

Responding to Global Trade Barriers in Turbulent Trade Environments: A Dynamic Framework for Firms Under Pressure

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Abstract

There is turbulence in the global trading environment due to many new trade restrictions enacted in the G20 nations from 2018-2024: over 14,000 new restrictions. In addition to more than 14,000 restrictions on trade being created in the G20 economies there are also many countries implementing restrictions on global merchandise trade. Dynamic response capability to respond to trade barriers is required because firms that depend on static compliance to respond to trade barriers are unable to provide the dynamic capability necessary to respond/respond quickly to changes in the global marketplace. The authors of this article will utilize analysis of WTO monitoring data, IMF trade analysis, and strategic theoretical analysis to provide some of the organizational capabilities, tools, and conditions required to build this type of dynamic response capability. A barrier response matrix and six archetypes of modern corporate responses are developed/illustrated to help with practical operational implementation of this dynamic response capability.

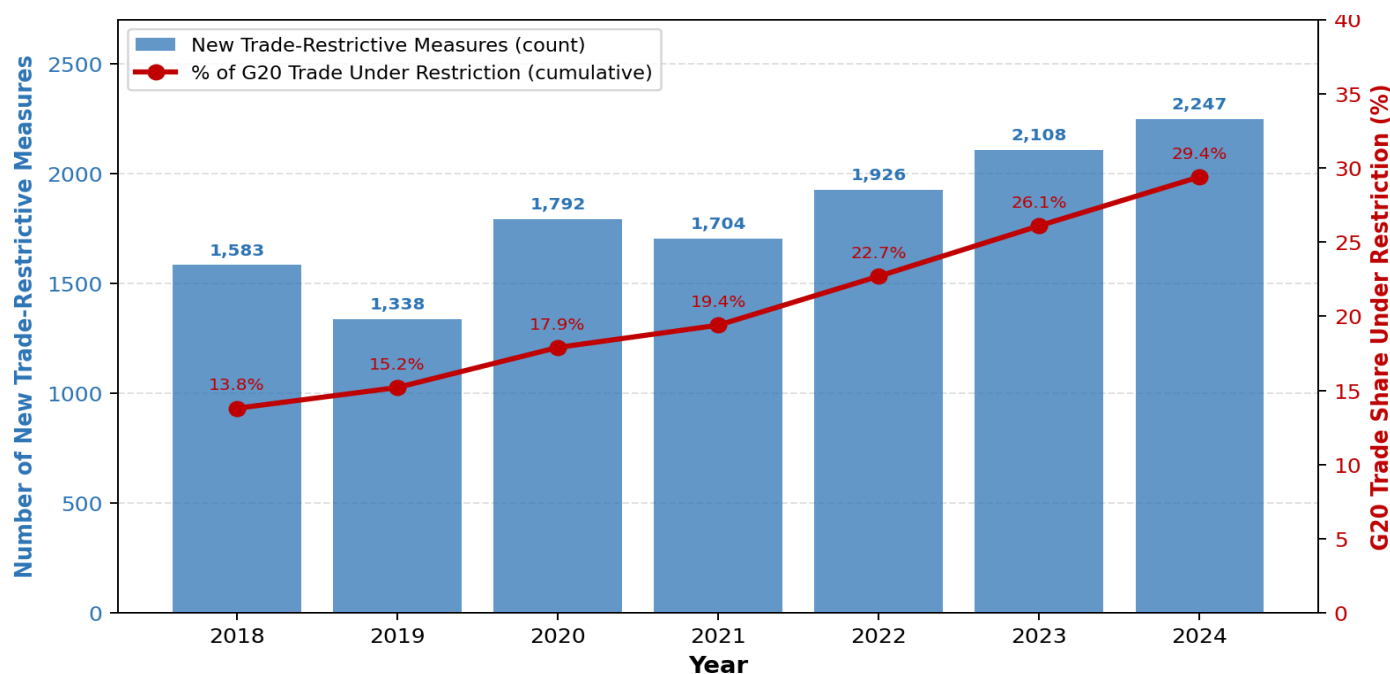
Introduction: When the Rules of Trade Keep Changing

The United States recently imposed sweeping tariffs (up to 25% on certain products) on imports from Canada, Mexico, and China (the largest coordinated tariff escalation since the Smoot-Hawley Act of 1930). As a result, firms were already scrambling to determine their changed landing costs, evaluate their sourcing configurations, and find new trade corridors to route their products through. The main issue for global businesses operating in 2021 and beyond is not whether barriers to trade will be put into place, but rather, how quickly businesses can respond once those barriers do exist. The increases in trade restrictions from the G20 member economies depicted in figure 1 show that trade-restrictive measures have been significantly compounding since 2018; the total number of newly established trade restrictions has risen from 1,583 in 2018 to 2,247 in 2024, a 42% increase. The impact of these trade restrictions is more serious than the increase in number, as seen in the WTO Trade Monitoring data; the total percentage of global merchandise

trade that is subject to trade restrictions has increased from 13.8% to 29.4% from 2018 to 2024. The days of free trade being the norm for commerce are over; the new normal is managed, weaponized, and fractured trade.

Current models of international strategy were created for global business activity in a more stable trade environment. The competitive advantage theory developed by Porter (1990), Dunning's eclectic paradigm of international production (1993), and traditional models of export management are all based on

the idea that there will be a relatively stable and predictable regulatory environment in a given country, and that the ability to optimize international operations is present. As the regulatory environment has changed rapidly and unpredictably since 2018, there has been a breakdown in strategies that focus on optimizing operations; firms have to have the ability to be dynamic in their strategy, to sense developing trade barriers, decipher their impact on the firm's international operations, and to respond with a sense of urgency and precision [2][3].



Sources: WTO Trade Monitoring Database (2024); IMF World Economic Outlook (2024); Global Trade Alert Annual Report (2024)

Figure 1: G20 new trade-restrictive measures (count, left axis) and share of G20 trade under active restriction (% , right axis), 2018–2024. sources: WTO trade monitoring database (2024); IMF world economic outlook (2024); global trade alert annual report (2024) [1][4]

The Velocity of Trade Disruption: What Has Changed

Today's companies have to deal with not only the volume but also the speed at which trade barriers are enacted and modified. Between 2018 and 2024, there were more than forty different changes made to tariffs between China and the United States — the changes involved over \$600 billion worth of two-way trade — and beginning in 2023 the European Union's Carbon Border Adjustment Mechanism (CBAM) imposed new compliance requirements on thousands of importers that could take months rather than years to implement. From now until 2024, the U.S. Entity List will add over 600 Chinese high-tech companies, resulting in an increase in supply chain re-engineering decisions for the semiconductor, telecom, and advanced manufacturing industries. Along with these changes to global trade, the system used to resolve trade disputes also has eroded over time, because the World Trade Organization (WTO) Appellate Body has not been functional since 2019. Therefore, bilateral trade disputes now lack an internationally recognized arbitration mechanism to enforce the relevant rules; the absence of an enforcement mechanism has led to the rapid unilateral introduction of restrictions by individual countries in violation of multilateral norms. Collectively, these developments have created a trading environment characterized by not only complexity but also structural turbulence, with an

extremely high rate of uncertainty and change, and very low levels of predictability.

Why Static Responses Fail

As a result of the turbulence and challenges that developed within global supply chains due to trade war escalation and COVID-19, many businesses are likely to take a reactive approach to compliance: by absorbing the cost of new barriers via margin compression; by applying for tariff exemptions one at a time; and, by waiting for trade war, tariff and, overall geopolitical conditions to stabilize before reforming and reconfiguring supply chain configurations. Teece, Pisano and Shuen's (1997) framework for dynamic capabilities offers an explanation as to why this will not work and why firms should be looking to take a proactive approach to compliance: (4) Firms that can sense, seize and, reconfigure their resource base more quickly than their competitors are the firms that will accrue sustainable competitive [5]. Reactive approaches to compliance fail across each of these dimensions: (i) detect barriers late; (ii) seize few opportunities from disruptions; and, (iii) reconfigure slowly. The material nature of delayed action is evidenced by Bown's (2021) evaluation of US - China tariff escalation. The analysis of the US - China tariff war shows that companies that waited for the tariffs to be fully enacted before taking the initiative to reconfigure their supply chains, paid on average 2.3 times the adjustment costs of those who acted on early warning

signals for anticipatory action (5). With tariff escalation cycles now occurring with weeks rather than years between them, the ability for an organization to respond quickly has become a true source of competitive advantage.

The Sense–Interpret–Respond Framework

The SIR framework (Sense-Interpret-Respond) provides an operationally actionable structure for managing trade barrier turbulence and is demonstrated in the diagram below (Figure 2).

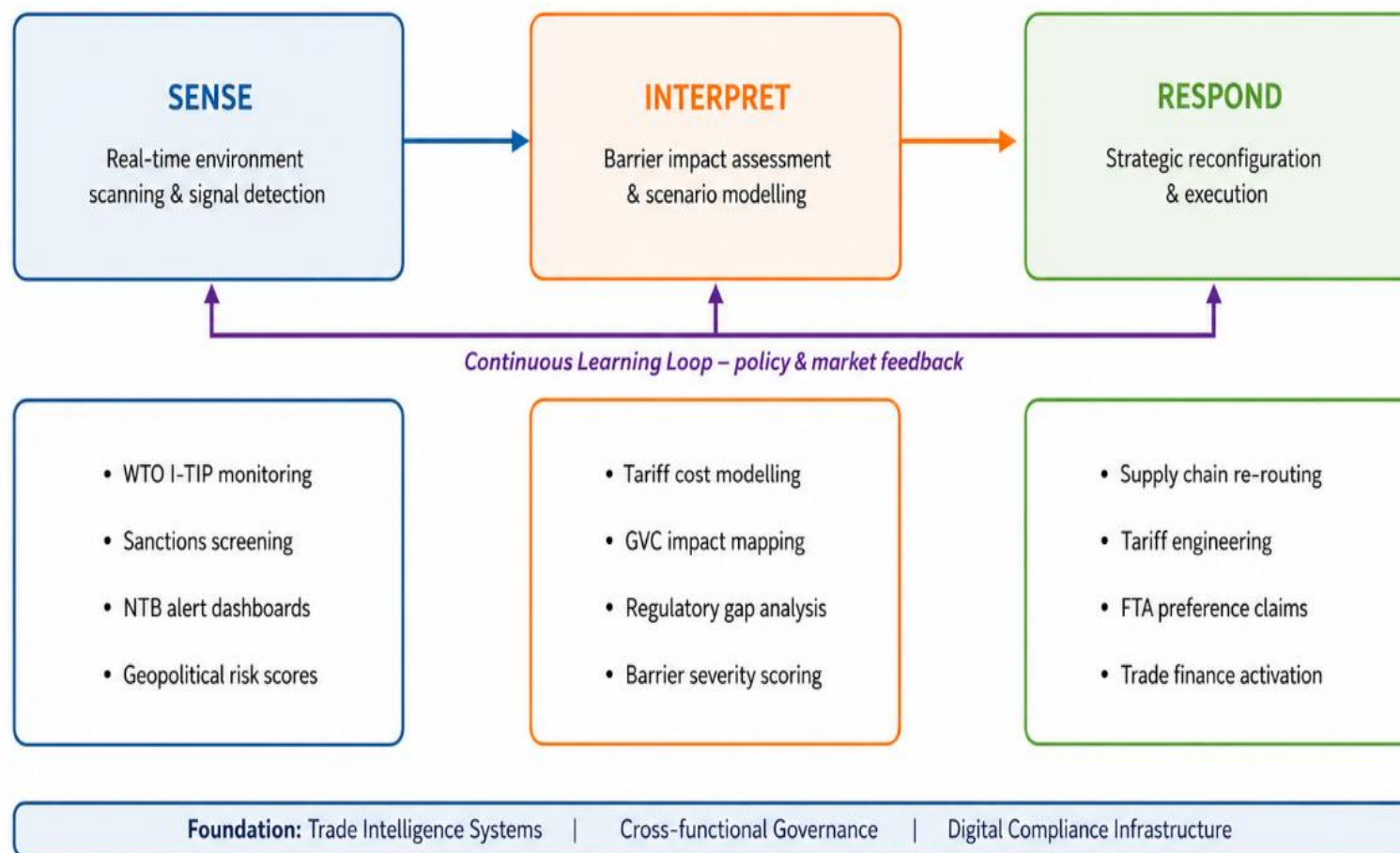


Figure 2: The sense–interpret–respond dynamic framework for trade barrier response, with supporting tools and a continuous learning loop. source: authors

Each of the SIR phases has appropriate tools, processes, and organizational roles; the phases of the framework are integrated through a continuous learning loop feeding into the sensing function.

Phase 1: Sense — Detecting Barriers Before They Strike

The sensing phase includes the systematic collection of data regarding the trade policy environment to identify signals of potential new trade barriers. It is important to note that identifying potential barriers is not the same as tracking existing trade barriers; barriers that are in place would not be classified as new or emerging barriers. Effective sensing will include monitoring legislative pipelines, deliberations in Parliament, documents related to trade negotiations, think tank reports, and other geopolitical intelligence that is available prior to formal announcement of a policy change (e.g. weeks and months). The tools available for the effective execution of the sensing function have vastly improved in recent years. The WTO Integrated Trade Intelligence Portal (I-TIP), The Centre for Economic Policy Research Global Trade Alert database, and various commercial platforms (e.g. Descartes Datamyne) are now providing near real-time notifications of newly imposed non-tariff barriers, tariff schedule amendments, and sanctions imposed by countries. When combined with Artificial Intelligence driven geopolitical monitoring tools – which scan release of diplomatic communications, regulatory gazettes, and

legislative calendars among targeted trading partners – international firms are now able to extend the effective time horizon associated with the Sensing Function of the SIR Framework.

Phase 2: Interpret — From Signal to Strategic Implication

The value of the raw signals that indicate potential trade barriers does not become strategically relevant until there is an interpretation of the information derived from them in order to quantify their cost impact and articulate which product lines will be affected along with the nodes in the supply chain that will be affected by those barriers. The interpretation phase allows for the transformation of trade intelligence into analysis that is ready for decision making purposes. There are three primary analytical tools demonstrated to be effective at analysing the impact of trade barriers: first, landed cost modelling, which allows a business to identify the full cost of importing or exporting specific products based upon projected barrier scenarios (including tariff rates, compliance costs, costs related to re-routing logistics and costs related to carrying inventory). Second, GVC impact mapping enables a firm to trace the implications of a barrier to the upstream and downstream value chain in order to determine potential tier-2 and tier-3 supplier vulnerabilities. Third, regulatory gap analysis involves comparing a firm's current compliance posture to the requirements for a new regulatory change in order to quantify

the difference between the two and estimate the costs and time required to remediate the difference. Research by Baldwin and Lopez-Gonzalez (2015) demonstrates that firms engaged in GVC analysis who systematically model the effects of trade barriers throughout their respective supply chains respond to trade disruptions in a time frame that is 40% faster than firms that only consider the impact of barriers within their own boundaries [7].

Phase 3: Respond — Strategic Reconfiguration Under Pressure

Implementation of the strategic response involves executing the actions determined by the firm in its strategic response to the trade barrier, after conducting an evaluation of the impact of the trade barrier. Response strategies range from three levels of ambition. Tactical responses such as tariff engineering, bonded warehousing, and pre-shipment speeding may be accomplished in days to weeks and are suitable for temporary barriers or uncertain barriers. Operational responses such as supply chain route restructuring, FTA preference exploitation, and alternate sourcing activation take weeks to months and are meant for medium-term barriers. Strategic responses such as market portfolio restructuring, manufacturing footprint adjustment, and joint ventures take years of investment and are recommended for barriers that are structurally durable.

Matching the response ambition level to the durability of the trade barrier is one of the distinguishing factors of mature trade response firms. Overinvestment in strategic reconfiguration due to temporary trade disputes results in wasted capital resources. Underinvestment due to structural policy changes will create a permanent competitive disadvantage. The continuous learning process of the SIR model, which involves incorporating the outcomes of the actual barrier into the sensing and interpretation processes, allows gradual improvement of this skill over time.

Barrier-Response Matrix: Aligning Actions to Barrier Types

Efficient use of the SIR framework needs to have a clear plan that describes how to apply response priorities to different types of barriers. Table 1 provides guidance for decision making with six types of barriers; the time frame and urgency of each barrier can help the organization allocate resources appropriately in the context of rapid developments in public policy.

Table 1. Barrier-Response Matrix: Barrier Types, Time Horizons, Primary Response Actions, and Urgency. Source: Authors, drawing on WTO (2024), Bown (2021), and Global Trade Alert (2024) [4][6].

Table 1: Aligning actions to barrier types

Tariff Escalation	Immediate	Tariff engineering; FTA preference audit; bonded warehousing	High
Export Controls/Sanctions	Immediate	Entity screening; dual-use compliance review; supply re-routing	Critical
Non-Tariff Barriers	Short-term	Regulatory mapping; conformity investment; local partner certification	High
Standards Divergence	Medium-term	Design-for-compliance; third-party testing; standards co-development	Medium
Currency & FX Controls	Medium-term	Natural hedging; ECA invoice financing; strong-currency billing	Medium
Investment Screening	Long-term	Entity structure review; local ownership arrangements; policy dialogue	High

Organizational Enablers: Building the Dynamic Response Capability

The SIR framework identifies what steps firms need take to respond to trade barriers. Just as important is the question of how firms can build the organizational systems needed to create those responses quickly. There are five critical enabling organizational systems.

Dedicated Trade Intelligence Function

The SIR framework's sensing phase requires an ongoing, dedicated capability rather than an ad hoc task force that assembles when a crisis occurs. This function is made up of individuals with trade policy analysis skills, customs expertise, and geopolitical risk knowledge; it serves as the early warning system for companies in the form of ensuring that any signals of barriers reach appropriate decision makers with ample time to allow for strategic options to remain available as a result of timely notification.

Cross-Functional War Room Protocol

Speed of interpretation and response time is essential once a material trade barrier has been identified. Leading companies retain pre-formed cross-functional teams — in trade compliance, supply chain, law, finance, and commercial strategy — that have previously agreed to their authorities and escalation protocols. This reduces the amount of time associated with the challenges associated with the coordination delays related to reactive response, when weeks can be spent determining who is responsible for what roles and aligning stakeholders.

Scenario-Based Supply Chain Design

The response stage of the SIR framework assumes that strategic options for response—such as alternative sourcing methods, routing methods, bonded warehousing capacity—are prequalified rather than created during times of crisis. Supply chains that were created with intentional barrier scenarios included in their design (such as dual-sourcing agreements, near

shore production possibilities, flexible logistics contracts) can initiate responses within days instead of months.

Trade Finance Pre-Qualification

A significant barrier to the speed of response is the pressure on cash flow in the reconfiguration of the supply chain. Companies that have prequalified export credit agency capacities, lines of trade credit insurance, and platforms for financial supply chain before they are needed, will quickly gain access to liquidity. Companies that begin to qualify during a trade crisis must wait for approvals that can take 60-120 days, making them vulnerable to losing their position in the marketplace.

Board-Level Trade Risk Governance

Companies must manage trade risk in an equally serious manner as they manage the risks associated with financial, cyber, and reputational issues in a rapidly changing trade environment. This includes quarterly board reviews of trade exposure metrics, a clear trade risk appetite, and KPIs that enable firms to sense (detect barrier before), interpret (determine impact), and respond (execute reconfiguration) based on the SIR framework.

Conclusion and Executive Recommendations

The primary conclusion from this article demonstrates that there is no room for strategic ambiguity with respect to the

global trade environment; it is far more volatile, far more uncertain and far more restricted than ever before since the post-war multilateral trading system was established. Firms that view the turbulence of the current environment as a temporary occurrence (i.e., that they can endure the effects of margin compression until the trade environment returns to normal) will likely be disappointed in their assumptions that the trade environment will return to normal. The more significant finding from the findings of the WTO (2024) and Bown's (2021) longitudinal studies is that trade restrictions are more likely to induce future trade restrictions: the cycle of escalating trade restrictions creates conditions that make it increasingly difficult to achieve liberalization through the creation of new political constituencies for protectionism. The practical implications of this finding are clear: having a capacity to respond dynamically to trade is no longer optional for firms with high international trade exposure. The SIR framework provides the operational infrastructure, and the barrier-response matrix provides the tactical playbook. The organizational enablers highlighted in Section 5 of the article provide the institutional foundation. All four parts create the context in which companies are truly prepared for this changing trade environment. Four recommendations are made for executive leaders. First, conduct a thorough, honest audit of your company's current trade response capability against each of the SIR framework phases; many leaders will find that their companies have considerable

gaps with their sensing and interpretation capabilities. Second, make an investment now in the infrastructure for trade intelligence; it is far less costly to create proactive capabilities than it is to respond reactively to a crisis. Third, redesign your supply chains to have barrier-scenario-optionality as part of the design rather than just as an afterthought; it is always easier to implement optionality as a part of the design than it is to purchase optionality when the pressure is on. Finally, develop a trade barrier risk agenda at the board level and treat it as seriously as cyber, climate, and financial risks; the magnitude of the exposure warrants this.

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