

Article

From WTO-Centered Governance to a Layered Trade Architecture: Functional Allocation Across Institutional Venues, 2000–2025

Klavdij Logožar 

Faculty of Economics and Business, University of Maribor, 2000 Maribor, Slovenia; klavdij.logozar@um.si

Abstract

Global trade governance is being reshaped as multilateral rulemaking and dispute settlement face persistent constraints. However, it remains unclear whether this development signals institutional decline or a layered allocation of governance functions across interconnected venues. This study develops a functional-allocation framework and examines rulemaking, enforcement, and coordination across the World Trade Organization (WTO), WTO-linked mechanisms, and regional trade agreements (RTAs). The framework distinguishes directly observable functional allocation from functional reallocation as a process-oriented interpretation of institutional change. The analysis combines a mapping of 282 RTA governance events entering into force between 2000 and 2025 with treaty content and institutional design data and a structured comparison of WTO core agreements, differentiated arrangements, enforcement supplements, and plurilateral initiatives. The findings identify a layered trade architecture rather than a simple shift away from the WTO. The WTO retains selected multilateral functions, differentiated arrangements sustain selective cooperation within its framework, and WTO-linked mechanisms supplement constrained appellate enforcement. RTAs provide additional venues for rulemaking, enforcement, and coordination. Among directly classified RTA events, formal adjudication increased from 76.0% in 2000–2004 to 100.0% in 2020–2025. Formal adjudication and institutionalized coordination are also positively associated with core substantive treaty depth. These patterns are consistent with functional allocation across a layered architecture, but do not establish that WTO constraints caused the observed institutional configurations.

Keywords: functional allocation; layered trade architecture; global trade governance; World Trade Organization; regional trade agreements; institutional differentiation



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1. Introduction

The World Trade Organization (WTO) has long served as the central institution of the multilateral trading system, providing a framework for rulemaking, dispute settlement, and coordination of global trade relations. However, in recent years, the WTO has faced persistent institutional constraints. The paralysis of its dispute settlement system, ongoing deadlock in negotiations, and growing reliance on differentiated or complementary governance arrangements have raised fundamental questions about the future of multilateralism. These constraints affect the WTO's ability to generate new rules across its full membership and have weakened its previously distinctive enforcement function. The WTO, therefore, remains formally central to the trade regime and retains certain multilateral rulemaking and coordination capacities, but its practical centrality as the principal site for rulemaking,

dispute settlement, and authoritative coordination has become increasingly contested. The relevant question is not simply whether the WTO is declining, but how trade-governance functions are organized when WTO-wide agreement or enforcement becomes difficult. This article, therefore, examines institutional layering and functional allocation rather than the fragmentation of trade flows, production, or commercial exchange (Colantone, 2025).

A growing body of international political economy (IPE) scholarship attributes the WTO's dysfunction to its institutional design, particularly its reliance on consensus-based decision-making within an increasingly heterogeneous and expanded membership. The consensus rule, once regarded as a mechanism for ensuring legitimacy and inclusiveness, has effectively become a system of multiple veto players, allowing individual states to block decisions and generating legislative inertia (Beviglia Zampetti et al., 2022; Van den Bossche, 2025). However, consensus does not automatically produce paralysis. As Steinberg (2002) shows, consensus-based bargaining in the GATT/WTO system historically coexisted with power-based bargaining, enabling dominant actors to shape outcomes even under formally egalitarian rules. The problem is therefore not consensus alone, but its changing interaction with preference heterogeneity, power configurations, and enforcement capacity.

As membership has expanded and preferences have diverged, the interaction between consensus rules and multiple veto players has made collective decisions more difficult, often producing lowest-common-denominator outcomes or stalemates (Baldwin, 2016; Hoekman & Mavroidis, 2021; Tsebelis, 2011). These rulemaking constraints are accompanied by pressures on enforcement. Tensions between member-driven governance and judicialized dispute settlement have culminated in the paralysis of the Appellate Body, exposing the fragility of the informal norms that previously sustained the system (Howse, 2016; Pauwelyn & Pelc, 2025). This enforcement dimension is crucial: the WTO was distinctive not only as a negotiating forum, but also because its dispute settlement system gave trade commitments unusually strong legal and institutional force (Poletti & De Bièvre, 2024). The Multi-Party Interim Appeal Arbitration Arrangement (MPIA) illustrates how members have responded to this impasse through a WTO-linked institutional innovation operating under Article 25 of the Dispute Settlement Understanding, rather than through the ordinary Appellate Body process (Pelc, 2025). It also reflects broader problems of large-N governance and institutional adaptability (Debre & Dijkstra, 2021; Eilstrup-Sangiovanni & Verdier, 2024).

WTO constraints, however, are not assumed to be the sole cause of the contemporary institutional architecture. The observed allocation of trade-governance functions may also reflect geopolitical rivalry, shifts in the global distribution of economic power, regional integration strategies, the expansion of digital trade, increasing regulatory complexity, legal and administrative learning, and the diffusion of treaty templates. Recurring negotiating actors may reproduce established institutional designs across agreements, while new issue areas may generate governance demands that were not previously concentrated within the WTO. WTO constraints are therefore treated as an important institutional context rather than as an empirically identified cause of every regional, plurilateral, or WTO-linked arrangement.

Scholars increasingly describe global trade governance as a regime complex, characterized by overlapping institutions, partially competing rules, and the absence of a clear hierarchy (Kim, 2020; Randall Henning & Pratt, 2023). In such settings, actors engage in forum shifting and regime shifting, strategically relocating negotiations across institutional venues to secure more favorable outcomes (Gómez-Mera, 2016; Morse & Keohane, 2014; Verdier, 2022). The WTO now coexists with regional trade agreements, plurilateral initiatives, and issue-specific regimes, each exercising partial authority over trade-related rulemaking (Azmeah et al., 2020; De Bièvre & van Ommeren, 2021; Stephen & Parížek, 2019).

These perspectives provide strong explanations of institutional multiplicity, strategic venue selection, institutional competition, and challenges to established multilateral arrangements. They are less consistent in distinguishing which governance function is located in which venue, how the same function is institutionalized differently across venues, and how the relevant arrangements differ in membership access, legalization, and enforceability.

At the same time, the related literature emphasizes the role of power asymmetries in shaping these processes. Power asymmetries enable dominant actors to engage in forum shifting, co-optation, and the creation of alternative governance arenas, while weaker actors may also leverage institutional complexity to advance their interests under specific conditions (Kahler, 2013; Kruck & Zangl, 2020; Newman & Posner, 2011; Vabulas & Snidal, 2020). These dynamics are captured in the concept of contested multilateralism, which highlights how dissatisfied actors challenge existing institutions by shifting rulemaking to alternative forums or creating competing regimes (Morse & Keohane, 2014). Fragmentation is therefore inherently political, reflecting struggles over authority, distributional outcomes, and the location of rulemaking power within the global economy (Mayer & Phillips, 2017; Phillips, 2017). However, power does not operate only through the selection of venues. It also shapes who can participate in them, whose preferences influence their design, the enforceability of resulting arrangements, and the degree to which different actors can access or influence them.

The resulting research gap is therefore narrower than a general absence of scholarship on fragmentation or institutional change. Existing research explains why multiple venues emerge and why actors use or contest them, but it offers less systematic comparison of how specific governance functions are allocated across these venues. Functional allocation provides a complementary analytical lens by focusing on where rulemaking, enforcement, and coordination occur and how their institutional design varies. Functional reallocation, by contrast, refers to the process through which the location or mode of performing a function changes over time. Distinguishing the observable configuration from the process of change avoids treating institutional coexistence as direct evidence that functions have moved from the WTO to another venue. Recent studies of digital trade, private actors, and new trade-policy frontiers further demonstrate the growing importance of institutional innovation while leaving open questions about the functional organization of the resulting architecture (Hopkins & van Erp, 2025; Jones & Adam, 2023).

Against this background, this paper asks:

RQ1: How are rulemaking, enforcement, and coordination allocated across WTO-centered, WTO-linked, and regional institutional venues between 2000 and 2025?

RQ2: How do these arrangements differ in membership access, legalization, and enforceability?

RQ3: Within regional trade agreements, how are core substantive treaty depth, formal adjudication, and institutionalized coordination associated?

This paper addresses these questions by developing a functional-allocation framework for global trade governance. Instead of viewing institutional fragmentation as merely the proliferation of overlapping regimes, the framework distinguishes four possible institutional configurations of governance functions: retention within the multilateral core, internal differentiation within the WTO framework, WTO-linked supplementation, and selective allocation through regional trade agreements (RTAs). Functional reallocation is retained as a process-oriented interpretation of how these configurations may emerge or change, but it is not treated as directly demonstrated by the empirical analysis. The analysis focuses on rulemaking, enforcement, and coordination, assessing how their institutional location varies with membership access, legalization, enforceability, and power asymmetries.

Empirically, the paper combines a structured cross-venue comparison of WTO-centered, WTO-linked, and regional arrangements with a mapping of 282 regional trade agreement governance events that entered into force between 2000 and 2025. The cross-venue comparison traces the allocation of governance functions, while the regional trade agreement analysis examines temporal patterns and associations among core substantive treaty depth, formal adjudication, and institutionalized coordination. The regression models do not directly test whether functions shifted from the WTO to regional trade agreements or whether WTO constraints caused particular treaty designs. The paper contributes to IPE and trade governance debates by moving beyond claims of WTO decline or regime proliferation and identifying how trade-governance functions are institutionally distributed and configured across venues.

The remainder of the paper is organized as follows. Section 2 reviews WTO constraints, institutional drift, regime complexity, forum shifting, and power asymmetries. Section 3 develops the functional-allocation framework and distinguishes it from process-oriented functional reallocation and related concepts. Section 4 outlines the research design and data. Sections 5 and 6 present the cross-venue comparison and the empirical analysis of RTA governance events. Section 7 discusses the implications for access, legalization, and enforceability, together with the theoretical implications for institutional change, and Section 8 concludes.

2. From WTO-Centered Governance to a Layered Trade Architecture

The WTO's current constraints reflect the interaction among its institutional design, heterogeneous member preferences, changing power configurations, and enforcement capacity. Consensus-based decision-making, originally intended to ensure inclusiveness and legitimacy, has increasingly functioned as a form of distributed veto power within a large and diverse membership (Beviglia Zampetti et al., 2022; Van den Bossche, 2025). This dynamic aligns with veto-player theory, which predicts that policy change becomes more difficult as the number of actors able to block change increases and their preferences diverge (Tsebelis, 2011). However, consensus is not a mechanical cause of paralysis. As Steinberg (2002) demonstrates, consensus-based bargaining in the GATT/WTO system historically coexisted with power-based bargaining, allowing dominant actors to shape outcomes under formally egalitarian rules. The central issue is therefore the evolving interaction among consensus rules, power configurations, preference heterogeneity, and enforcement capacity. From an institutional-design perspective, institutions structure incentives and constrain feasible outcomes over time (North, 1990; Williamson, 1985), while historical institutionalism shows that institutional arrangements may persist even as their practical effectiveness changes (Pierson, 2004).

Membership heterogeneity has intensified these constraints. As the organization has expanded to include economies with different development levels, regulatory preferences, and geopolitical interests, reaching agreement on complex issues such as digital trade, state-owned enterprises, and industrial policy has become more difficult. This has often resulted in lowest-common-denominator outcomes, protracted negotiations, or deadlock (Baldwin, 2016; Hoekman & Mavroidis, 2021). However, the implications extend beyond legislative stasis. The WTO's distinctiveness also relied on a dispute settlement system that connected legal interpretation, enforcement expectations, and bargaining incentives (Howse, 2016; Pauwelyn & Pelc, 2025; Poletti & De Bièvre, 2024).

The paralysis of the Appellate Body illustrates how consensus-based appointment procedures can limit enforcement capacity. The creation of the MPIA, in turn, shows that members have not simply abandoned appellate review. Instead, they have established a WTO-linked supplement operating outside the ordinary Appellate Body structure (Pelc,

2025). This response is important because it demonstrates that institutional constraints do not necessarily eliminate a governance function. A function may instead be maintained through a narrower and selectively accessible arrangement with different participation conditions and institutional reach. More broadly, these developments reflect persistent problems of large-N governance and institutional adaptability in international institutions (Debre & Dijkstra, 2021; Eilstrup-Sangiovanni & Verdier, 2024).

The resulting institutional configuration cannot be reduced to a breakdown of WTO-centered trade governance. Different functions are affected unevenly. Some rulemaking and coordination functions remain within the multilateral core, while others are pursued through differentiated arrangements within the WTO framework. Enforcement may be supplemented by WTO-linked mechanisms, and regional trade agreements provide selective venues for rulemaking, enforcement, and coordination. The relevant question is therefore not whether the WTO has been replaced, but how governance functions are allocated across venues when particular tasks cannot be performed uniformly through the WTO's full membership.

Functional allocation describes this observable institutional configuration: the location and design of rulemaking, enforcement, and coordination across WTO-centered, WTO-linked, and regional venues. By itself, it does not establish that a function previously performed by the WTO has moved elsewhere. Identifying such movement requires evidence of a change in the location or mode through which a particular function is performed.

Institutional drift provides one process-oriented explanation of how such changes may occur. In historical institutionalism, drift refers to situations where formal rules remain unchanged, but changes in the external environment alter their practical effects (Mahoney & Thelen, 2010; Streeck & Thelen, 2005). In trade governance, WTO rules and institutions may remain formally central even as their practical capacity to generate, enforce, or coordinate new commitments diminishes. Drift is not necessarily passive or unintended. Actors can exploit the gap between formal institutional continuity and changing political or economic conditions, repurpose existing arrangements, or seek alternatives when the original venue no longer produces acceptable outcomes. In this sense, drift is related to conversion and displacement, through which institutions are reworked, supplemented, or bypassed rather than formally abolished (Thelen, 2004).

Forum shifting and regime shifting describe the strategic dimension of institutional change. States and other actors may pursue preferred outcomes by selecting forums with more favorable combinations of participation rules, bargaining conditions, and power configurations (Gómez-Mera, 2016; Morse & Keohane, 2014; Verdier, 2022). Forum choice is not only a matter of where negotiations occur; it also shapes the type of institutional arrangement that can be established, including binding adjudication, negotiated commitments, or institutionalized coordination. Forum shifting, therefore, concerns an actor's strategic choice of venue, whereas functional reallocation concerns a change in the institutional location or mode of performance of a governance function. Functional allocation refers to the resulting observable configuration, regardless of whether the process that produced it can be directly identified.

In trade governance, functional allocation can take several forms. WTO-internal differentiated arrangements preserve selective cooperation within the multilateral framework. The MPIA provides a WTO-linked supplement to constrained appellate review. Regional trade agreements offer selective settings for substantive rulemaking, dispute settlement, and formal coordination. Other plurilateral initiatives may develop negotiated texts without acquiring the same legal status or institutional integration as established WTO agreements. These arrangements should not all be treated as equivalent forms of institutional exit. Their relationship to the WTO differs: functions may be retained, internally

differentiated, supplemented, or selectively allocated through regional venues, while some initiatives remain pending incorporation into the WTO legal framework.

This distinction also clarifies the role of power asymmetries. Contested multilateralism captures how dissatisfied actors challenge existing arrangements by shifting negotiations to alternative forums or creating competing venues (Morse & Keohane, 2014). Fragmentation is therefore political, reflecting struggles over authority, distributional outcomes, and the institutional location of rulemaking power within the global economy (Mayer & Phillips, 2017; Phillips, 2017). Power shapes not only the selection of venues, but also their participation rules and substantive design, the enforceability of resulting arrangements, and the extent to which different actors can access or influence them. Multiple venues may create opportunities for weaker actors through coalition-building, strategic sequencing, and regulatory arbitrage (Dreyling, 2021; Verdier, 2022). However, actors with greater resources, technical capacity, and institutional access remain better positioned to navigate complex governance landscapes. Repeated participation by powerful negotiating entities may also spread common treaty templates across formally separate agreements, creating institutional similarities that do not necessarily arise from equivalent functional pressures in every case.

Institutional drift and forum shifting can therefore reinforce each other without implying the disappearance of the original institutional core. Constraints within the WTO may create incentives to seek differentiated, complementary, or regional alternatives; increased use of these alternatives may, in turn, reduce the practical centrality of WTO-wide solutions in certain issue areas. However, the same institutional configuration may also reflect geopolitical rivalry, regional integration strategies, regulatory change, administrative learning, or the diffusion of established treaty models. The framework, therefore, does not treat WTO constraints as the sole cause of observed institutional arrangements.

The result is a layered governance architecture in which rulemaking, enforcement, and coordination are distributed across venues with different membership structures, degrees of legalization, and levels of enforceability. Section 3 develops this argument into a functional-allocation framework that distinguishes retained, internally differentiated, WTO-linked supplementary, and selectively regional forms of trade governance and clarifies when changes among these configurations may be interpreted as functional reallocation.

3. Functional-Allocation Framework

3.1. From Regime Complexity to Functional Allocation

The preceding discussion shows that constraints within the WTO do not necessarily lead to institutional disappearance. They coexist with an institutional architecture in which specific trade-governance functions are performed across WTO-centered, WTO-linked, and regional venues. Whether this configuration resulted from moving a function from one venue to another is a separate, process-oriented question. Regime-complexity scholarship offers an important foundation for understanding this architecture. It conceptualizes global governance as a non-hierarchical set of overlapping institutions operating within the same issue area, including multilateral organizations, regional agreements, and specialized arrangements (Alter & Meunier, 2009; Raustiala & Victor, 2004). This literature has shown how institutional overlap can create strategic opportunities, reshape cooperation, and generate tensions across formally distinct but substantively connected governance arrangements (Eilstrup-Sangiovanni & Westerwinter, 2022; Kim, 2020; Randall Henning & Pratt, 2023).

However, institutional multiplicity alone does not explain how specific governance functions are allocated across venues. Regime complexity highlights overlap, interaction, and competition among institutions, but it offers less systematic guidance on whether spe-

cific governance functions remain within an established institution, become differentiated internally, are supplemented through connected arrangements, or are organized elsewhere. The existence of an alternative venue does not necessarily mean that a function has moved away from the WTO. Some arrangements preserve selective cooperation within the WTO framework, while others complement a constrained WTO function or establish governance outside its institutional structure.

This paper therefore develops a functional-allocation framework. Functional allocation refers to the observable distribution and institutional configuration of rulemaking, enforcement, and coordination across connected venues with different membership structures, degrees of legalization, and levels of enforceability. It identifies where and how a governance function is performed without assuming that the function previously belonged exclusively to another venue. Functional reallocation is a related but analytically distinct concept. It refers to a process through which the institutional location or mode of performing a governance function changes over time. Demonstrating reallocation therefore requires evidence of change, whereas allocation can be established by comparing the institutional configuration of functions across venues during a specified period.

This perspective builds on research on forum shifting and regime shifting, which shows that states and other actors may select institutional venues that offer more favorable participation rules, bargaining conditions, or power configurations (Gómez-Mera, 2016; Haftel & Lenz, 2022; Morse & Keohane, 2014; Verdier, 2022). However, forum choice is only part of the explanation. Forum shifting concerns an actor's strategic choice among venues, whereas regime shifting concerns moving an issue or rulemaking agenda toward an alternative institutional regime. Contested multilateralism emphasizes challenges to an established institution through the creation or use of alternative multilateral arrangements. Functional allocation differs from these concepts by focusing on the observed institutional location and design of specific governance functions rather than primarily on actor strategy, institutional competition, or venue proliferation. Table 1 clarifies these distinctions.

Table 1. Distinguishing functional allocation from related institutional concepts.

Concept	Definition	Principal Level of Analysis	Core Mechanism	Observable Implication
Regime complexity	A non-hierarchical configuration of partially overlapping institutions within an issue area.	Institutional system	Institutional overlap, interaction, and competition	Multiple venues exercise partially overlapping responsibilities without a single hierarchical center.
Forum shifting	Strategic movement of negotiations or disputes from one forum to another.	Actor or negotiation	Selection of a venue with more favorable rules, participants, or bargaining conditions	A specific negotiation or dispute is pursued in an alternative forum.
Regime shifting	Movement of an issue, rulemaking agenda, or governance activity toward an alternative institutional regime.	Issue area or governance agenda	Repositioning of governance activity across regimes with different mandates or rules	An issue becomes governed primarily through a different institutional regime.

Table 1. *Cont.*

Concept	Definition	Principal Level of Analysis	Core Mechanism	Observable Implication
Contested multilateralism	A challenge to an established multilateral institution through the use or creation of alternative multilateral arrangements.	Institutional order and actor strategy	Institutional challenge, counter-institutionalization, or competitive regime creation	Alternative arrangements contest the rules, authority, or centrality of an established institution.
Institutional differentiation	Variation in membership, obligations, or participation within a broader institutional framework.	Institutional design	Selective participation or differentiated commitments	Subsets of members assume commitments while remaining within the broader institution.
Functional allocation	The observable distribution and design of rulemaking, enforcement, and coordination across institutional venues.	Governance function	Institutional location and configuration of a function	A function is observed in one or more venues with identifiable membership, legal, and enforcement characteristics.
Functional reallocation	A change over time in the institutional location or mode through which a governance function is performed.	Governance function over time	Retention, internal differentiation, supplementation, or movement to another venue	Longitudinal evidence shows that the location or institutional form of a function has changed.

Source: Author's elaboration.

3.2. Four Institutional Configurations of Functional Allocation

The framework identifies four institutional configurations through which trade-governance functions may be allocated in relation to the WTO-centered system. These categories apply to the relationship between a particular governance function and an institutional venue rather than to an institution as a whole. An arrangement may perform several functions, and each function is classified according to its legal location, membership basis, and relationship to the WTO.

First, functions may be retained within the WTO multilateral core. In these cases, WTO-wide arrangements continue to provide the main institutional framework for rulemaking or coordination across the membership. Retention does not mean that the WTO operates without constraints. Instead, it indicates that a function remains institutionally located within the multilateral system despite negotiation difficulties, uneven implementation, or weakened enforcement capacity.

Second, functions may be internally differentiated within the WTO framework. Differentiated arrangements allow subsets of members to pursue commitments or sector-specific cooperation while remaining within WTO legal and institutional structures. They retain a formal relationship to the WTO but depart from full membership uniformity. Such arrangements show that selective cooperation can be maintained within the WTO framework rather than shifted entirely to an external venue. The defining criteria are selective participation combined with formal legal or institutional anchoring within the WTO.

Third, functions may be supplemented through WTO-linked arrangements. These arrangements address specific constraints in the ordinary WTO system while remaining closely connected to it. The MPIA is the clearest example: it provides a participation-based mechanism for appellate review under the WTO dispute settlement system's legal basis

while operating outside the ordinary Appellate Body structure. Supplementation, therefore, differs from replacement. The original institution remains formally relevant, but its practical capacity is reinforced through a narrower arrangement with different participation conditions and institutional reach. The defining feature is that the supplementary mechanism relies on, or operates in connection with, an existing WTO legal function without becoming part of the ordinary institutional procedure.

Fourth, functions may be selectively allocated through RTAs. Regional agreements provide settings in which participating economies can establish substantive commitments, dispute settlement provisions, and formal coordination mechanisms outside WTO-wide membership rules. Their governance role is selective rather than universal: participation depends on agreement membership, and the scope, legal precision, and enforceability of commitments vary across agreements. Regional trade agreements may therefore serve as important venues for rulemaking, enforcement, and coordination without constituting a single coherent alternative to the WTO. The presence of such functions in RTAs demonstrates regional allocation but does not, without longitudinal evidence, establish that the functions were transferred from the WTO.

Some initiatives occupy an intermediate institutional position. WTO plurilateral initiatives with concluded or substantially developed texts, but without full incorporation into the WTO legal framework, cannot yet be considered established forms of internal differentiation. They are better understood as arrangements pending incorporation. This distinction separates negotiated ambition from operative legal authority and avoids treating all plurilateral initiatives as equivalent to completed WTO agreements or fully external alternatives. Pending incorporation is therefore treated as a distinct legal-status category rather than as a fifth completed configuration of functional allocation.

Figure 1 summarizes this framework. It shows that functional allocation is not organized along a linear continuum leading away from the WTO. Instead, trade-governance functions may remain in the WTO multilateral core, be differentiated within its framework, be supplemented through WTO-linked mechanisms, or be selectively organized through regional agreements. WTO plurilateral initiatives are represented separately because their institutional status remains contingent on incorporation. The figure also highlights that power asymmetries condition the membership access, legalization conditions, reach, and enforceability of each governance venue. These dimensions may have implications for institutional authority, but authority itself is not directly measured in the empirical analysis.

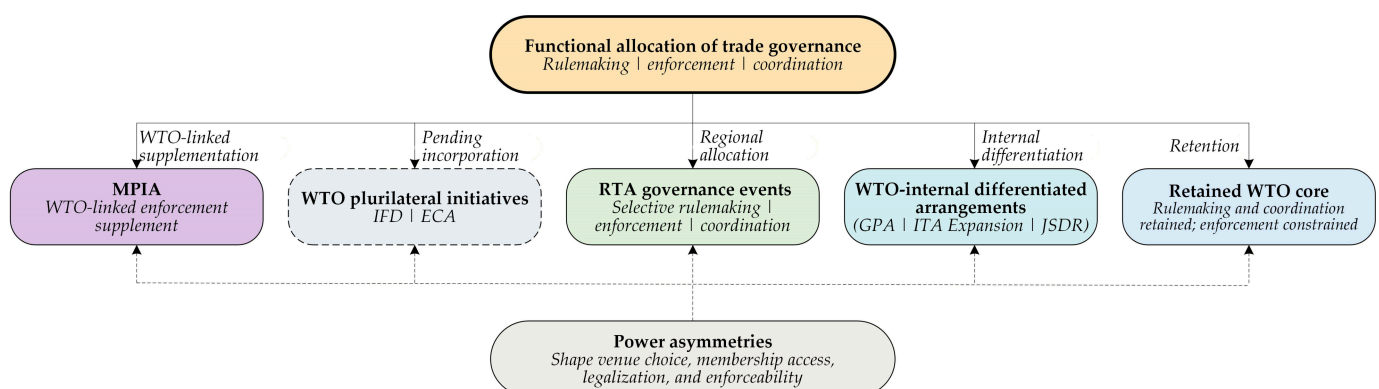


Figure 1. Functional allocation of trade governance across WTO-centered, WTO-linked and RTA venues.

Functional allocation operates at the level of governance functions rather than entire institutions. A single venue may combine rulemaking, enforcement, and coordination, while the same function may be performed differently across venues. For example, regional trade

agreements can combine substantive commitments with formal dispute settlement and joint institutional bodies. Therefore, the empirical analysis does not treat trade agreements as homogeneous substitutes for the WTO. Instead, it examines variation in their core substantive treaty depth, enforcement architecture, and formal coordination arrangements. Functional reallocation remains a possible interpretation when longitudinal evidence shows that the location or institutional form of a particular function has changed, but the cross-venue comparison itself establishes allocation rather than transfer.

3.3. Membership Access, Legalization, and Enforceability

The consequences of functional allocation depend on the institutional characteristics of each venue. Three dimensions are particularly important. First, membership access determines who can participate in rulemaking, enforcement, or coordination. WTO-wide arrangements are formally open to the full membership, while differentiated arrangements, WTO-linked mechanisms, and regional agreements involve narrower participation conditions. Broader participation may strengthen formal legitimacy but can also increase decision-making costs. More selective arrangements may permit faster agreement or deeper commitments while limiting access for nonparticipants.

Second, legalization determines how commitments are formalized and institutionally specified. Legalization varies across venues based on the precision of obligations, the existence of dispute-settlement procedures, and the institutional mechanisms available to monitor or implement commitments. Third, enforceability refers to the practical capacity of an arrangement to support compliance, resolve disputes, and sustain coordinated action. Formal legal design is important, but enforceability also depends on participation, institutional resources, political support, and the credibility of implementation mechanisms. The presence of a formal adjudicative mechanism is therefore an indicator of treaty design rather than a direct measure of accessibility, frequency of use, implementation of rulings, compliance effects, or enforcement effectiveness.

Power asymmetries shape all three dimensions. They determine which actors can initiate alternative arrangements, participate in them, shape their substantive content, and use them strategically. Fragmentation may create coalition-building opportunities for weaker actors, especially where multiple venues permit sequencing or alliance formation. However, actors with greater economic resources, technical capacity, and institutional access are generally better positioned to navigate complex governance environments and influence the terms under which functions are allocated or potentially reallocated (Gómez-Mera, 2016; Morse & Keohane, 2014; Verdier, 2022). Repeated participation by large economies or established regional blocs may also diffuse common treaty templates across agreements, meaning that similar institutional designs can reflect negotiating capacity and institutional learning rather than identical functional requirements.

The framework does not claim to estimate a causal effect of WTO constraints on venue selection. Instead, it provides a structured basis for comparing the institutional location of trade-governance functions and for assessing how differences in membership access, legalization, and formal enforceability across venues shape those functions. Geopolitical rivalry, regional integration objectives, preference similarity, administrative capacity, regulatory complexity, and treaty-template diffusion may all contribute to the observed configuration. Institutional authority is therefore treated as a theoretical implication of legal status, participation, and enforceability rather than as a directly measured empirical outcome. The framework guides the cross-venue mapping in Section 5 and the empirical analysis of RTA governance in Section 6.

3.4. Analytical Expectations for RTA Governance Architecture

The regional analysis examines whether substantive treaty depth is systematically associated with enforcement and coordination architecture. One possible mechanism is functional: denser substantive commitments may increase implementation interfaces, interpretive ambiguities, monitoring demands, and potential disputes. Agreements containing more extensive commitments may therefore be more likely to provide formal mechanisms for adjudication and ongoing coordination.

This mechanism is not the only possible explanation. Deeper commitments and more formal institutional architectures may arise from greater similarity in partner preferences, stronger administrative and legal capacity, the participation of large economies, the type of partnership, learning from previous negotiations, or the replication of established treaty templates. Institutionalized enforcement and coordination may also make deeper commitments politically feasible, implying potential reverse causality. The empirical expectations are therefore deliberately associational rather than causal.

E1: RTAs with greater core substantive treaty depth are more likely to provide for formal adjudication.

E2: RTAs with greater core substantive treaty depth are more likely to include an institutionalized coordination architecture.

The models test whether these institutional characteristics covary within the RTA field. They do not test whether WTO constraints led to the adoption of particular treaty designs or whether governance functions shifted from the WTO to RTAs.

4. Research Design, Data and Measures

4.1. Research Design and Event Universe

This study combines a descriptive cross-venue comparison of WTO-centered, WTO-linked, and regional governance arrangements with an agreement-level analysis of RTA governance events that entered into force between 2000 and 2025. The design aims to identify patterns of functional allocation and variation in regional governance architecture rather than to estimate a causal effect of WTO constraints on treaty design or venue choice, or to directly establish a process of functional reallocation.

The unit of analysis is a primary RTA governance event rather than a static agreement. An event is defined as an original entry into force or a legally distinct subsequent event that materially alters the relevant governance architecture. The initial universe contains 337 WTO RTA Information System (RTA-IS) records. This is reduced to 282 primary governance events after excluding accession and enlargement entries, UK continuity or replacement arrangements that primarily replicated pre-existing commitments, and duplicate supplementary records. These exclusions are necessary because accession and continuity events do not typically create an independent institutional architecture that can be treated as a new instance of functional allocation. They are conceptual exclusions from the principal event universe, rather than cases removed due to missing regression data. UK continuity arrangements are nevertheless reintroduced in a separate Model B sensitivity analysis.

For each event, the dataset records the source treaty name, parent or base treaty, event type, entry-into-force year, inclusion or exclusion decision, and the relevant legal text vintage. Appendix Tables A1 and A2 summarize the construction of the event universe and the treatment of potential text-vintage alignment issues. The event-based design allows the analysis to distinguish original agreements from later revisions, protocols, modernization events, and replacements when these involve a substantively different governance configuration. Table 2 summarizes the data sources, measures, and construction of the analytical samples.

Table 2. Sources, measures and analytical sample construction.

Construct	Operationalization	Source	Analytical Sample	Key Design Choice
RTA event universe	Primary agreement-level governance event entering into force between 2000 and 2025.	WTO RTA-IS register; DTA 2.0 crosswalk	282 events	Excludes 19 accession/enlargement events, 35 UK continuity or replacement events, and one duplicate AfCFTA DTA supplement. UK continuity arrangements are added only in a Model B sensitivity analysis.
Core substantive treaty depth	CoreSubstantiveDepth: count of directly observed DTA 2.0 provision-level commitments retained under the core codebook. Regression models use $\ln(\text{CoreSubstantiveDepth} + 1)$; the unlogged count is used in the PPML sensitivity model.	World Bank DTA 2.0 binary provision matrix; author provision-code classification and audit	253 primary events with direct depth data; 237 complete cases in Model B	The measure supersedes the legacy SubstantiveDepth field, which did not reproduce the direct DTA binary matrix. The core codebook retains substantive commitments while excluding institutional and procedural clauses.
Enforcement architecture	Political settlement or consultations; ad hoc adjudicative process; standing tribunal. Formal adjudication equals 1 for ad hoc adjudication or standing tribunal.	WTO RTA-IS dispute-settlement classifications and manual validation of unresolved cases	273 classified events; 237 complete cases in Model B	Where classifications overlap, the higher-legalization category is retained. All nine initially unmatched cases remain missing from the main models. Six were manually validated and included only in the manual-DS sensitivity analysis; three remain unresolved.
FCA	FCA 0: no coordination body; FCA 1: basic coordination body; FCA 2: institutionalized coordination architecture.	DESTA; Institutional Provisions of PTAs extension	207 high-confidence DESTA base-treaty matches, 2000–2019; 197 complete cases in Models A and C	Matching uses base_treaty, entry_type, and wto_name. The audit found no duplicate DESTA base treaties in the matched main sample.
Membership economic weight	Combined GDP of event-time agreement parties divided by world GDP in the relevant entry year; logged in regression models.	World Development Indicators; event-time membership reconstruction	267 events with full GDP coverage	Membership is reconstructed as of the date of entry into force rather than based on present-day bloc composition. Models requiring this covariate use only full-coverage observations.
Analytical-unit alignment	Descriptive mapping and Model B retain the RTA governance-event unit. Models A and C use the high-confidence DESTA base-treaty sample because FCA is a treaty-level institutional measure.	Author’s sample harmonization	Event-level and treaty-level samples, as specified above	Prevents an artificial mixing of event-level enforcement observations with treaty-level FCA observations.
Cross-venue comparison	Structured comparison of WTO, WTO-linked, and RTA arrangements by principal function, membership access, legalization, relationship to the WTO, and legal status.	WTO legal instruments and official initiative documentation	Descriptive only	The WTO-side inventory is too small and heterogeneous for a common regression model.

Note. DESTA treaty identities and matching logic follow [Dür et al. \(2014\)](#). FCA uses the Institutional Provisions of PTAs extension by [Gastinger and Dür \(2026\)](#). Source: Author’s elaboration.

Differences among the reported sample sizes should not be interpreted as a single sequential attrition process. They result from the intersection of sources with different temporal coverage, units of analysis, and matching requirements. The 282-event universe is used for descriptive mapping. Dispute-settlement architecture is classified for 273 events,

and CoreSubstantiveDepth is available for 253 events. Model B uses the 237 event-level observations for which depth, dispute-settlement classification, and the required economic-weight covariate are jointly available. Models A and C draw on a different analytical population because FCA is a treaty-level measure available only for high-confidence DESTA matches through 2019; these models therefore use 197 complete treaty-level observations. The model samples consequently overlap but are not nested in a single linear sequence.

The event universe remains the appropriate basis for descriptive mapping and for Model B, which examines the enforcement architecture of individual RTA governance events. However, FCA is generated from treaty-level DESTA records. Models A and C, therefore, use one observation per high-confidence DESTA base treaty in the 2000–2019 matched sample. The final audit found no duplicate base treaties within this sample, so no further collapsing of observations was required. Models A and C should therefore be interpreted as evidence for the matched treaty-level population rather than as estimates representative of the entire 2000–2025 event universe.

4.2. Institutional Measures and Treaty Characteristics

The RTA analysis constructs two analytically distinct institutional measures: enforcement architecture and Formal Coordination Architecture (FCA). Enforcement architecture is coded using the WTO RTA-IS dispute-settlement categories, which distinguish among political settlement or consultations, ad hoc adjudication, and standing tribunals. When official classifications overlap, the category with the higher degree of legalization is retained. For the regression analysis, ad hoc adjudication and standing tribunals are combined into a binary indicator of formal adjudication, with consultations or political settlements as the reference category. The indicator captures formal treaty design rather than the practical accessibility, use, cost, duration, compliance effects, or effectiveness of dispute settlement.

The enforcement coding is based only on cases for which the RTA-IS classification can be directly confirmed, or the relevant category can be validated from official treaty materials. Records with unresolved or unclear dispute settlement information remain missing rather than being imputed. Manual validation was conducted for cases requiring closer examination of official treaty texts or RTA-IS profiles. The main models retain only cases for which the RTA-IS classification can be directly confirmed. All nine initially unmatched cases remain missing from the main analysis. Six were manually validated from official treaty materials and included only in a separate sensitivity specification, while three remain unresolved. This approach prioritizes coding reliability over maximizing the number of observations.

FCA is derived from the Design of Trade Agreements (DESTA) database (Dür et al., 2014) and the Institutional Provisions of Preferential Trade Agreements (PTAs) extension (Gastinger & Dür, 2026). Agreement-level events are matched using base_treaty, entry_type, and wto_name, with accession entries excluded. FCA distinguishes among agreements with no identified coordination body, those with a basic coordination body, and those with an institutionalized coordination architecture. The latter category includes agreements in which coordination is more formally embedded through institutional provisions beyond a basic joint committee structure.

The DESTA/FCA measure is available only for the matched treaty-level sample through 2019. The final audit identified 207 high-confidence DESTA base-treaty matches and no duplicate base treaties within the main FCA sample. Models A and C are therefore estimated on the 197 complete cases available after the required covariates are merged. FCA evidence is interpreted as treaty-level supplementary evidence rather than as an event-level estimate for the entire RTA universe.

To avoid a mechanical association between institutional architecture and treaty depth, the substantive measure is reconstructed directly from the DTA 2.0 binary provision matrix. CoreSubstantiveDepth counts the substantive provisions retained under a pre-specified codebook rather than the number of policy areas in which an agreement contains at least one commitment. The audit covered 400 DTA agreements and retained 930 provision codes representing direct market access, regulatory, economic governance, sectoral access, and comparable substantive commitments. In the primary RTA universe, 253 events have direct CoreSubstantiveDepth data.

The core codebook excludes dispute-settlement provisions, enforcement procedures and remedies, committees and secretariats, consultations and cooperation-only language, review clauses, transparency-only provisions, and other institutional or procedural clauses. This prevents tautological overlap between treaty depth and the two institutional outcomes: formal adjudication and FCA. A stricter sensitivity measure additionally excludes 18 borderline structural, transparency, and procedural provision codes. In the regression models, the principal measure is specified as $\ln(\text{CoreSubstantiveDepth} + 1)$; the unlogged count is used in a PPML sensitivity analysis.

CoreSubstantiveDepth does not involve new manual coding of individual treaty texts. The underlying presence or absence of each provision is taken from the DTA 2.0 binary matrix. The author-developed component consists of a provision-code-level classification that distinguishes substantive commitments from institutional, enforcement, procedural, consultation, review, and transparency-only provisions. Once this classification was fixed, the measure was mechanically generated and applied consistently across all agreements by summing the retained binary provisions. Conventional inter-coder reliability for treaty-text coding is therefore not directly applicable, although the classification of provision codes necessarily involves substantive judgment. Because the study was conducted by a single author, no independent second-coder assessment was performed. Uncertainty regarding borderline classification decisions is instead assessed through the strict-depth specification, which excludes 18 additional structural, transparency, and procedural provisions.

This separation is central to the empirical design. Formal adjudication and FCA measure enforcement and coordination architecture, whereas CoreSubstantiveDepth measures the density of substantive treaty commitments. Appendix D summarizes the coding logic, inclusion and exclusion categories, audit rationale, and strict-depth treatment.

The analysis also includes an event-time measure of economic weight. This variable is defined as the combined GDP of the parties to an agreement at the relevant entry-into-force or revision event, divided by the world GDP for the same year. It is therefore based on historical event-time membership rather than present-day membership of regional organizations or agreements. This distinction is particularly important for arrangements involving the European Union (EU), European Free Trade Association (EFTA), Association of Southeast Asian Nations (ASEAN), Southern Common Market (MERCOSUR), Southern African Customs Union (SACU), Central American Common Market (CACM), Gulf Cooperation Council (GCC), and other blocs whose membership has changed over time. The logged value of this measure is used in the regression analysis.

Another potential source of measurement error is the relationship between the legal text's vintage and the timing of the event. DTA and RTA-IS records may reflect the most recent available legal text, while the temporal variable identifies an earlier entry-into-force event. The dataset records whether the treaty text can be clearly matched to the relevant event. Agreements involving modernization, protocols, amendments, or replacement are flagged when the available text may reflect a later institutional configuration. The event crosswalk records these potential alignment issues as a data-quality precaution, but the final reported robustness analyses focus on alternative depth coding, enforcement

classification, UK continuity treatment, recurring negotiating entities, agreement coverage, and temporal stability.

4.3. Cross-Venue Functional Comparison

The agreement-level analysis is complemented by a structured descriptive comparison of governance arrangements across institutional venues. This component does not combine WTO and RTA observations into a common regression sample. Instead, it compares the institutional location of rulemaking, enforcement, and coordination across a set of theoretically relevant arrangements.

The comparison includes WTO core agreements such as the Trade Facilitation Agreement (TFA), the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) Amendment, and the Fisheries Subsidies Agreement (FSA); internally differentiated arrangements such as the Government Procurement Agreement (GPA), the Information Technology Agreement (ITA) Expansion, and the Joint Initiative on Services Domestic Regulation (JSDR); the MPIA as a WTO-linked enforcement supplement; WTO plurilateral initiatives such as the Investment Facilitation for Development Agreement (IFD) and the Agreement on Electronic Commerce (ECA) (WTO, 2024a); and RTA governance events in the agreement-level dataset.

Each arrangement is coded by its principal function, membership access, degree of legalization, relationship to the WTO, and legal status as of 31 December 2025. The relevant relationship categories are retained, internally differentiated, WTO-linked supplementation, regionally allocated, and pending incorporation. These categories classify the observable relationship between a governance function and an institutional venue; they do not by themselves demonstrate that a function was transferred from the WTO. This comparison provides the empirical basis for Table 3 and directly operationalizes the functional-allocation framework introduced in Section 3.

Table 3. Cross-venue functional allocation in global trade governance.

Institutional Location	Illustrative Arrangements	Principal Function(s)	Membership Access	Legalization and Enforceability	Relationship to WTO	Status as of 31 December 2025
Retained WTO multilateral core	TFA; TRIPS Amendment; FSA	Rulemaking; implementation coordination	WTO-wide, subject to applicable acceptance procedures	Binding multilateral commitments for participating members	Retained	Operative
WTO-internal differentiated arrangements	GPA; ITA Expansion; JSDR	Rulemaking; regulatory coordination	Selective participation within WTO architecture	Binding commitments through plurilateral obligations or scheduled commitments; varying MFN reach	Internally differentiated	Operative
WTO-linked enforcement supplement	MPIA	Appellate review and enforcement	Participation-based and open to WTO members	Article 25 arbitration; enforceable between participating parties in relevant disputes	WTO-linked supplementation	Operative
WTO plurilateral initiatives	IFD; ECA	Rulemaking; implementation and coordination	Open to WTO members; participation-based	Negotiated texts, but Annex 4 incorporation unresolved	Pending incorporation	Not incorporated into Annex 4
RTA governance events	282 events entering into force, 2000–2025	Rulemaking; enforcement; coordination	Selective bilateral, regional, or plurilateral membership	Varies across agreements, from consultations to formal adjudication and institutionalized coordination	Regional allocation	Operative and heterogeneous

Source: Author's elaboration.

4.4. Empirical Strategy and Robustness Checks

The quantitative analysis uses three parsimonious association models. Model A estimates $\ln(\text{CoreSubstantiveDepth} + 1)$ as a function of formal adjudication, institutionalized FCA, a linear five-year period measure, logged membership economic weight, cross-regionality, and goods-and-services coverage. The model is estimated on 197 complete observations from the high-confidence DESTA base-treaty sample for 2000–2019. Ordinary least squares (OLS) with HC3 standard errors is used because the Breusch–Pagan test rejects homoskedasticity. A PPML specification of the unlogged CoreSubstantiveDepth count is reported as a sensitivity analysis.

Model B estimates the likelihood that an RTA governance event includes formal adjudication rather than consultations or political settlement only. The model uses 237 event-level observations with direct CoreSubstantiveDepth data, full GDP coverage, and classified dispute-settlement architecture. It is estimated using Firth penalized logistic regression because consultation-only arrangements are sparse in the analytical sample.

Model C estimates the likelihood that an agreement has an institutionalized Formal Coordination Architecture, coded as FCA 2 rather than FCA 0 or FCA 1. It is estimated using Firth penalized logistic regression on the 197 complete high-confidence DESTA base-treaty observations. This specification is supplementary because FCA 2 is highly prevalent in the matched sample.

All models are associational. They do not establish that WTO constraints cause particular agreements to adopt deeper substantive commitments, formal adjudication, or institutionalized coordination. Instead, they identify patterned covariation among core substantive treaty depth, enforcement architecture, coordination architecture, membership economic weight, and time. Model A and the PPML specification examine treaty depth as the outcome, whereas Models B and C reverse the analytical perspective by examining formal adjudication and institutionalized coordination as outcomes. These complementary specifications assess the robustness of the associations but do not resolve the direction of the associations or potential endogeneity.

Robustness analyses assess whether the principal associations depend on modeling or coding choices. They include PPML estimation of the raw CoreSubstantiveDepth count, the stricter depth codebook, manual validation of previously unresolved dispute-settlement cases, and the inclusion of UK continuity agreements.

Additional analyses examine recurring negotiating entities, agreement coverage, and temporal stability. Models A–C are re-estimated after excluding EU- and EFTA-linked agreements to assess whether the principal associations are driven by repeated participation or by the diffusion of their treaty templates. Where sufficient outcome variation remains, subgroup estimates and formal interaction tests compare agreements that cover only goods with those that cover both goods and services. Temporal stability is assessed using the five-year period measure rather than period-specific Firth models, because formal adjudication becomes nearly universal in later cohorts.

Fully disaggregated models by individual region or development category are not estimated because several resulting cells contain little or no variation in formal adjudication or FCA. Such specifications would produce quasi-complete separation and weakly identified estimates rather than reliable evidence of heterogeneity. The reported checks, therefore, target the most plausible observable sources of instability while preserving adequate analytical sample sizes. The results are presented in Section 6.4.

5. Cross-Venue Functional Allocation

This section maps the institutional location of rulemaking, enforcement, and coordination across WTO-centered, WTO-linked, and regional venues. The purpose is not to present

these arrangements as equivalent substitutes or to imply that all developments outside the WTO result from institutional failure. Rather, the comparison identifies how specific governance functions are retained, internally differentiated, supplemented, or regionally allocated under varying conditions of membership access, legalization, and enforceability. It maps an observable institutional configuration and does not, by itself, establish that functions were transferred from the WTO to another venue.

The comparison follows the framework developed in Section 3 and uses 31 December 2025 as the temporal cutoff. It is descriptive rather than regression-based. The WTO-side arrangements are few and heterogeneous, so they cannot be meaningfully combined with the agreement-level RTA dataset. Instead, their role is to establish the broader institutional context in which the RTA evidence in Section 6 should be interpreted. Table 3 summarizes the cross-venue functional allocation.

5.1. Retention in the WTO Multilateral Core

The first finding from the cross-venue comparison is that WTO constraints have not eliminated multilateral rulemaking. Several important agreements show that the WTO retains the capacity to generate binding commitments when issue-specific coalitions, negotiation conditions, and acceptance thresholds allow agreement. The TFA entered into force in February 2017, the Protocol Amending the TRIPS Agreement entered into force in January 2017, and the FSA entered into force in September 2025 (WTO, 2017a, 2017b, 2025c).

These arrangements are analytically important because they challenge any simple claim that the WTO has ceased to perform rulemaking functions. The TFA established binding commitments on the movement, release, and clearance of goods, while including differentiated implementation schedules and capacity-building provisions. The TRIPS Amendment made the earlier public health waiver a permanent part of the WTO legal framework. The FSA created binding multilateral disciplines in an area where negotiations had been difficult for decades.

Retention should not be conflated with unrestricted institutional capacity. These agreements emerged under specific political and substantive conditions, often after lengthy negotiations, and their implementation remains uneven among members. They also do not resolve the WTO's ongoing challenges in areas such as distributive conflict, industrial policy, digital trade, or major-power rivalry. Their significance lies elsewhere: they demonstrate that constrained multilateralism is not the same as institutional incapacity. Certain governance functions remain at the core of the WTO, even as others become more differentiated or dispersed. The comparison underscores their continued institutional location within the WTO core, rather than a general restoration of WTO-wide rulemaking capacity.

5.2. Internal Differentiation

A second configuration consists of differentiated cooperation that remains embedded within WTO legal and institutional structures. This category includes the GPA, the ITA Expansion, and the JS DR. These arrangements differ in legal form and substantive scope, but each allows more ambitious commitments among participating members without requiring uniform participation from the entire WTO membership.

The revised GPA entered into force in 2014 and remains binding only on participating parties. It therefore combines WTO institutional anchoring with selective membership. The ITA Expansion was concluded by a subset of members in 2015, with tariff reductions implemented through participants' WTO schedules starting in 2016. Its benefits are extended on a most-favored-nation (MFN) basis, creating a distinctive form of critical-mass cooperation within the WTO framework. The Joint Initiative on Services Domestic Regulation (JS DR) introduces a third variation: its disciplines entered into force in 2024 through incorporation

into participating members' schedules of specific commitments and apply on an MFN basis (WTO, 2014, 2015, 2016, 2024a).

These cases should not be considered external alternatives to the WTO. They illustrate internal differentiation. The WTO continues to provide the legal vocabulary, notification procedures, committee structures, and institutional setting within which cooperation occurs, but the depth of participation and commitment varies among members. This distinction is important because it separates selective cooperation within WTO structures from the allocation of comparable functions through separate regional venues.

The GPA is particularly useful in this respect. It does not show that a new governance function has recently shifted away from the WTO; rather, it demonstrates that differentiated plurilateral governance has long been possible within the WTO framework. The ITA Expansion and JSDR show that such differentiation remains relevant when broad multilateral consensus is difficult to achieve, but a sufficiently large coalition can agree on common commitments. Internal differentiation thus preserves elements of WTO-centered governance while relaxing the requirement of full membership uniformity. Its defining characteristics are selective participation and continued legal or institutional anchoring within the WTO.

5.3. WTO-Linked Enforcement Supplementation

The MPIA represents a different institutional configuration. Its purpose is not to create a new set of substantive trade rules, but to preserve an appellate review function after the Appellate Body ceased to operate. The arrangement relies on Article 25 of the Dispute Settlement Understanding and provides participating members with agreed procedures for appeal arbitration in disputes between them (Pelc, 2025; WTO, 2025a).

This is best understood as supplementation rather than external allocation or replacement. The MPIA remains legally connected to the WTO dispute settlement system: disputes originate under WTO agreements, panels continue to operate within the WTO framework, and arbitration is conducted under a procedure expressly provided by the Dispute Settlement Understanding. However, it does not restore the universal appellate mechanism that existed before the paralysis of the Appellate Body. Participation is selective, its institutional reach is narrower, and its operation depends on the willingness of disputing parties to use the arrangement.

The MPIA, therefore, shows how a constrained function can be partially preserved without resolving the underlying institutional problem. It maintains appellate review for participating members but does not reestablish a common enforcement mechanism for the entire WTO membership. This distinction is important for the article's broader argument. Within the functional-allocation framework, the MPIA represents a WTO-linked supplement that maintains legal continuity while altering participation, scope, and institutional reach. Its emergence may be interpreted as functional reallocation only in the process-oriented sense that appellate review has been partially reconstituted through a different procedural mechanism.

5.4. WTO Plurilateral Initiatives Pending Incorporation

The IFD and the ECA occupy an intermediate position between internal differentiation and institutional incompleteness. Both initiatives were developed by subsets of WTO members, are open to broader participation, and seek incorporation into Annex 4 of the Marrakesh Agreement. However, neither had secured the consensus required for that incorporation by 31 December 2025.

The IFD was finalized by participating members in early 2024. It focuses on transparency, administrative efficiency, and investment-related procedures rather than market

access liberalization or investment protection. The ECA reached a stabilized text in July 2024 and includes commitments on digital trade facilitation, consumer protection, paperless trading, transparency, and cooperation. Both initiatives reflect efforts to develop rulemaking capacity within the broader WTO environment while a full multilateral agreement remains unavailable (Azmeah et al., 2020; WTO, 2024b, 2025b).

Their legal position requires careful consideration. They should not be classified as fully established WTO-internal differentiated arrangements because they have not been incorporated into Annex 4. Nor should they be described as fully external alternatives to the WTO, because their participants continue to seek legal anchoring within WTO structures. The appropriate classification is therefore pending incorporation.

This category is analytically useful because it prevents an overly simplistic distinction between successful multilateralism and external fragmentation. Negotiated texts can generate political expectations, coalition effects, and preparatory implementation activities before they acquire the full legal status of established WTO agreements. However, negotiated ambition is not equivalent to operative authority. Because authority is not measured directly in this study, the more precise distinction is between negotiated content and operative legal status. The distinction between a stabilized text and an incorporated legal instrument is central to the article's argument about legalization and enforceability.

5.5. Regional Allocation in RTA Governance Events

RTAs represent the largest category of regionally allocated trade governance in the analysis. Unlike WTO-wide arrangements, RTAs have selective membership and may combine substantive commitments, dispute settlement procedures, and coordination bodies within a single agreement. They therefore serve as venues for rulemaking, enforcement, and coordination outside the WTO's full-membership procedures. Their performance of these functions does not, without longitudinal evidence, establish that the functions were transferred from the WTO.

The RTA category should not be limited to mega-regional agreements such as the CPTPP. Large agreements are highly visible examples of deeper rulemaking, but the empirical universe includes 282 RTA governance events that entered into force between 2000 and 2025. This broader event-level design allows for the examination of variation across bilateral, regional, and cross-regional agreements, rather than inferring general patterns from a small number of prominent treaties.

The role of RTAs is selective in two ways. First, their membership is limited to participating economies. Second, their institutional architectures vary substantially. Some agreements rely mainly on consultation or political settlement, while others include ad hoc adjudication or standing tribunals. Similarly, some establish only basic coordination bodies, while others create more institutionalized coordination arrangements. Their core substantive treaty depth also varies considerably. RTAs should therefore not be treated as a uniform alternative trade regime, but as a heterogeneous institutional field in which rulemaking, enforcement, and coordination can be combined in different ways. In this comparison, formal adjudication refers to treaty design; it does not establish whether dispute-settlement mechanisms are accessible, frequently used, effective, or capable of securing compliance.

This heterogeneity aligns with research indicating that regional agreements can serve as important venues for deeper regulatory cooperation and institutional experimentation when WTO-wide updates are limited (De Bièvre & van Ommeren, 2021; Stephen & Parížek, 2019). However, the present analysis does not assume that every RTA arises from WTO deadlock or that every regional provision replaces a missing multilateral rule. Instead, RTAs provide an institutional setting where governance functions can be selectively organized

under varying conditions of membership access, legal precision, and enforceability. Their institutional design may also reflect regional integration objectives, partner preferences, administrative capacity, bargaining power, institutional learning, and the diffusion of established treaty templates.

Section 6 systematically examines these patterns. It tests whether greater core substantive treaty depth is associated with formal adjudication and institutionalized coordination, and maps temporal changes in RTA governance architecture.

6. Empirical Analysis of RTA Governance Architecture

This section examines patterned associations among core substantive treaty depth, enforcement architecture, and formal coordination. The descriptive mapping retains the full event-level RTA universe, whereas the FCA analyses use the matched treaty-level sample. The purpose is not to suggest that WTO constraints caused individual agreements to adopt specific institutional designs, but to assess whether core substantive treaty depth covaries with formal enforcement and institutionalized coordination within the RTA field. The analysis addresses the two associational expectations developed in Section 3.4; it does not test whether governance functions moved from the WTO to RTAs.

6.1. Temporal Pattern of RTA Governance

Table 4 and Figure 2 show 282 RTA governance events that entered into force between 2000 and 2025. The number of events does not follow a linear upward trend. Entry into force was most frequent in 2005–2009, with 76 events recorded, followed by 66 in 2010–2014. The number then declined to 43 in 2015–2019 before increasing modestly to 45 in 2020–2025. The empirical pattern, therefore, does not support the simple claim that a layered trade architecture can be understood as the continuous proliferation of RTAs.

Table 4. RTA governance events, core substantive treaty depth, and institutional architecture by entry period.

Entry Period	RTA Events	Core-Depth N	Median CoreSubstantiveDepth	DS-Classified N	Formal Adjudication	FCA-Matched N	FCA 2
2000–2004	52	52	118.5	50	76.0%	45	71.1%
2005–2009	76	75	176.0	72	91.7%	66	90.9%
2010–2014	66	65	206.0	64	95.3%	59	89.8%
2015–2019	43	42	209.0	43	97.7%	37	91.9%
2020–2025	45	19	230.0	44	100.0%	—	—
Total	282	253	181.0	273	91.9%	207	86.5%

Note: CoreSubstantiveDepth is a direct provision-level count. Coverage is incomplete for 2020–2025. FCA results are limited to 2000–2019 because the matched DESTA sample ends in 2019. Formal adjudication indicates the presence of ad hoc adjudication or a standing tribunal and does not measure the use or effectiveness of these mechanisms. Source: Author’s calculations.

The most notable change concerns enforcement architecture. Among classified events, the proportion involving formal adjudication increased from 76.0% in 2000–2004 to 91.7% in 2005–2009, 95.3% in 2010–2014, and 97.7% in 2015–2019. All classified events entering into force in 2020–2025 included formal adjudication. Figure 2 illustrates this shift. Although formal adjudication includes both ad hoc adjudication and standing tribunal design, and therefore does not imply uniform enforcement strength across all agreements, the pattern shows that consultation-only arrangements became increasingly rare within the coded RTA population. It does not establish that the mechanisms were equally accessible, frequently used, effective in securing implementation, or supported by comparable political credibility.

Core substantive treaty depth increases across the available entry cohorts, from a median of 118.5 retained provisions in 2000–2004 to 209.0 in 2015–2019. The median of 230.0 for 2020–2025 should be interpreted cautiously because direct DTA depth data are available for only 19 events in this final period. The descriptive pattern, therefore,

suggests that later RTA cohorts tend to contain denser substantive commitments, but it does not by itself establish an independent temporal effect. The trend may reflect changes in treaty-drafting practices, regulatory complexity, institutional learning, partner composition, or the diffusion of established treaty templates. In Model A, the five-year period coefficient is positive but not statistically significant once institutional architecture, economic weight, cross-regionality, and goods-and-services coverage are accounted for.

This distinction is important for the article's broader argument. Regional allocation of trade-governance functions is not captured solely by the number of agreements or the expansion of substantive coverage; it also concerns the institutional forms through which commitments are governed, interpreted, and coordinated. The temporal patterns describe the evolution of RTA design but do not identify WTO constraints as its cause.

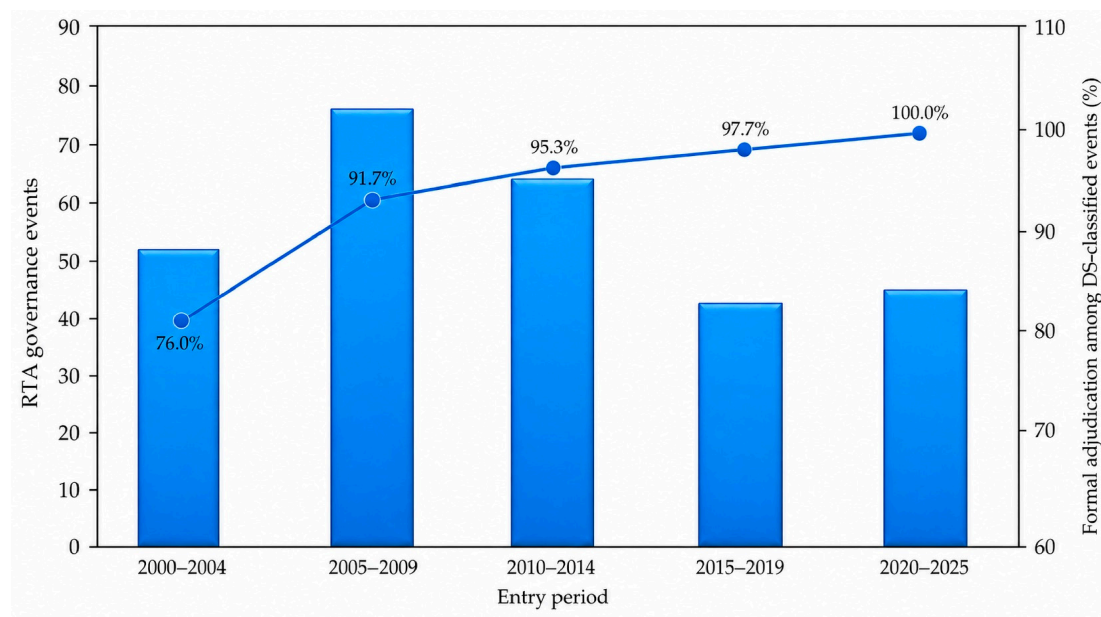


Figure 2. RTA governance events and formal adjudication, 2000–2025.

6.2. Core Substantive Treaty Depth and Formal Coordination Architecture

Figure 3 shows the relationship between CoreSubstantiveDepth and FCA in the 2000–2019 matched sample. Agreements with no coordination body or only a basic coordination body have substantially lower median depth: 54 retained provisions for FCA 0 and 77 for FCA 1. By contrast, agreements with an institutionalized coordination architecture have a median CoreSubstantiveDepth of 204.5.

This difference is substantively meaningful and aligns with the expectation that denser substantive commitments are accompanied by institutional arrangements that support ongoing administration, monitoring, interpretation, and political management. One possible explanation is that a larger number of substantive commitments creates more implementation interfaces and coordination demands. However, deeper commitments and institutionalized coordination may also arise jointly from preference similarity, administrative capacity, the participation of large negotiating economies, partnership type, institutional learning, or the replication of established treaty templates. The descriptive relationship should therefore not be interpreted as evidence that treaty depth itself causes institutionalized coordination.

The distribution of FCA categories remains highly unbalanced. FCA 2 is the dominant category in the matched sample, especially after the mid-2000s. The proportion of matched events coded as FCA 2 increases from 71.1% in 2000–2004 to 90.9% in 2005–2009, 89.8% in 2010–2014, and 91.9% in 2015–2019. This concentration limits the strength of claims based solely on FCA variation. Therefore, the FCA model is interpreted as supplementary

evidence rather than as the central empirical test. The high prevalence of FCA 2 also limits the feasibility of finely disaggregated subgroup models.

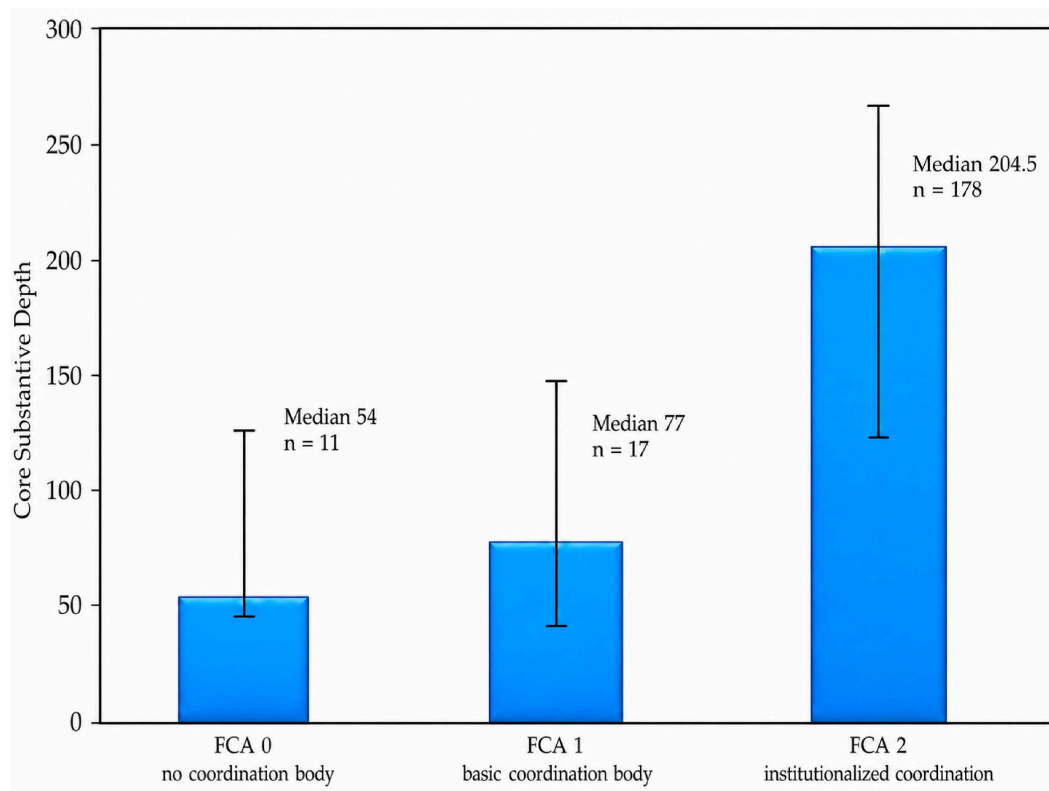


Figure 3. Core substantive treaty depth by FCA, 2000–2019. Note: Bars report median CoreSubstantiveDepth values; error bars show the first and third quartiles. Sample sizes are reported next to each bar.

6.3. Associations Among Treaty Depth, Enforcement, and Coordination

Tables 5–7 report the full estimates for the three parsimonious association models. Model A shows that formal adjudication, institutionalized coordination, membership economic weight, and goods-and-services coverage are positively associated with $\ln(\text{CoreSubstantiveDepth} + 1)$. Formal adjudication is associated with a coefficient of 0.662 ($p < 0.001$), FCA 2 with a coefficient of 0.467 ($p < 0.001$), and logged membership economic weight with a coefficient of 0.057 ($p = 0.002$). Goods-and-services coverage has a coefficient of 0.778 ($p < 0.001$). The five-year period and cross-regionality are not statistically significant in this specification.

Table 5 reports HC3-robust OLS estimates for $\ln(\text{CoreSubstantiveDepth} + 1)$. Formal adjudication, institutionalized coordination, membership economic weight, and goods-and-services coverage are positively associated with deeper substantive commitments, whereas the five-year period and cross-regional status are not statistically significant in the parsimonious specification.

Table 6 reports Firth penalized logistic regression estimates for formal adjudication. Greater substantive treaty depth, later entry periods, and larger combined membership economic weight are each positively associated with the likelihood that an agreement includes ad hoc adjudication or a standing tribunal.

Table 7 reports Firth penalized logistic estimates for the institutionalized Formal Coordination Architecture. Core substantive treaty depth is positively associated with institutionalized coordination, whereas formal adjudication, period, and membership economic weight are not independently significant once treaty depth is taken into account.

Table 5. HC3-Robust OLS Estimates of Core Substantive Treaty Depth.

Variable	Coefficient	HC3-Robust SE	95% CI	p-Value
Constant	3.602	0.197	[3.217, 3.988]	<0.001
Formal adjudication	0.662	0.158	[0.353, 0.971]	<0.001
FCA 2: institutionalized coordination	0.467	0.112	[0.246, 0.687]	<0.001
Five-year period	0.036	0.036	[−0.035, 0.107]	0.320
ln membership economic weight	0.057	0.019	[0.021, 0.094]	0.002
Cross-regional agreement	0.078	0.082	[−0.084, 0.239]	0.345
Goods-and-services coverage	0.778	0.082	[0.617, 0.938]	<0.001
Observations	197			
R ²	0.634			
Adjusted R ²	0.623			
HC3-robust Wald F-statistic	F(6, 190) = 38.770			
Prob. > F	<0.001			

Note: Dependent variable: $\ln(\text{CoreSubstantiveDepth} + 1)$. FCA 2 is coded 1 for an institutionalized coordination architecture and 0 for FCA 0/1. Cross-regional agreement is coded 1 where parties span more than one region. Goods-and-services coverage is coded as 1 for agreements that cover both goods and services. The five-year period variable is a linear temporal measure. Coefficient inference is based on HC3 standard errors. Source: Author's calculations.

Table 6. Firth penalized logistic regression estimates of formal adjudication.

Variable	Coefficient	Approx. SE	Wald p-Value	Odds Ratio	95% CI for Odds Ratio
Constant	−2.240	1.739	0.198	0.106	[0.004, 3.215]
$\ln(\text{CoreSubstantiveDepth} + 1)$	1.099	0.331	0.001	3.000	[1.569, 5.734]
Five-year period	0.643	0.268	0.016	1.902	[1.125, 3.215]
ln membership economic weight	0.329	0.158	0.038	1.390	[1.019, 1.895]
Observations	237				
Formal adjudication = 1	216				
Formal adjudication = 0	21				
Penalized log-likelihood	−43.129				
Null penalized log-likelihood	−69.455				
Penalized McFadden pseudo-R ²	0.379				
Converged	Yes				

Note: The dependent variable equals 1 where an RTA includes ad hoc adjudication or a standing tribunal and 0 where it relies on consultations or political settlement only. Estimates use Firth penalized logistic regression because consultation-only arrangements are sparse in the analytical sample. The reported pseudo-R² is calculated from the penalized log-likelihood of the full and intercept-only Firth models. The dependent variable captures formal treaty design rather than actual dispute use or enforcement effectiveness. Source: Author's calculations.

Table 7. Firth penalized logistic estimates of institutionalized FCA.

Variable	Coefficient	Approx. SE	Wald p-Value	Odds Ratio	95% CI for Odds Ratio
Constant	−4.771	1.853	0.010	0.008	[0.0002, 0.320]
$\ln(\text{CoreSubstantiveDepth} + 1)$	1.547	0.372	<0.001	4.697	[2.267, 9.733]
Formal adjudication	−0.622	0.750	0.407	0.537	[0.123, 2.337]
Five-year period	0.362	0.241	0.133	1.436	[0.896, 2.303]
ln membership economic weight	0.171	0.150	0.254	1.187	[0.885, 1.591]
Observations	197				
Institutionalized FCA = 1	172				
FCA 0/1 = 0	25				
Penalized log-likelihood	−51.923				
Null penalized log-likelihood	−73.405				
Penalized McFadden pseudo-R ²	0.293				
Converged	Yes				

Note: The dependent variable equals 1 for FCA 2, indicating an institutionalized coordination architecture, and 0 for FCA 0/1. Estimates use Firth penalized logistic regression because the FCA 0/1 category is sparse. The reported pseudo-R² is calculated from the penalized log-likelihood of the full and intercept-only Firth models. Source: Author's calculations.

Model B reverses the analytical perspective by estimating the likelihood of formal adjudication. Core substantive treaty depth is positively associated with formal adjudication ($OR = 3.000, p = 0.001$), as are the five-year period ($OR = 1.902, p = 0.016$) and membership economic weight ($OR = 1.390, p = 0.038$). These results reinforce the descriptive evidence that later RTA governance events are more likely to include formal adjudication and show that treaty depth remains a strong correlate after accounting for time and economic weight. They do not establish whether deeper commitments generate demand for adjudication or whether formal adjudication makes deeper commitments politically feasible.

Model C examines institutionalized FCA. Core substantive treaty depth is again strongly positively associated with FCA 2 ($OR = 4.697, p < 0.001$). Formal adjudication, the five-year period, and membership economic weight are not independently significant once treaty depth is included. This result indicates that enforcement and coordination should not be treated as interchangeable treaty-design features: both are associated with substantive depth, but formal adjudication does not independently explain institutionalized coordination in the matched FCA sample.

These findings should not be interpreted as evidence that formal adjudication or institutionalized coordination causes deeper treaty commitments. Treaty depth, enforcement design, and coordination architecture may all be shaped by shared political, commercial, and institutional conditions. Instead, the estimates identify systematic associations consistent with E1 and E2. Agreements with denser substantive commitments tend to be accompanied by more formal governance arrangements, although the strength of these relationships may differ across agreement types.

6.4. Robustness, Heterogeneity, and Interpretive Limits

The main findings remain stable across the reported robustness analyses. First, the PPML model using the unlogged CoreSubstantiveDepth count preserves the positive and statistically significant associations of formal adjudication, FCA 2, logged economic weight, and goods-and-services coverage with treaty depth. Second, the stricter codebook produces virtually unchanged inferences for the institutional coefficients in Model A and for the depth effects in Models B and C. The principal measure already excludes provisions that are clearly institutional or procedural. The stricter specification additionally excludes 18 borderline provisions that retain some potentially substantive content but may also reflect structural, transparency, or procedural features.

The formal-adjudication results are also robust to the manual supplementation of unresolved dispute-settlement classifications and to the inclusion of UK continuity agreements. In these alternative Model B specifications, the CoreSubstantiveDepth odds ratio remains positive and statistically significant. These checks reduce the risk that the central association is driven by a small number of uncertain classifications, borderline provision codes, or the treatment of post-Brexit continuity arrangements.

Additional analyses examine whether the principal associations are driven by recurring negotiating entities, agreement coverage, or temporal change. Excluding EU- and EFTA-linked agreements leaves the main coefficients in Models A–C substantively and statistically stable. Interactions with the five-year period measure are not statistically significant in any of the three models (all $p \geq 0.275$), providing no evidence that the principal associations systematically strengthen or weaken across different entry periods.

Agreement coverage, however, introduces a meaningful qualification. Table 8 reports subgroup estimates for goods-only agreements and agreements covering both goods and services, along with interaction tests from the corresponding full-sample models.

Table 8. Heterogeneity of the principal institutional associations by agreement coverage.

Model and Association	Goods Only	Goods and Services	Interaction <i>p</i> -Value
Model A: Formal adjudication → ln(depth + 1)	$\beta = 0.284$, 95% CI [−0.189, 0.758], $p = 0.239$	$\beta = 1.028$, 95% CI [0.658, 1.398], $p < 0.001$	0.001
Model A: FCA 2 → ln(depth + 1)	$\beta = 0.557$, 95% CI [0.210, 0.905], $p = 0.002$	$\beta = 0.447$, 95% CI [0.188, 0.706], $p = 0.001$	0.679
Model B: ln(depth + 1) → formal adjudication	OR = 1.276, 95% CI [0.645, 2.526], $p = 0.483$	OR = 57.752, 95% CI [8.255, 404.015], $p < 0.001$	0.001
Model C: ln(depth + 1) → FCA 2	OR = 6.204, 95% CI [1.682, 22.881], $p = 0.006$	OR = 22.940, 95% CI [3.995, 131.720], $p < 0.001$	0.942

Note: Models A and C contain 63 goods-only and 133 goods-and-services agreements. Model B contains 77 goods-only and 159 goods-and-services events. The single services-only observation is excluded from the subgroup comparison. Model A reports HC3-robust OLS estimates. Models B and C report Firth penalized logistic estimates. Interaction *p*-values are obtained from full-sample models containing the relevant coverage interaction. The large Model B odds ratio for goods-and-services agreements should be interpreted with caution because only 8 observations in this subgroup lack formal adjudication. Source: Author's calculations.

The association between substantive treaty depth and formal adjudication is concentrated in agreements that cover both goods and services. Among goods-only agreements, formal adjudication is not significantly associated with depth in either Model A ($\beta = 0.284$, $p = 0.239$) or Model B (OR = 1.276, $p = 0.483$). Among goods-and-services agreements, the association is positive and statistically significant in both analytical directions. The coverage interaction is statistically significant in both Model A and Model B ($p = 0.001$). This heterogeneity remains under the strict-depth specification and after EU- and EFTA-linked agreements are excluded.

The relationship between treaty depth and institutionalized coordination is more stable. FCA 2 is positively associated with depth in both coverage groups, and the relevant interaction terms are not statistically significant in Model A ($p = 0.679$) or Model C ($p = 0.942$). Coordination architecture therefore tends to accompany substantive depth across agreement types, whereas the connection between depth and formal adjudication is concentrated in agreements that integrate commitments on both goods and services. One possible explanation is that cross-sectoral commitments create more implementation interfaces, regulatory interactions, and interpretive contingencies. However, this explanation remains inferential and cannot rule out differences in partner composition, administrative capacity, bargaining power, or the diffusion of treaty templates.

The very large Model B odds ratio for goods-and-services agreements should not be interpreted as a precise estimate of effect size. Only eight observations in this subgroup lack formal adjudication, which produces a wide confidence interval despite Firth penalization. The more defensible inference concerns the direction of the association and the statistically significant difference between agreement types, rather than the exact subgroup odds ratio.

Extensive subgroup estimation by individual region or development category is not reported because formal adjudication is nearly universal in several resulting cells and FCA 2 dominates the matched coordination sample. Further disaggregation would therefore produce quasi-complete separation, small cells, and weakly identified parameters rather than reliable estimates of heterogeneity.

The findings nonetheless remain associational. The design cannot establish that WTO constraints directly caused individual RTA events to adopt deeper substantive commitments, formal adjudication, or institutionalized coordination. Nor can it fully distinguish

functional allocation patterns from regional integration dynamics, commercial interdependence, legal diffusion, preference similarity, administrative capacity, bargaining power, recurring negotiating entities, or the strategic preferences of treaty parties. Reverse causality also remains possible: formal enforcement and coordination may facilitate deeper commitments rather than emerge in response to them. The evidence should therefore be interpreted as a structured pattern within the RTA field rather than as a universal causal mechanism or as direct evidence that governance functions were reallocated from the WTO to RTAs.

Taken together, the analysis supports three conclusions. First, formal adjudication became substantially more prevalent among classified RTA governance events during the study period. Second, greater core substantive treaty depth is systematically associated with both formal adjudication and institutionalized coordination, but the depth–adjudication relationship is concentrated in agreements that cover both goods and services. Third, enforcement and coordination remain analytically distinct components of RTA governance architecture, with the depth–coordination association exhibiting greater stability across agreement types.

7. Discussion: Functional Allocation in Layered Trade Governance

7.1. What the Cross-Venue Evidence Shows

The evidence presented in Sections 5 and 6 does not support a simple narrative of WTO decline followed by institutional replacement. Instead, it indicates a layered architecture in which trade-governance functions are distributed unevenly across WTO-centered, WTO-linked, and regional venues. The WTO maintains an operative multilateral core for selected rulemaking and coordination functions, while internal differentiation, enforcement supplementation, and regional allocation provide different institutional settings for performing these functions. This pattern aligns with accounts of regime complexity, which emphasize institutional overlap and the absence of a single hierarchical center in contemporary global governance (Kim, 2020; Randall Henning & Pratt, 2023). It also reflects the global–regional realignment identified by Lütz (2021), in which regional governance structures coexist with, rather than simply replace, global institutions. In the trade regime, this coexistence is visible in the simultaneous retention of WTO-centered functions, internal differentiation within the WTO, WTO-linked supplementation, and regional allocation through RTAs.

Figure 1 summarizes five distinct configurations. The TFA, the TRIPS Amendment, and the FSA illustrate retention within the WTO’s multilateral core. The GPA, the ITA Expansion, and the JS DR represent internal differentiation, while the MPIA supplements appellate review through a WTO-linked mechanism. The IFD and the ECA remain pending incorporation, and RTAs allocate rulemaking, enforcement, and coordination through selective regional arrangements. These configurations differ in legal location and participation conditions and should not be treated as equivalent forms of exit from the WTO.

The key implication is that institutional location is as important as institutional proliferation. A new agreement does not necessarily mean that a function has left the WTO, nor does a plurilateral arrangement necessarily indicate external fragmentation. The relevant distinction is whether the function remains in the multilateral core, is differentiated within the WTO, is supplemented through a connected mechanism, or is organized through a separate regional venue. Functional allocation captures this observable configuration more precisely than a generalized claim of fragmentation. Functional reallocation remains a process-oriented interpretation that requires evidence that the location or mode of performing a function changed over time. The present cross-venue comparison identifies where functions are located and how they are institutionally configured; it does not establish that they were transferred from the WTO.

The layered architecture should also not be attributed exclusively to WTO constraints. Geopolitical rivalry, regional integration objectives, regulatory changes, preference similarity, administrative capacity, and treaty-template diffusion may produce similar institutional configurations. WTO constraints constitute an important context, but the evidence does not identify them as the common cause of all differentiated, supplementary, or regional arrangements.

7.2. *What the RTA Evidence Adds*

The RTA analysis adds an important empirical dimension to this argument. Existing discussions of trade fragmentation often focus on prominent agreements or high-profile institutional disputes. In contrast, the event-level evidence reveals patterns across 282 RTA governance events that entered into force between 2000 and 2025. This broader perspective is important because regional allocation varies across a much wider range of bilateral, regional, and cross-regional arrangements.

First, the descriptive evidence shows a substantial increase in the share of classified RTA events that include formal adjudication. Consultation-only arrangements became progressively less common during the study period. This does not establish that all later RTAs provide equally strong enforcement, since ad hoc adjudication and standing tribunals differ in institutional capacity, accessibility, and practical use. Formal adjudication measures treaty design rather than litigation frequency, implementation of rulings, compliance, or enforcement effectiveness. Nevertheless, the pattern indicates that formal dispute-settlement provisions have become a more common component of RTA governance architecture.

Second, greater core substantive treaty depth is positively associated with formal adjudication and institutionalized coordination. One possible explanation is that denser commitments generate more implementation interfaces, interpretive contingencies, and coordination demands. However, the associations may also reflect partner preferences, administrative capacity, bargaining power, legal traditions, or the replication of established treaty templates. Reverse causality is equally plausible: formal enforcement and coordination may render deeper commitments politically feasible.

The heterogeneity analysis further qualifies the general relationship. The association between substantive depth and formal adjudication is concentrated in agreements covering both goods and services and is not statistically significant in agreements covering only goods. Cross-sectoral agreements may generate more regulatory interactions and interpretive contingencies, but this mechanism cannot be isolated from differences in partner composition or negotiating capacity. By contrast, the relationship between substantive depth and institutionalized coordination remains positive across both agreement types. Ongoing coordination may therefore be a more general institutional complement to treaty depth than formal adjudication.

Third, enforcement and coordination are related but analytically distinct. Formal adjudication concerns the management of disputes and legal disagreement, whereas Formal Coordination Architecture concerns joint administration, monitoring, and political management over time. Model C shows that institutionalized coordination is strongly associated with core substantive treaty depth, but not independently with formal adjudication once depth is taken into account.

The RTA evidence should not be interpreted as proof that WTO paralysis caused specific agreements to become deeper or more legalized. Treaty design may also reflect commercial interdependence, regional integration projects, legal diffusion, domestic political preferences, and the strategic interests of participating states. The empirical contribution is narrower but remains important: RTAs exhibit a structured association among substantive breadth, enforcement, and coordination that aligns with their role as selective venues

for organizing trade-governance functions. This supports arguments that regional agreements can serve as sites of deeper regulatory cooperation when WTO-wide updating is difficult, while also varying significantly in legal depth and institutional capacity (De Bièvre & van Ommeren, 2021; Stephen & Parížek, 2019).

7.3. Power, Access, and Practical Implications

Functional allocation is not politically neutral. The observed arrangements distribute governance functions across venues that differ in membership access, legal form, administrative resources, and enforceability. These differences affect not only where rules are negotiated, but also who can participate in their formation, whose preferences shape their content, and how far their effects extend beyond participating members. The analysis does not measure authority directly, but legal status, access, and enforceability all have implications for the practical influence exercised through each venue.

Power asymmetries shape these implications. Strange's (1996) distinction between relational and structural power is useful because institutional influence extends beyond bargaining within a specific negotiation to the capacity to shape the environment in which other actors operate. Larger economies are generally better positioned to initiate or shape alternative arrangements because they possess greater market size, administrative capacity, technical expertise, and bargaining leverage (Kahler, 2013; Newman & Posner, 2011). Smaller states can use institutional multiplicity for coalition-building and strategic sequencing, but the costs of navigating a layered governance environment remain unevenly distributed (Gómez-Mera, 2016; Morse & Keohane, 2014; Verdier, 2022).

Selective membership creates a recurring trade-off. It can reduce bargaining costs and permit deeper commitments among willing participants, but it can also restrict participation and make institutional influence dependent on legal, administrative, and political capacity. Formal openness is therefore not equivalent to practical accessibility. The same applies to dispute settlement: the presence of adjudication may have limited value for parties unable to sustain litigation or implementation costs.

These findings have differentiated practical implications. For WTO members, the priority is to maintain legal compatibility and credible pathways for incorporating differentiated, plurilateral, and multilateral arrangements. For RTA negotiators, deeper substantive commitments should be matched by adequate administrative capacity, ongoing coordination, and effective dispute-resolution procedures. For smaller or nonparticipating economies, the central concerns are access costs, limited influence over externally developed templates, and the capacity to comply with overlapping obligations. International organizations can help mitigate these problems by increasing transparency, monitoring institutional overlap, and promoting interoperability among agreements.

The distributional implications extend beyond formal participation. Aggregate institutional or economic expansion can coexist with localized, unevenly distributed costs, a concern also identified in other areas of economic restructuring (Rashidin & Javed, 2026). In trade governance, arrangements that increase the capacity of participating actors may simultaneously impose adjustment, compliance, or exclusion costs on nonparticipants. This cross-domain comparison does not substantiate the functional-allocation framework, but it illustrates why institutional capacity should not be assessed independently of distributional consequences.

7.4. Limitations and Future Research

The findings should be interpreted within clear limits. The cross-venue comparison is structured and theory-guided, but descriptive. It maps functional allocation but does not directly identify functional reallocation or estimate whether WTO constraints produce par-

ticular institutional configurations. Similarly, the RTA models identify associations among core substantive treaty depth, formal adjudication, coordination architecture, economic weight, and time. They do not demonstrate that WTO constraints caused individual treaty parties to adopt these designs.

The study also measures treaty architecture rather than institutional performance. Formal adjudication does not necessarily indicate that dispute settlement is frequent or effective. Institutionalized coordination does not establish that joint bodies meet regularly, resolve implementation problems, or change state behavior. Similarly, greater core substantive treaty depth does not necessarily indicate that commitments are implemented in practice. These are important limitations because legal design, institutional activation, and practical compliance are related but distinct empirical questions.

The analytical samples also have uneven coverage. Models A and C apply to high-confidence DESTA matches through 2019, while direct treaty-depth coverage is limited for 2020–2025. Missing observations and matching success may be systematic. Repeated participation by the EU, EFTA, and other negotiating entities may further create interdependence through shared treaty templates. Excluding EU- and EFTA-linked agreements leaves the principal results stable, but this check cannot eliminate all dependence among observations.

CoreSubstantiveDepth is constructed consistently from the DTA 2.0 binary provision matrix, but its provision-code classification remains author-defined and lacks a fully independent external benchmark. The strict depth-sensitivity analysis reduces concern about borderline classification choices but cannot eliminate all construct-validity uncertainty. Endogeneity and reverse causality also remain possible because treaty depth, enforcement, and coordination may be jointly shaped by preferences, capacity, bargaining power, and prior institutional models.

Future research could extend the analysis in several directions. First, function-specific longitudinal and process-tracing studies could establish whether and how particular functions move among WTO-centered, WTO-linked, and regional venues, identifying the political conditions under which retention, differentiation, supplementation, or relocation becomes more likely. Second, institutional-performance research could assess whether formal adjudication and institutionalized coordination lead to greater compliance, more frequent committee activity, or more durable regulatory cooperation. Third, network analysis could map how states, legal experts, firms, and international organizations connect otherwise separate governance venues.

Future research could also link treaty-level governance architecture to actual trade, firm, value-chain, and post-shock recovery outcomes. Such analysis would determine whether formal institutional design has downstream implications for economic resilience, an outcome that the present study does not measure. Negotiator-level and treaty-version data would further enable stronger analysis of template diffusion, institutional learning, and changes in governance functions over time.

The available evidence therefore supports a narrower conclusion. Trade-governance functions are allocated across a layered architecture whose venues differ in participation, legalization, and enforceability. This configuration is neither institutional collapse nor a uniform substitute for WTO-centered governance. Its practical consequences depend on how the relevant arrangements distribute access, legal capacity, and opportunities for influence.

8. Conclusions

This study examined how rulemaking, enforcement, and coordination are institutionally allocated across WTO-centered, WTO-linked, and regional venues. Its central

argument is that contemporary trade governance is better understood as a layered architecture rather than as either WTO collapse or the replacement of multilateralism by regionalism. Governance functions coexist across venues that differ in membership, legalization, and enforceability.

The functional-allocation framework distinguishes the observable institutional configuration of governance functions from functional reallocation as a process of change over time. Functions may remain within the WTO multilateral core, be internally differentiated within the WTO, be supplemented through WTO-linked mechanisms, or be regionally allocated through RTAs. Plurilateral initiatives pending incorporation occupy an intermediate legal position. These configurations may all involve selective participation, but they differ in their legal relationship to the WTO, their membership structures, and their enforceability.

The cross-venue comparison shows that selected rulemaking and coordination functions remain in the WTO multilateral core. Differentiated arrangements sustain cooperation among subsets of WTO members, the MPIA supplements constrained appellate review through a WTO-linked mechanism, and pending plurilateral initiatives illustrate the distinction between negotiated content and operative legal status. RTAs provide additional venues for substantive commitments, formal adjudication, and ongoing coordination. Their existence demonstrates regional allocation, but not necessarily that these functions have been transferred from the WTO.

The empirical analysis of 282 RTA governance events shows that formal adjudication became increasingly prevalent among classified agreements between 2000 and 2025. Greater core substantive treaty depth is positively associated with formal adjudication and institutionalized coordination. However, the depth–adjudication association is concentrated in agreements covering both goods and services, whereas the depth–coordination association remains positive across agreement types. Enforcement and coordination are therefore related to substantive depth but remain analytically distinct components of treaty architecture. Formal adjudication captures treaty design rather than the accessibility, use, effectiveness, or compliance-related consequences of dispute settlement.

Layered governance has important distributional implications. Selective arrangements may preserve governance capacity and enable deeper commitments where WTO-wide agreement is difficult, but the ability to initiate, join, shape, and use such arrangements depends in part on legal, administrative, and bargaining resources. Institutional layering may therefore create opportunities for cooperation while also increasing access costs, rule overlap, and the influence of recurring negotiating entities and established treaty templates. The architecture is consequently not politically neutral, even though the present analysis does not directly measure institutional authority.

The study remains subject to several limitations. The cross-venue comparison is descriptive, and the RTA models identify associations rather than causal effects. They cannot establish that WTO constraints caused particular treaty designs, rule out reverse causality, or fully disentangle functional considerations from partner preferences, administrative capacity, bargaining power, regional integration objectives, and template diffusion. Models involving FCA are also limited to high-confidence DESTA matches through 2019, while direct depth coverage is incomplete for 2020–2025. Finally, the analysis measures formal treaty architecture rather than institutional activation, dispute usage, implementation, or compliance.

Future research should use function-specific longitudinal comparison and process tracing to determine whether governance functions actually move among venues. Treaty-version analysis could identify institutional learning and template diffusion, while evidence on dispute use, committee activity, implementation, and access for nonparticipants could connect formal design to institutional performance. Linking treaty architecture to trade,

firm, value-chain, and post-shock outcomes would also permit direct examination of economic consequences that the present study does not measure.

The future of this architecture may follow three broad trajectories. It may become a durable form of coexistence in which different functions remain allocated across venues. Some arrangements may instead be transitional responses while participants continue to seek WTO incorporation or firmer legal anchoring. Regional and plurilateral experimentation may also generate rules or procedures that are later multilateralized or reintegrated into WTO structures. Which trajectory prevails will depend on membership inclusiveness, interoperability, legal compatibility, major-power support, and WTO members' capacity to accommodate differentiated cooperation without undermining multilateral legitimacy.

The central question is therefore not whether the WTO will again become the sole institutional center of global trade governance, but how rulemaking, enforcement, and coordination can coexist across venues while preserving legal coherence, meaningful access, and opportunities for future reintegration. Functional allocation provides a framework for analyzing that architecture without reducing it to institutional decline or treating regionalism as a simple response to multilateral constraints.

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Abbreviations

The following abbreviations are used in this manuscript:

ASEAN	Association of Southeast Asian Nations
CACM	Central American Common Market
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
DESTA	Design of Trade Agreements
DTA	Deep Trade Agreements
ECA	Agreement on Electronic Commerce
EFTA	European Free Trade Association
EU	European Union
FCA	Formal Coordination Architecture
FSA	Agreement on Fisheries Subsidies
GATT	General Agreement on Tariffs and Trade
GCC	Gulf Cooperation Council
GDP	Gross domestic product
GPA	Agreement on Government Procurement
HC3	Heteroscedasticity-consistent standard errors
IFD	Investment Facilitation for Development Agreement
IPE	International political economy
ITA	Information Technology Agreement
JSDR	Joint Initiative on Services Domestic Regulation
MERCOSUR	Southern Common Market
MFN	Most-Favored Nation

MPIA	Multi-Party Interim Appeal Arbitration Arrangement
OLS	Ordinary least squares
PPML	Poisson Pseudo Maximum Likelihood
PTA	Preferential Trade Agreement
RTA	Regional Trade Agreement
RTA-IS	Regional Trade Agreement Information System
SACU	Southern African Customs Union
TFA	Trade Facilitation Agreement
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UK	United Kingdom
WDI	World Development Indicators
WTO	World Trade Organization

Appendix A. RTA Event-Universe Construction

Table A1. Construction of the RTA event universe and analytical samples.

Stage	N	Decision
Initial event master	337	Systematic RTA module master, 2000–2025.
Less: accession/enlargement events	19	No independent agreement-level provision set.
Less: UK continuity/replacement events	35	Excluded from the principal event universe; included only in the UK-continuity Model B sensitivity and not treated as a new instance of functional reallocation.
Less: duplicate AfCFTA DTA supplement	1	Official RTA-IS AfCFTA event retained; duplicate DTA-only supplement omitted to avoid double counting/current-text contamination.
Final RTA event universe	282	Agreement-level events used for descriptive RTA mapping.
Direct RTA-IS DS classification	273	22 consultations-only; 247 ad hoc; 4 standing tribunal; nine unmatched remain missing.
Direct CoreSubstantiveDepth coverage	253	Direct DTA 2.0 provision-level depth data; only 19 of 45 events in 2020–2025.
FCA high-confidence matched events, 2000–2019	207	DESTA/Gastinger–Dür matched treaties; 197 complete cases in Models A/C.
Full WDI event-time GDP coverage	267	Partial WDI cases excluded from main models.
Text-vintage risk screen	251	No recorded post-entry change or only technical/limited change; 31 events flagged for modernization/multi-stage text risk.

Note. All nine unmatched cases remain missing in the main models. Six manually validated cases are added only in the manual-DS sensitivity; three remain unresolved.

Appendix B. Data Integrity, Text-Vintage, and Dispute-Settlement Coding

Event-time membership economic weight is calculated as the combined GDP of the agreement parties in the relevant entry year, divided by world GDP in the same year. Membership is reconstructed dynamically when regional organizations changed composition over time. For events entering into force in 2025, the latest available World Development Indicators observation for 2024 is used. Events with incomplete GDP coverage are excluded from the principal models rather than imputed.

Table A2. Text-vintage risk classification and treatment of RTA governance events.

Risk-Screen Classification	Events	Treatment
No recorded post-entry change	237	Included in principal event universe.
Multi-stage goods/services coverage	19	Flagged for possible current-text versus event-time mismatch.
Technical/limited or other post-entry change	14	Flagged for potential event–text mismatch; retained in the principal mapping but not separately modeled in the reported robustness analyses.
Substantive upgrade/protocol after base entry into force	12	Flagged; included in main mapping but excluded in text-aligned sensitivity.

Note. The screen identifies cases in which current RTA-IS or DTA text may differ materially from the original event. It does not claim that every post-entry change has been reconstructed in legal detail.

Table A3. RTA-IS dispute settlement cases treated as missing in the Main Models.

RTA ID	Agreement	Year	Coverage	Region	Treatment
89	Türkiye–North Macedonia	2000	Goods	Europe	Missing in DS models
579	Common Economic Zone (CEZ)	2004	Goods	CIS and associated/former member States	Missing in DS models
858	Russian Federation–Serbia	2006	Goods	Europe	Missing in DS models
562	India–Bhutan	2006	Goods	West Asia	Missing in DS models
566	Iceland–Faeroe Islands	2006	Goods & Services	Europe	Missing in DS models
392	India–Nepal	2009	Goods	West Asia	Missing in DS models
773	Mexico–Bolivia, Plurinational State of	2010	Goods	South America; North America	Missing in DS models
952	Indonesia–Pakistan	2013	Goods	East Asia; West Asia	Missing in DS models
999A1	RCEP Agreement	2022	Goods & Services	West Asia; East Asia; Oceania	Missing in DS models

Appendix C. FCA Matching and Sample-Coverage Audit

Table A4. High-confidence DESTA/FCA matching coverage by RTA entry period.

RTA Entry Period	RTA Events	High-Confidence DESTA Matches	Coverage
2000–2004	52	45	86.5%
2005–2009	76	66	86.8%
2010–2014	66	59	89.4%
2015–2019	43	37	86.0%
2000–2019 total	237	207	87.3%
2020–2025	45	—	Not used in FCA main analysis

Table A5. Characteristics of high-confidence DESTA/FCA matched and unmatched RTA events, 2000–2019.

Group	N	Goods & Services	Cross-Regional	EU-Linked	Median CoreSubstantiveDepth	Mean Event Year
Matched	207	66.7%	72.0%	14.5%	188	2009.1
Unmatched	30	36.7%	46.7%	6.7%	104.5	2009.3

Table A6. Coverage-bias tests for high-confidence DESTA/FCA matching, 2000–2019.

Coverage Comparison	Test	Interpretation
Period distribution (2000–2019)	$\chi^2 = 0.36; p = 0.948$	No evidence that match status varies by five-year period.
Goods & services coverage	$\chi^2 = 10.10; p = 0.001$	Matched treaties are more often goods-and-services agreements.
Cross-regional membership	$\chi^2 = 7.82; p = 0.005$	Matched treaties are more often cross-regional.
EU-linked status	$\chi^2 = 1.37; p = 0.241$	No clear evidence of differential EU-linked coverage.
CoreSubstantiveDepth	Mann–Whitney $p = 0.0005$	Matched treaties have greater core substantive depth (median 188 versus 104.5).

Note. The FCA sample is not temporally selective within 2000–2019, but matched treaties are more often goods-and-services and cross-regional agreements and have greater core treaty depth. FCA findings, therefore, apply to the matched treaty-level sample.

Appendix D. Construction of Core Substantive Treaty Depth

Table A7. Operational construction of core substantive treaty depth.

Coding Element	Operational Rule	Reason
Unit of analysis	Each retained substantive DTA 2.0 binary provision is coded 1 when present. CoreSubstantiveDepth is the sum of retained provisions; Models A–C use $\ln(\text{CoreSubstantiveDepth} + 1)$.	Preserves provision-level variation while separating substantive treaty depth from enforcement and coordination architecture.
Included content	Direct commitments on market access, regulatory disciplines, economic governance, sectoral access, investment, services, technical regulation, SPS, rules of origin, procurement, competition, intellectual property, and comparable substantive disciplines.	These clauses directly alter commitments or economic and regulatory obligations.
Excluded content	Dispute settlement, enforcement procedures, remedies, committees, secretariats, consultations, cooperation-only language, review clauses, transparency-only provisions, and other institutional/process clauses.	Prevents tautological overlap with Enforcement Architecture and FCA.
Borderline treatment	Structural, transparency and procedural provisions are excluded in the principal measure. A stricter coding screen is used only for sensitivity checks.	Protects the anti-tautology design.
Audit trail	The provision-level source matrix, inclusion/exclusion decision, rationale and borderline flag are retained in the replication archive.	Allows complete reproduction and review of treaty-depth coding.

Table A8. Core substantive treaty depth by FCA level.

FCA Level	N	Median CoreSubstantiveDepth	Q1	Q3	Mean CoreSubstantiveDepth
FCA 0	11	54.0	43.5	124.0	93.27
FCA 1	17	77.0	40.0	147.0	95.59
FCA 2	178	204.5	118.25	266.0	198.48

Note. Descriptive statistics are based on 206 matched events with non-missing data for FCA and CoreSubstantiveDepth. The Model A/C sample is smaller because it additionally requires complete covariate data, including event-time economic weight.

Appendix E. Full Estimates and Robustness Checks

Table A9. PPML sensitivity estimates of core substantive treaty depth with HC3-robust standard errors.

Parameter	Coefficient	HC3-Robust SE	p-Value	95% CI Low	95% CI High	exp(β)
Constant	3.620	0.162	<0.001	3.301	3.938	37.329
Formal adjudication	0.763	0.127	<0.001	0.515	1.012	2.145
FCA 2 (vs FCA 0/1)	0.447	0.093	<0.001	0.266	0.628	1.564
Five-year period	0.061	0.026	0.018	0.010	0.111	1.062
ln membership economic weight	0.069	0.015	<0.001	0.040	0.098	1.071
Cross-regional agreement	0.077	0.058	0.185	−0.037	0.192	1.080
Goods-and-services coverage	0.732	0.067	<0.001	0.600	0.864	2.079
Observations	197					
Log pseudo-likelihood	−2631.227					
Null log pseudo-likelihood	−6150.724					
McFadden pseudo-R ²		0.572				
Robust Wald $\chi^2(6)$		302.297				
Prob. > χ^2		<0.001				

Note. Dependent variable: raw CoreSubstantiveDepth, measured as the count of retained substantive treaty provisions. The PPML model uses the same high-confidence DESTA base-treaty sample as Model A. Standard errors are HC3 heteroscedasticity-consistent. exp(β) indicates the multiplicative association with the expected provision count. Source: Author's calculations.

Table A10. Sensitivity of key associations to confirmed alternative coding and sample treatments.

Model	Sensitivity Test	Key Association	Main-Model Estimate	Sensitivity Estimate	Interpretation
Model A	Strict-depth coding	Formal adjudication → ln(CoreSubstantiveDepth + 1)	$\beta = 0.662$, $p < 0.001$	$\beta = 0.674$, $p < 0.001$	Positive and statistically significant
Model A	Strict-depth coding	FCA 2 → ln(CoreSubstantiveDepth + 1)	$\beta = 0.467$, $p < 0.001$	$\beta = 0.476$, $p < 0.001$	Positive and statistically significant
Model B	Strict-depth coding	ln(CoreSubstantiveDepth + 1) → formal adjudication	OR = 3.000, $p = 0.001$	OR = 3.014, $p < 0.001$	Positive and statistically significant
Model B	Manual DS supplementation	ln(CoreSubstantiveDepth + 1) → formal adjudication	OR = 3.000, $p = 0.001$	OR = 3.680, $p < 0.001$	Positive and statistically significant
Model B	UK continuity inclusion	ln(CoreSubstantiveDepth + 1) → formal adjudication	OR = 3.000, $p = 0.001$	OR = 2.175, $p < 0.001$	Positive and statistically significant
Model C	Strict-depth coding	ln(CoreSubstantiveDepth + 1) → institutionalized FCA	OR = 4.697, $p < 0.001$	OR = 4.729, $p < 0.001$	Positive and statistically significant

Note. Strict-depth coding excludes 18 additional borderline structural, transparency, and procedural provision codes. Manual DS supplementation adds the six manually validated dispute-settlement cases to Model B. UK continuity inclusion adds UK continuity arrangements to the Model B sensitivity sample. All sensitivity checks preserve the sign and statistical inference of the relevant main-model association. Source: Author's calculations.

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