DSM when the targeted sector is more heavily integrated. The marginal effect of integration seems to be greatest at low-to-moderate levels, perhaps because relatively small levels of integration are needed to convince domestic groups to mobilize, and there are simply fewer non-mobilized groups available at higher levels. Furthermore, by using four different proxies for integration, across two different data sets, we demonstrate that our results are not driven by our modeling choices.

Our findings have important implications not only for the study of trade policy and the politics of WTO dispute settlement, but also for the analysis of the conditions that make international institutions effective more broadly. First, we support existing studies that stress that the politics of trade policy can no longer be exclusively conceived of as a conflict pitting producers wishing to increase market access opportunities abroad against producers seeking protection from foreign competition in the domestic market. The internationalization of trade, production, and distribution systems has changed the nature of the political conflict that underlies the making of trade policy, leading to the emergence of import-dependent GVC integrated firms as a key set of actors that is affected by and mobilizes over trade policies. This article thus contributes to our understanding of the politics of trade policy by highlighting how the judicial institutions of the WTO affect the preferences and patterns of mobilization of this important set of trade-related interests, and how such dynamics contribute to particular trade policy outcomes.

Second, our findings broaden our understanding of the political implications of the growing internationalization of production in the world economy. While the potential for such processes to make trade liberalization easier to achieve has already been widely noted (Antras and Staiger 2012; Chase 2003),<sup>21</sup> no study so far has systematically assessed how different patterns of integration into GVCs can affect compliance with the WTO DSB. We therefore contribute to this strand of literature by showing how growing internationalization and the fragmentation of production processes in the world economy facilitate international trade liberalization by creating political conditions that strengthen the WTO's capacity to enforce multilateral trade rules. This is a particularly important finding given that the growing inability of the WTO to perform its legislative function—sustaining the liberalization of world trade through the adoption of broad multilateral trade deals—is contributing to its judicial institutions becoming central to the organization's political system (Goldstein and Steinberg 2008). Finally, and more generally, our article contributes to the literature on international cooperation by advancing our knowledge of the micro foundations of states' cooperative behavior in international trade relations.

Additionally, our argument and empirical findings suggest several avenues for further research. Two such avenues are particularly important in our view. First, the reform of the dispute settlement mechanism that materialized with the creation of the WTO was meant to increase both first- and second-order compliance with WTO rules (von Stein 2012). While this article has shown that integration into GVCs can increase the likelihood that WTO enforcement institutions will be effective in fostering second-order compliance, it remains an open question whether similar dynamics affect first-order compliance. Does integration in GVCs make the imposition of protectionist trade policies or measures less likely in the very first place? Many previous studies have shown that trading nations have

<sup>21</sup> See also, Orefice and Rocha (2014), Eckhardt (2013, 2015); Eckhardt and Poletti (2016), Jensen et al. (2015); Kim (2015), Manger (2009) and Milner (1987).

resorted to protectionism to a lesser degree than might have been expected in the wake of the global financial crisis that erupted in 2007–2008. While the presence of credible enforcement mechanisms such as the WTO DSM certainly played a significant role in constraining such protectionist demands across the board, logic suggests that the effectiveness of enforcement institutions in fostering first-order compliance should be more pronounced whenever trading partners are heavily integrated into GVCs (Baccini and Kim 2012; Kim 2012). The data analyzed here, as depicted in Fig. 1, suggest potentially important findings regarding such a mechanism. We can observe that sectors characterized by high GVC integration were affected by fewer disputes on average than other sectors in our sample. This would indicate that integration may indeed lead to less protectionist policies across the board. However, and perhaps more importantly, our data also show that WTO-incompatible trade barriers nevertheless get erected in sectors with very high integration into global production networks. This might suggest that, from a domestic political standpoint, policymakers still enact potentially WTO-incompatible, disruptive trade policies whose benefits outweigh their costs – at least in the short term until they are targeted through inter-state litigation. However, because a rigorous analysis of GVCs’ implications for first-order compliance is beyond the scope of this study, we suggest that further research could investigate more systematically whether, and eventually how, these structural transformations in the world economy systematically affect first-order compliance with multilateral trade rules.

Second, the increasingly important phenomenon of the internationalization of production is not limited to how GVCs affect first- and second-order compliance at the WTO. In addition to offering the institutional means to enforce trade rules, the multilateral trading system should perform a legislative function. An important question in the analysis of the effects of GVC integration is, therefore, how this integration affects preferences and patterns of mobilization of trade-related interests in multilateral trade negotiations. While some scholars argue that GVCs creates powerful incentives for trading nations to engage in trade liberalization via PTAs, others have shown that import-dependent firms have played a key role in pushing powerful WTO members to support far-reaching trade liberalization commitments in the Doha Round (Baldwin 2014; Poletti and De Bièvre 2016). Further research should tackle both of these important questions if we are to understand how the changing character of international trade will affect the stability of the multilateral trading system.

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