

Governing trade uncertainty amid WTO weakening: coordination and firm-level adaptation

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Abstract. The weakening of the WTO's framework for trade conflict management, together with more unilateral measures and diverging national rules, creates distinct but related forms of uncertainty for governments and firms. The authors treat WTO weakness as part of a broader fragmentation of trade authority—not as the cause of every problem discussed. The main distinction is between two kinds of predictability. First-order predictability covers information and accommodation in the public regulatory environment. Second-order predictability covers how an affected firm responds. Using doctrinal analysis and structured comparison, two regulatory episodes are looked at—the Section 301 and Section 232 conflicts—and three firm-level commercial settings: Huawei-related export controls, Apple's tariff-driven supply-chain adjustment, and RTI Ltd v MUR Shipping BV. This comparison shows that mechanisms only improve predictability when the relevant actor has legal authority or practical control. Coordination can deliver better information or negotiated accommodation, but it cannot settle questions of international legality. Firms can make their own responses more predictable through compliance systems, lawful operational alternatives, and clear contractual terms. But they cannot create public-law permission where none exists. Trade governance is thus functionally differentiated and overlapping: public coordination and private ordering may address different aspects of the same disruption, but neither can replace authority it does not have.

Keywords: WTO, trade fragmentation, regulatory coordination, legal uncertainty, private ordering

1. Introduction

Production and contracting continue to be very much intertwined. However, trade-related powers have been devolved. Governments are increasingly making economic and security choices with respect to tariffs, export controls, sanctions, licensing, and industrial policies [1]. Market access and transaction costs can be influenced by the availability of these tools, which continually changes. Limited and/or delayed responses are offered by multilateral organisations. This fragmentation is echoed in WTO conflict management, which has been undermined [2]. The distribution of public authority has now been broken up among national regulators, negotiating governments, international bodies, and implementing states. Many times, firms have to make decisions prior to the manifestation of a clear outcome from these actors.

The shared question is: how should trade governance adapt to WTO weakness, divergent national rules, and firm-level legal uncertainty? To answer this, it needs to separate public regulatory uncertainty from transaction-level legal risk. Regulatory unpredictability concerns the substance, scope, timing, and possible retaliation around public measures. Contested legality concerns whether those measures remain disputed under international law—a condition that coordination can reveal or manage but not necessarily resolve. Transaction-level commercial risk concerns whether performance is allowed, whether lawful alternatives exist to reduce exposure, and how remaining costs and remedies are allocated.

The authors structure these problems according to aspects of first- and second-order predictability. First-order predictability relates to the public regulatory setting, that is, disclosure, consultation, negotiated adjustment, and the perpetual contestability of public measures in court. Second-order predictability is related to the response of an affected firm. Even if public action remains undecided, a firm can state how it will determine whether performance is legally permitted, how it will assess lawful alternatives, and how it will distribute the remaining consequences. This differentiation helps to avoid the use of private ordering as an alternative to public law. It also does not draw on the assumption that public coordination provides a solution to the problem of transaction risk.

The starting point is authority and control. A reliable mechanism can be put in place to control only the things that the relevant actor is legally or de facto in control of. A domestic notice process can improve information but cannot control a foreign state's retaliation. If there is not a general rule, then the negotiators can "bend" for one another. A firm is able to control the decision-making process and contracts but not a licence. The roles of regulatory coordination and firm adaptation are therefore different, and regulatory coordination and adaptation are often overlapping. Both mechanisms may be triggered by the same public measure, but not necessarily in that order.

Section 2 integrates the literature, provides a shared context, and talks about the approach. Section 3 deals with regulatory coordination, and Section 4 considers legal adaptation at the firm level. The main cross-case synthesis is provided in Section 5, while actor-specific recommendations are provided in Section 6. Section 7 concludes. The distinction between the two regulatory periods and the three commercial contexts at the firm level is clearly established. It is up to date through 14 August 2026.

2. Literature review, common framework, and method

2.1. Literature review

Existing literature on trade fragmentation is both legal and economic in nature. Bown also explores the ways in which tariffs, counter-tariffs, and exclusions transformed US-China trade, and ultimately the connection between unilateral trade measures and the demise of multilateral conflict resolution [2, 3]. The WTO [1] places such changes in the context of geopolitical rivalry, economic security policy, and a host of fragmenting risks. These works demonstrate that fragmentation is not simply an issue of conflicting rules of law. It also encompasses market access, retaliatory measures, and the unpredictable duration of public measures.

Transparency and consultation take care of some of that uncertainty but not legality. Wolfe says transparency is disclosure, explanation, and peer review. His research on Specific Trade Concerns demonstrates the way in which WTO committees can provide clarity on measures prior to litigation without any binding judgments [4, 5]. In this literature, making space for information is differentiated from legal settlement and accommodation. A procedure may be observable and may not have the capability or incentive to influence the behavior of the states.

Firm-level scholarship approaches uncertainty through organizational and contractual capacity. Supply-chain research emphasizes visibility, flexibility, collaboration, and the ability to respond [6, 7]. But trade regulation adds a prior legal condition: any alternative—supplier, route, currency, or production site—must be lawful as well as feasible. Private-ordering work shows that choice-of-law, forum-selection, and arbitration clauses shape transaction risk, while vague or missing terms can create fresh disputes [8].

These bodies of work offer strong but largely separate accounts of interstate conflict management and firm adaptation. What is missing is not another list of proposals, but a theory of functional allocation: which actor can address which type of uncertainty, what kind of predictability that mechanism produces, and what falls outside its authority or control. Existing work also says little about interaction. Public coordination and private response may occur at the same time, but no fixed institutional sequence governs how they relate. The framework the authors develop below addresses this gap.

2.2. Common analytical framework

The analysis compares mechanisms through five questions: (1) what object of uncertainty is present; (2) which actor and mechanism respond; (3) what legal authority, procedure, incentives, or practical control the response requires; (4) what form of predictability it produces; and (5) what remains outside the mechanism's reach. This paper assesses effectiveness against the mechanism's assigned function rather than through a single cross-level metric. Table 1 summarizes the two governance functions, the uncertainty each addresses, the predictability it can produce, and the authority or control that limits its operation.

Table 1. Governance functions, predictability, and authority limits

Governance function	Object of uncertainty	Predictability produced	Authority/control condition	Boundary
Regulatory coordination	Regulatory unpredictability: scope, timing, retaliation, and escalation	First-order procedural predictability or negotiated accommodation	Timely disclosure linked to actors able and willing to alter conduct	Information does not itself settle legality or prevent retaliation
Firm-level legal adaptation	Transaction-level permission, exposure, and consequence risk	Conditional second-order predictability	Accurate legal analysis, lawful and deployable alternatives, precise drafting, and sufficient private control	Firms cannot override mandatory law, regulators, banks, or unequal bargaining conditions

Permission, exposure, and consequence are "response-oriented" categories that link public regulatory uncertainty with firm decision-making. Permission is a question asking whether the action being considered is legal or requires permission. Exposure asks, "Can a lawful operational or governmental adjustment result in a change in the practical effect of a measure?" Consequence concerns who suffers from the delay, cost, suspension, renegotiation, and/or termination after permission/exposure. This list is not an exhaustive list of the types of uncertainties that are relevant at the public level. Instead, these categories explain what decisions governments and firms can make. The authority of private actors can be seen as increasing from public consent to contractual consequences, although public law and power dynamics are always limiting factors.

2.3. Methodology, propositions, and scope

This paper combines doctrinal legal analysis with structured, focused comparison. The doctrinal part interprets GATT 1994, relevant national trade measures, export-control and customs rules, and judicial and private-law materials. The comparative part is analytical rather than statistically representative. It distinguishes two regulatory episodes—Sections 301 and 232—and three firm-level commercial settings. The selection varies conditions that matter legally and institutionally: information versus accommodation, public authorization versus operational capacity, and contractual control.

This study evaluates two propositions of different kinds. P1 is comparative: domestic procedure may improve information, and interstate bargaining may produce accommodation, but neither necessarily resolves legality. P2 is a bounded-control proposition: compliance, lawful operational alternatives, and clear contractual terms can improve second-order predictability, but only to the extent that the firm controls the relevant response. None of these can authorize prohibited conduct or override mandatory law. The cases support, illustrate, or qualify these propositions; they are not meant to prove universal causal effects.

The cross-case synthesis question has to do with assigning functions to actors with appropriate authority or control. Regulatory co-ordination and firm-level adaptation have different roles and may overlap in time. Not all issues have an impact on public-law uncertainty, which can affect firm decisions before negotiations and/or litigation with governments.

The limitations are included in conclusions. The purposive selection does not reveal the extent to which a mechanism has been successful in other sectors or disputes. The public records do not contain confidential contracts, comprehensive cost figures, or compliance systems. There is evidence of a production footprint and activity in the Apple material, but not of all the rationale behind the corporate choices. The Huawei FDPR and Bosch records do not reveal Huawei's compliance. Thus, it restricts causal inferences to mechanisms observed and reported. It also distinguishes between intrinsic limitations of a mechanism and constraints which are inherited. Coordination can maximize information or accommodation, but it cannot solve the problem of international legality and outside reprisals. Contractual relationships impose duties on the parties to the contract, but there are implied public-law duties and unequal bargaining circumstances.

3. Regulatory coordination: procedural predictability and accommodation

3.1. Legal setting and standards of assessment

Regulatory coordination addresses the first-order uncertainty surrounding the timing, range, and escalation of public policies. It can be in conjunction with domestic administration, interstate bargaining, or litigation. It need not be in a fixed institutional sequence. Now, however, the comparative proposition will be applied in various settings in the Section 301 and Section 232 segments. The domestic procedure provided information without interstate control. The changes in state practices brought about by reciprocal bargaining did not create a general rule of law.

The multilateral benchmark for the tariff conflicts that it reviews is GATT 1994. It includes most-favoured-nation treatment (*Article I:1*) and negotiated tariff bindings (*Article II:1*) [9] (*arts. I:1, II:1*). These international obligations are in addition to domestic laws that provide for trade action. *U.S. Section 301* is a remedy for responding to certain foreign trade practices. There are measures under Section 232 that are based on national-security findings. It therefore does not follow that a measure which is lawful under domestic law is necessarily not subject to challenge on the international plane.

Coordination mechanisms operate within the gap between domestic authority and contested international legality. They may produce information by disclosing scope, timing, and administrative procedure. They may produce accommodation by changing the conduct of participating states. Transparency is more likely to affect conduct when information reaches an actor with authority to alter the measure, participation occurs before positions and retaliation become entrenched, and consultation is linked to reciprocal incentives, monitoring, or a review point. Without these conditions, transparency may make a measure legible while leaving strategic behavior unchanged. Legal settlement remains a third and distinct outcome.

3.2. *Section 301*: transparency without interstate control

The *US-China Section 301* episode is a longitudinal case where domestic procedure and interstate escalation unfolded together. USTR launched its investigation in August 2017, targeting Chinese practices on technology transfer, intellectual property, and innovation. The process included written submissions and a public hearing [10]. Before the first tariff list took effect, USTR used notice-and-comment procedures, revised the proposed list after public input, and later set up a product-exclusion process [11, 12]. These steps gave firms information about product coverage and a way to request exclusions, improving the predictability of the US administrative process.

However, these procedures were not in effect for the interstate response. The U.S. added an extra 25-percent tariff on nearly US\$34 billion of Chinese imports on July 6, 2018. In reply, China slapped counter-tariffs on an equivalent value of U.S. exports, and more rounds ensued [3, 13]. A firm could have an understanding of the procedure for a particular U.S. tariff line. However, it was not able to anticipate the next round of tariffs, China's countermeasures, or the length of the war. The issue of domestic transparency was not identified as a common interstate process.

The next WTO case, which is a review, further distinguishes procedure from the suit. The DS543 panel was also able to conclude that the challenged duties breached *Articles I:1 and II:1(a) and (b)* and did not meet the requirements of *Article XX(a)* based on the record it had before it [14]. The appeal was filed on October 26, 2020, when the Appellate Body did not have a division. The report has yet to be adopted [15]. A formal adjudication process was undertaken in which legal analysis was provided but no adopted DSB recommendations or rulings resulted. As the episode will show, there is some good information that can go hand in hand with the retaliation and pending legal issues.

3.3. *Section 232*: negotiated de-escalation without a general rule

The *U.S.-Canada/Mexico Section 232* episode is a test of negotiated accommodation following escalation. In 2018, the U.S. imposed additional tariffs on steel (25 percent) and aluminum (10 percent), while Canada and Mexico slapped countermeasures on certain U.S. exports. The three governments made bilateral arrangements in May 2019. The *Section 232* tariffs were lifted by the United States. Canada and Mexico removed their retaliatory tariffs. These agreements also included provisions for monitoring and consultations in the event of a possible increase in imports [16].

The outcome was de-escalation. These agreements altered the practices of all the governments involved and eliminated current tariff restrictions, which were not part of the public discussion or product exclusion. However, their scope of use was more limited. They did not provide a generally applicable interpretation of the GATT national-security exception or commit other WTO members. Their durability was also conditional. In August 2020, the U.S. applied a 10 percent tariff on some Canadian aluminum imports under the surge mechanism. This illustrates that negotiated accommodation can help to manage a relationship without resolving the legal question in a permanent way [17].

The comparison is useful for P1, and P1's conditions are identified. The *Section 301* notice, hearings, and exclusions provided additional information for firms. But the domestic process lacked the power to decide the Chinese response and was not related to reciprocity. The *Section 232* agreements influenced the conduct of the parties by allowing them to lift tariffs, pull back countermeasures, and monitor surges. Neither episode produced a general legal rule.

4. Firm-level legal adaptation: permission, lawful alternatives, and contractual consequences

4.1. The bounded-control proposition

Firm-level legal adaptation addresses a different problem from public coordination. An unresolved question under WTO law does not necessarily suspend the domestic tariff, export-control, sanctions, customs, licensing, or payment restriction confronting a transaction. Firms may therefore have to decide whether and how to perform while governments continue to consult, litigate, or implement contested measures. Private ordering cannot determine the international legality of those measures; it can only structure the firm's response to the legal environment that remains operative.

P2 proposes a bounded-control gradient. Control is lowest over permission. A firm can identify relevant jurisdictions and legal nexuses, classify products and technology, screen parties, end use, and destination, preserve evidence, pause performance, and seek authorization. Only the competent authority, however, can grant a license. Control is intermediate over exposure: a firm may alter sourcing, production, logistics, or payment arrangements, but only where the alternative is both legally qualified and operationally deployable. Control is greatest, though still incomplete, over contractual consequences such as information duties, cost allocation, suspension, renegotiation, and termination.

The sequence of permission, exposure, and consequence is a transaction-level legal inquiry, not a chronology for public governance. Permission asks whether performance is lawful or requires authorization. Exposure asks whether a lawful alternative changes the practical effect of the measure. Consequence asks how the remaining delay, cost, non-performance, and remedies are allocated. Huawei examines permission at the regulatory boundary; Apple provides limited evidence of exposure adjustment; and MUR Shipping addresses contractual consequences. The sequence therefore produces bounded second-order predictability without resolving first-order international legality.

4.2. Huawei FDPR: third-party supplier compliance at the permission boundary

The 2020 Huawei-related export-control rule illustrates permission uncertainty. BIS added more non-US Huawei affiliates to the Entity List, removed a temporary general license, and revised the foreign-produced direct product rule. The revised Huawei FDPR covered specified foreign-produced items when the direct-product or plant nexus and knowledge conditions were met, and a designated Huawei entity ordered or incorporated the item or took part in the transaction [18]. A foreign supplier thus could not rely on name screening alone. It also had to determine the item's EAR status, the relevant US technology, software, or production-equipment nexus, the parties' roles, and the intended transaction.

This setting does not disclose Huawei's internal compliance system, and that does not use it to assess that system. It instead identifies the legal task facing a regulated counterparty. Name screening alone is insufficient: the counterparty must reach a documented conclusion on jurisdiction, classification, licensing, parties, end use, destination, and transaction-specific knowledge using current rules and reliable facts. BIS

guidance describes an export compliance program as covering risk assessment, jurisdiction, classification, licensing, screening, records, training, audits, corrective action, and continuing updates [19]. These controls can make a permission decision consistent, reviewable, and auditable. They do not alter the FDPR or guarantee either approval or a correct legal outcome.

The Bosch settlement illustrates the same authorization boundary. In June 2026, BIS imposed a US\$36,184,680 administrative penalty on Robert Bosch GmbH concerning exports from outside the United States of foreign-origin MEMS sensors and automotive software to Huawei or its affiliates without a license or other authorization [20]. The settlement is enforcement evidence, not judicial precedent, and it does not identify the internal-control failure associated with each transaction. It nevertheless shows that private classification, screening, escalation, and contracting do not substitute for authorization where the applicable rule requires it.

Contracts can support, but cannot replace, that public-law inquiry. Representations and warranties may address ownership and control, classification, origin, end use, destination, and restricted-party status. Continuing covenants can require updated information and cooperation with a license application; audit and recordkeeping rights preserve evidence; and conditions precedent, suspension, termination, or indemnity provisions can allocate the consequences of missing or inaccurate information. *Articles 6.1.14-6.1.17* of the *UNIDROIT Principles* similarly distinguish the effort to obtain public permission from the consequences of refusal or delay [21]. The effect of each term depends on its drafting and governing law. These provisions allocate information duties and consequences between the parties; they neither make prohibited performance lawful nor bind the regulator.

4.3. Apple: operational adaptation and exposure

Apple is a corroborating operational setting, not a judicial or regulatory holding. Its 2025 Form 10-K states that a significant majority of manufacturing is done in whole or in part by outsourcing partners based mainly in mainland China, India, Japan, South Korea, Taiwan, and Vietnam. It also warns that tariffs and other trade restrictions may affect cost, availability, pricing, margins, and the supply chain. Changing suppliers or operations can be costly, slow, and disruptive [22]. The filing documents a geographically spread production footprint and the costs of shifting operations. It does not show spare or readily scalable capacity, nor does it prove that diversification removes tariff exposure.

The March 2025 episode provides narrower evidence of deployability. In that month, Apple's principal suppliers in India shipped almost US\$2 billion worth of iPhones to the United States. Reports described accelerated customs clearance, chartered air freight, and increased production as tariff changes loomed [23]. This evidence supports only the proposition that pre-existing manufacturing and logistics capacity may enable a rapid short-run response. It does not disclose Apple's complete legal or commercial reasoning, establish a new supply-chain model, or prove that diversification is durable or generally effective across firms and sectors.

Whether an operational response changes legal exposure requires a separate customs analysis. Under the general US non-preferential approach described by CBP, processing in another country must result in substantial transformation to change origin; rerouting or relabeling alone is insufficient. The governing tariff measure must still be checked for any product-specific origin rule, together with classification, valuation, and documentary requirements [24]. Evidence that goods were shipped from India therefore does not by itself establish their customs origin or tariff treatment. The production facts must support the claimed treatment, and the alternative must also exist at sufficient scale and quality to justify switching and reversal costs.

Operational action is therefore not proof of legal effectiveness. Faster shipment, additional inventory, or production at another site must be matched by evidence that the goods qualify for the asserted origin and tariff treatment and comply with relevant licensing and destination rules. Contracts can make that inquiry auditable through representations on origin and classification, duties to retain manufacturing and input records, notice and cooperation obligations, allocation of additional duties and delay costs, and remedies for inaccurate information. These terms divide evidence and cost risk between the parties, but they cannot bind a customs authority or validate an inaccurate origin claim. This is a contract-and-compliance design inference, not evidence of Apple's internal process.

4.4. MUR shipping: contractual precision and consequence allocation

RTI Ltd v MUR Shipping BV deals with the zone of greatest relative private control—contractual performance and the allocation of its consequences. Freight had to be paid in U.S. dollars pursuant to the contract of affreightment. RTI's parent was sanctioned, but making payments was not against the law; there was only a risk that the dollar payments would be delayed. RTI offered to pay in euros and cover the conversion costs. MUR argued that it had a force majeure clause with a reasonable-endeavours proviso in the contract [25]. So, the question was not whether regulation would allow for payment, but whether general contractual language would mandate acceptance of a non-contractual alternative.

In a unanimous ruling, the Supreme Court of the United Kingdom (UK) ruled that MUR was not obliged to accept non-contractual performance under reasonable endeavours. The deal provided MUR with a claim for payment in dollars. If MUR were forced to accept euros, then it would lose the right to reject their introduction [25]. The Court also noted that the parties can agree that a particular alternative is obligatory [25]. This applies to the protection of contractual security: the subsequent economic equivalence may not change the promised performance.

The holding must be separated from the design inference. The Court addressed the proposed euro payment under the clause before it. It did not hold that parties must provide alternative banks, routes, sources, or delivery points. Those are prospective drafting options derived from paragraph 59's recognition of express agreement. Parties may specify permitted alternatives, evidence and notice requirements, conversion and delay costs, and sequenced remedies. MUR Shipping was decided under English law and concerned a charterparty. The *UNIDROIT Principles* and the *ICC Force Majeure and Hardship Clauses* are used here as comparative contract-design benchmarks, not as the governing law in MUR [21, 26]. The *CISG* did not govern that dispute and becomes relevant only to an international sale within the Convention's scope, subject to exclusion by the parties under *Article 6* [27] (*arts. 1, 6*).

The *UNIDROIT Principles* make the doctrinal separation concrete. *Article 6.1.17* separates refusal of permission affecting validity from refusal making performance impossible, when the non-performance rules apply. *Articles 6.2.2–6.2.3* address hardship and provide a route to renegotiation and, where appropriate, judicial termination or adaptation. *Article 7.1.7* addresses a qualifying impediment [21]. Where the *CISG* applies, *Article 79* may exempt damages liability for a qualifying impediment. But it does not automatically adapt the price or terminate the contract, and *Article 79(5)* preserves rights other than damages [27] (*art. 79*). The response depends on the event's effect and the applicable regime, not on attaching one force majeure label to every governmental measure.

Contractual precision cannot expand public permission. A clause cannot force a bank to process a prohibited transfer, compel a regulator to issue a license, or make unlawful performance lawful. Party autonomy also remains subject to overriding mandatory rules and public policy [28] (*art. 11*).

Predictability also depends on the surrounding dispute architecture. A choice-of-law clause identifies the rules for interpreting force majeure, hardship, illegality, and contractual remedies, while a forum or arbitration clause identifies the decision-maker and procedure. Together, they can produce bounded private adjudicative predictability by reducing secondary disputes over applicable law and forum and by directing expressly allocated regulatory risks to a known decision process [8, 28]. That predictability remains party-level. These clauses cannot determine the WTO legality of a state measure, neutralize overriding mandatory rules at the place of performance or in the forum, or bind regulators and banks. Their contribution is a more predictable route for deciding contractual rights, not public-law finality.

4.5. Comparative assessment: conditional second-order predictability

The evidence supports a differentiated version of P2. The Huawei FDPR and Bosch settlement show that a documented process can support a counterparty's permission analysis while authorization remains a public matter. The settlement is enforcement evidence, not judicial precedent. Apple provides narrower operational evidence that pre-existing capacity may support a short-run exposure adjustment, while the CBP material shows that its legal effect depends on origin and customs qualification. MUR Shipping supplies direct judicial authority that clear drafting can define contractual performance and remedies; the *UNIDROIT Principles*, *CISG*, and *HCCH Principles* provide comparative benchmarks subject to their respective scope and governing-law limits. These sources perform different functions and should not be treated as equally legal or equally conclusive.

Second-order predictability is therefore conditional on information, legal accuracy, resources, bargaining power, and enforceability. Smaller firms may lack alternative capacity, specialist compliance teams, or leverage to negotiate tailored terms. Even a powerful firm cannot forecast a regulator's decision or ensure that a bank, supplier, or court will act as expected. Firm-level adaptation is legally significant because it converts unresolved public conditions into structured and reviewable decisions: permission remains least within private control, exposure changes are conditional on lawful capacity, and contractual consequences provide the greatest relative private control. Each stage remains bounded by mandatory law and third-party authority.

5. Integrated cross-cutting finding

A single question is used to compare them: What kind of predictability can be created by each actor within his/her authority or control? They are functionally differentiated and may overlap. Their importance is in delegating the information about how to regulate, the bargained accommodation, and the responses to transactions to those actors who can deal with those objects. Table 2 compares the two regulatory episodes and three firm-level settings, identifying the predictability each mechanism can produce, the conditions it requires, and its principal limits.

Table 2. Cross-case comparison of mechanisms, conditions, and limits

Setting or episode	Mechanism and predictability produced	Authority/control condition	Boundary or failure condition
<i>Section 301</i> episode	Notice, hearings, and exclusions improved first-order procedural information	Timely domestic procedure connected to an authority able to modify the measure	Retaliation and international legality remained unsettled

Table 2. Continued

Section 232 episode	Negotiated agreements produced first-order accommodation	Reciprocal political willingness, exchange of concessions, and monitoring	Accommodation remained country-specific and reversible
	Compliance supports		
Huawei FDPR / Bosch settlement	permission analysis; enforcement confirms the authorization boundary	Accurate facts, classification, screening, and current authorization	A private process cannot supply a license; the settlement is not judicial precedent
Apple operational setting	Existing capacity enabled a short-run exposure response	A lawful, scalable, and economically justified alternative	Evidence does not establish general or durable diversification effectiveness
MUR Shipping	Clear terms can structure contractual performance and remedies	Express drafting, enforceable rights, and sufficient bargaining power	Contract cannot bind regulators, banks, or overriding mandatory law

5.1. First-order and second-order predictability

First-order and second-order predictability concern different outputs. The *Section 301* procedure did have a positive impact on knowledge about an administrative procedure but did not have an impact on the prevention of retaliation. The *Section 232* arrangements did not lead to the creation of a general law, but to a modification in the attitude of the governments involved. A solid compliance procedure can help to make internal decision-making reproducible even though no change in the underlying export-control rule is necessary. So, procedure is helpful but not as extensive as substantive control. It does not change the constraint that gives rise to the uncertainty, but it does affect the actor in relation to this uncertainty.

The two types of predictability are somewhat independent. While a firm might be notified or given an accommodation, it may not be sure of the facts of the situation, inventory, payment, or contractual recourse. On the other hand, while the public rule is in limbo, a company could implement a robust holding or licensing enquiry, or an alternative-performance or termination regime. The Huawei example illustrates process at the permission boundary. The exposure information from Apple is limited. MUR Shipping directly creates a contract-law boundary for consequence allocation. Thus, private ordering adds value to public coordination but does not supplant public law.

Public regulatory uncertainty and the three categories of responses overlap but are not the same. Permission, exposure, and expected consequences can be influenced by regulatory uncertainty prior to a regulation's adoption. Firm processes cannot resolve the fact that a measure has an unresolved international-law status, which is a public constraint. Permission analysis is a logical process of converting public conditions into a determination of lawfulness at the transaction level. Exposure analysis is a test to determine if there is a lawful alternative that alters the firm's stance. What is left is allocated by consequence analysis. This crosswalk helps to clarify why the same "public" event can give rise to the creation of different "private" tasks and why a contract might be used to address consequences even when it cannot address the public-law controversy.

5.2. Authority and control as the ceiling of each mechanism

The limiting principle that is common to them is authority and control. An agency is needed to explain or modify the measure for domestic procedures. Negotiated accommodation must involve the capacity and the willingness to change behaviours. Firm adaptation needs a legal mandate, legal capacity, and binding contracts. That which is not under the control of the actor is not subject to reliable control by the mechanism. There is no means of preventing foreign retaliation through a national notice process. Third states are not bound by a bilateral deal; they can buy and sell independently. A public licence cannot be provided by a private contract.

Not all mechanisms are voluntary, and not every mechanism is equal. WTO commitments and country regulations have the force of law. The national law applies to domestic procedures. Participating governments' behavior is determined by negotiated arrangements. The primary purpose of contracts is that they are agreements only between the parties. Authority is the legal power or ability to do something. The ability to do it is control. Effectiveness requires both authority and control for implementation, operational alternatives, and enforcement.

This distinction is of evidentiary import. A completed administrative procedure does not indicate that retaliation was prevented, but only that information was processed. Participating governments did not establish any general legal rule but demonstrated changed behaviours through negotiated tariff removal. A corporate action does not necessarily reflect the response's legality, durability, or cost-effectiveness. The authors therefore try to evaluate each mechanism for what it is supposed to create and consider a statement about its more general impact to be a different statement that requires its own evidence.

5.3. Overlap, migration, and failure conditions

Uncertainty is often transformed or redistributed rather than eliminated. Coordination may turn surprise into a known but still contested measure. Negotiated accommodation may reduce immediate exposure without establishing a general rule. Firm governance may convert an open-ended commercial disruption into a specific allocation of delay, cost, or termination rights. An unresolved public-law question can thus persist while firms adapt, and firms may act before governments negotiate or litigate.

Each design has limits that are identified by counterexamples. Transparency, even if limited and provided via a notification process, could hasten targeted retaliation if it reveals timing and product coverage without consultation, confidentiality, or reciprocity. Bilateral accommodation can be country-specific and reversible. Smaller parties might not have the resources to diversify or negotiate specially tailored clauses.

The resulting architecture is functionally differentiated and overlapping. Regulatory coordination should be assessed by information and accommodation. Firm adaptation should be assessed by lawful and enforceable response capacity. Neither mechanism is a substitute for authority it does not possess, and no universal handoff requires every problem to pass through both.

6. Recommendation

6.1. Create an early notification and consultation protocol for major unilateral tariff measures

Actors and legal change: WTO members should adopt, through the General Council or existing WTO goods bodies, an opt-in notification and consultation protocol for major unilateral tariff measures. For purposes of the protocol, "major" measures would include tariffs that materially depart from existing tariff treatment or affect a significant volume of trade, with thresholds to be defined by participating members. A participating

member would disclose the domestic legal basis, product coverage, rate, implementation date, expected duration or review point, and available administrative procedures. Affected members would receive a defined consultation opportunity before implementation where urgency permits, with prompt post-adoption notice for emergencies. The protocol would add a procedural commitment without prejudging substantive GATT consistency.

Evidence and incentives: *Section 301* supplies workable notice, hearing, and exclusion elements. *Section 232* shows that information changes conduct only when linked to reciprocal bargaining and monitoring. Standard forms, fixed response periods, a standing consultation channel, and publication of compliance records would raise the reputational cost of non-cooperation. They cannot force accommodation where a member prefers escalation. The protocol's narrower purpose is to reduce surprise, create a usable record, and make exemptions, sequencing, suspension, or negotiated restraint available before retaliation becomes entrenched.

6.2. Institutionalize a permission–exposure–consequence protocol

Actors and governance change: Boards, general counsel and compliance functions, procurement and commercial teams, and contracting counterparties should institutionalize a documented permission–exposure–consequence protocol. The protocol changes internal decision-making and contractual terms. It does not amend international law, determine the legality of a public measure, or replace regulator guidance.

Permission: Identify applicable jurisdictions and legal nexuses; classify controlled products, software, and technology; and screen material parties, end use, destination, origin, sanctions, customs, and licensing requirements. Assign internal approval responsibility and record the supporting facts and rule version. Missing information or required authorization must trigger a documented hold or license inquiry, because no operational alternative or contractual warranty can make prohibited conduct lawful.

Exposure: Maintain pre-vetted alternatives and test their legal qualification, capacity, lead time, quality, cost, and reversibility. For goods, the record should support origin, classification, valuation, and applicable tariff treatment rather than assume that routing or shipment location changes origin. The Apple setting supports only the narrower proposition that pre-existing capacity may enable rapid adjustment; it does not establish that diversification is universally effective.

Consequence: Contracts should specify regulatory events, information and cooperation duties, responsibility for permissions, expressly permitted alternatives, evidence and notice standards, cost allocation, and sequenced rights of suspension, adjustment, renegotiation, and termination. Governing-law and forum or arbitration clauses should identify the rules and decision-maker for disputes over those rights. MUR Shipping supports the need for clear words where alternative performance is intended; the broader menu of currencies, banks, routes, and remedies remains a design recommendation rather than the Court's holding. All terms remain subject to mandatory law and public policy.

Disincentives and limits: Commercial pressure may encourage teams to bypass holds, while smaller firms may lack redundant capacity, specialist advice, or bargaining power. Dual approval for high-risk transactions, auditable escalation records, pre-agreed clause options, and model guidance from regulators or industry associations can reduce these barriers. They improve the consistency of the firm's response; they do not change the public rule, guarantee third-party cooperation, or make every negotiated allocation fair or enforceable.

6.3. Connect public coordination and firm-level response

Either answer may be given first; they are mutually reinforcing. If the notification is in time, it adds to the information of governments and firms. Consultation may be useful in facilitating exclusions, sequencing, or negotiated restraint. Clear procedures make for documented decisions regarding permission, exposure, and contractual implications. But co-ordination in the public sphere does not make transaction-specific legal analysis unnecessary, nor does private ordering make interstate co-ordination unnecessary.

7. Conclusion

There is no one trade certainty, but multiple mechanisms that govern it. There are three aspects that need to be addressed: regulatory uncertainty, international legality, and transactional commercial risk. Public coordination may lead to accommodation, and this may improve information. The uncertainty that still exists can be addressed in the companies' legal design. There may be interactions and interdependence between the two levels, but neither will replace the other, and not every measure will be relevant to only one transaction.

It differentiates between first- and second-order predictability and link it to authority and control. First-order predictability is related to the public legal conditions. Second-order predictability has to do with the reaction of the affected company. They are not completely autonomous and cannot give guarantees to each other. Within the legal field or the practical capacity of the actor using the mechanism, predictability can be achieved only in a certain way.

Several limitations of our findings highlight the need to replicate this study, as our sample was selected purposively and there is insufficient public information on internal company decisions, length of contracts, and durability of changes in operations. Further studies could potentially build the framework with additional regulatory episodes and firms, and explore tariff and other regulatory areas like digital trade or climate. The underlying principle is that predictability can also be offered in many different ways, but only within the boundaries of the power and authority of the different actors.

Author contribution

Peilin Chen, Lita Mo and Zongze Li contributed equally to this work and should be considered co-first authors.

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