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Emergent Digital Fragmentation

The Perils of Unilateralism

A Joint Report of the Digital Policy Alert and Global Trade Alert

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Emergent Digital Fragmentation: The Perils of Unilateralism

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FOREWORD BY THE HINRICH FOUNDATION

The digital economy is inescapable. Global e-commerce revenue is increasing, by some 25 percent from 2019 to 2020 and by 17 percent from 2020 to 2021. Digital platforms continue to expand. Many of us live a large part of our lives online.

As can be the case when governments face increasing complexity, policymakers are turning to regulation. In a world of uncertainty, what can be certain is one's action and response to the uncertainty. Perhaps this attempt to wield control partly explains the mounting barriers erected by governments around the world. Increasingly, participation in the digital economy requires overcoming dense and ever higher regulatory walls. Tech giants can rustle up the resources to scale the walls. Small businesses cannot.

But we are rallying against increasing regulation in the digital domain not only to safeguard the opportunities for small businesses, who are critical to the fostering of innovation and inclusive growth, but also to minimize other risks. This important new report by Global Trade Alert – their 29th so far, and the first from new venture Digital Policy Alert – lays out in meticulous detail other negative consequences of regulatory intervention. It is discouraging enough that more unilateral state action leads to more policy fragmentation and more barriers to trade and investment, to the detriment of economic growth. Add to the mix heightened geopolitical tensions fuelled by more subsidies and other interventions.

In the worst-case scenario, the world of tomorrow may be defined not merely by technological advances but by its division into trade blocs demarcated by diverging policies.

We are confident that such a scenario is not inevitable. Indeed, in their unmistakable pragmatic way, authors Simon Evenett and Johannes Fritz chart in this report the extent of regulatory interventions as well as the possibilities to avert policy fragmentation. In their view – and ours – international cooperation can still be forged, especially with the participation of seasoned negotiators in the trade policy community.

Regional trade agreements and digital economy agreements also offer hope. Despite increasing regulation at the national level, the authors noted, in these agreements governments are choosing less policy fragmentation for the digital domain, even in the contentious area of data governance. Indeed, at the national level, debate continues amongst policymakers regarding the best path forward for the digital economy. If impatient calls to regulate emerge as the loudest, it does not mean that other voices are not urging for more restraint. In time, more measured voices may gain more influence.

At the Hinrich Foundation, we advocate for policymaking that supports sustainable and mutually beneficial global trade. We support trade-related regulatory frameworks that promote coherence, transparency, a level playing field, and long-term sustainability – for the economy, the environment, and social stability. We thank and congratulate Global Trade Alert and their path-charting work for promoting these same goals. The digital future remains rife with uncertainties, but sharp policy analysis can help usher in more clarity.

EXECUTIVE SUMMARY

Policymakers are flying blind as they shape and nurture the digital domain. The last inventory of government intervention affecting this critical vehicle for opportunity and growth was published four years ago. Much has happened since. No official institution has a global mandate to track policy intervention in the digital domain.

Nothing good comes of this evidence gap. Officials learn less from the prior choices of peers. Patchy information reinforces the tendency of officials to retreat into silos, resulting in state initiatives that don't take into account the complexities of an evolving, multi-faceted digital domain which exists in a world with extensive cross-border ties. Accountability is diminished too.

This is a recipe for poor public decision-making. Policy incoherence at home coexists with international regulatory divergence. Mistakes matter in the digital domain. Heavy handed regulations stifle commercial initiative, hamper deployment of digital technologies, and limit the contributions to national employment and economic growth. A fragmented internet and global digital economy denies users choice, diminishes the incentives for innovation, exacerbates trade tensions between governments, and increases the risk of numerous crises.

This report fills the evidence gap. It adopts a comprehensive view of the policies affecting the digital domain and their cross-border repercussions. A whole-of-supply-chain approach is taken, drawing in policy decisions affecting upstream activities that support the digital economy (e.g. the mining of Rare Earths), midstream activities (e.g. developments in the critical semiconductor sector and in hardware and software), and downstream activities (e.g. platform businesses and digital delivery to customers).

Drawing upon two extensive inventories of public policy intervention, the Digital Policy Alert and the Global Trade Alert, this report delineates the global policy landscape towards the digital domain. Evidence on legal and regulatory developments—such as those relating to the governance of data, content moderation, and taxation—is presented along with information on resort to trade and investment policy changes and subsidy policies so as to provide a comprehensive perspective. Information on over 15,000 policy and regulatory developments were used in compiling this report. The principal findings are:

1 Governments have gone into regulatory overdrive in digital sectors since the start of 2020.
   - Together, European and G20 governments took 1,731 legal and regulatory steps. Fifty-five percent of those steps have already translated into state action—41% are in the pipeline.
   - The three most active areas of state intervention are data governance, online content moderation, and competition law enforcement.
   - Resort to state intervention is accelerating. The first quarter of 2020 saw 71 regulatory developments; the first quarter of 2022 saw 217.

2 Regulatory heterogeneity is growing, posing an ever-greater risk of digital fragmentation.
   - Particular concerns arise concerning rules on the storage, use, and transfer of data, with China, the European Union, India, Russia, and the United States going off in different directions.
   - Divergent regulatory approaches to online content moderation—including demands to takedown material posted on the internet—are emerging.

3 Commercial policy developments over the past decade have erected more and more barriers between national digital sectors.
   - A third of global trade in digital economy goods currently faces market access barriers.
   - Digital economy sectors saw twice as much discrimination against foreign firms than world goods trade overall, as measured by the ratio of discriminatory to reform measures implemented.

4 Subsidy races are breaking out in the digital economy, most notably in the semiconductor sector.
   - Looking across sectors, states tend to substitute digital trade barriers for subsidies. Consolidation of public finances after COVID-19 is likely to result in further digital fragmentation as governments resort more to trade and investment barriers.

5 With no global playbook to guide policymakers and regulators, burgeoning unilateral state action in the digital domain remains uncoordinated, stokes trade tensions on topics from corporate taxation through to competition law enforcement, and chills cross-border corporate deployment of digital technologies.

The perils of unilateral governance action are becoming clearer. Officials around the globe must intensify efforts to develop shared understandings on sound principles to regulate and nurture their economies' digital sectors. Worthwhile efforts to negotiate a plurilateral accord on e-commerce need to be wrapped up and a more ambitious work programme launched at the WTO. Bilateral and regional initiatives to align policy and regulation (such as the Indo-Pacific Economic Framework), as well as the negotiation of more digital trade chapters in regional trade agreements, are useful stepping stones to counter emergent digital fragmentation.

CHAPTER 1
THE VISIBLE HAND AND THE DIGITAL DOMAIN: THE EVIDENCE GAP

Cross-border repercussions from burgeoning state action

Year after year, compelling examples demonstrate how digital technologies are redrawing the boundaries of social, political, and commercial life, inducing innovation in numerous activities and geographies, lifting standards of living at home and abroad, and transforming the ends and means of intensifying rivalry between states. No wonder that policymakers seek simultaneously to shape and to nurture the so-called digital economy. The upshot—in recent years the Visible Hand has grappled purposefully on the digital tiller.

However, there is no accepted playbook for the Visible Hand to follow, even though some discern emergent approaches to regulating the digital economy (UNCTAD 2021).[1] This is not only a recipe for policy falling short and political backlash. But also for growing tensions between states as the steps taken by one government—inadvertently or otherwise—harm the social and commercial interests of other countries. Worse, some well-intentioned national regulatory measures have been implemented in silos that appear to have been devised with little or no appreciation of the strength of cross-border ties between societies.

In addition, there is a paucity of reliable and comparable information on what steps governments and regulators have taken to regulate the digital economy. The international sharing and adoption of legal and regulatory better practices is thereby hampered. This is particularly ironic as one promise of the spread of the internet was that it would make state intervention more transparent and governments more accountable. Quis custodiet ipsos custodes?

In sum, despite living in an era where information gathering and sharing has never been easier, governments around the world are embarked upon regulating the critical digital domain in a manner that, unless corrected, is almost certain to result in suboptimal outcomes at home and frictions abroad.

Useful precedents exist[2] that point to a more constructive and effective way forward.[3] Those precedents have been developed when regulators and policymakers reconciled the imperatives of domestic regulation with longstanding principles that have both limited tensions between national governments and encouraged predictable, transparent, and non-discriminatory policy that facilitates cross-border commercial ties. In turn, those ties allow domestic customers to benefit from technological innovation, productivity improvements, and new products and services created abroad. That—for good or ill—the world is highly interconnected should be a central feature of national initiatives to shape and nurture the digital domain. Cross-border ties are a feature, not a bug.

The evidence gap on policy and regulation affecting the digital domain

Developing understandings between states concerning the regulation of the digital economy and the terms upon

1 See also O'Hara and Hall (2018), who provide an account of the "four internets".

2 Notably, the multilateral trade rules associated with technical standards and with health standards. Central to those rules is the imperative of reconciling the legitimate right of governments to regulate with measures to safeguard the benefits of cross-border commerce. By adopting these rules, signatories recognise that national regulators cannot live in hermetically-sealed silos and refuse to engage with foreign counterparts.

3 Some progress has been made in fostering international standards and rules as they relate to the digital economy in chapters of certain regional trade agreements (for example, chapter 14 of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership). The European Union has adopted certain regional rules pertaining to the digital economy and is planning to introduce more. Those rules implicate 27 national economies and can have extra-territorial reach (as is the case in its General Data Protection Regulation). It is too early to assess whether the recently created European Union and United States Trade and Technology Council has achieved meaningful progress towards its numerous digital-related priorities.

which foreign firms can access domestic markets will be facilitated by accurate, up-to-date, easily accessible as well as impartially collected and classified information on the legal and regulatory developments undertaken by governments. To date, however, no multilateral organisation has been tasked with collecting and sharing such information.

The last inventory of the numerous policies deployed by governments to influence digital economies and trade was published over four years ago (ECIPE 2018).[4] For sure, since then very useful tallies of information on specific forms of pertinent public policy intervention have been published (see, for example, Cory and Dascoli 2021 and Ferracane and van der Marel 2021), as have invaluable indices of aggregate policy stance towards sectors heavily reliant on digital technologies, notably the OECD's Digital Services Trade Restrictiveness Index (see Ferencz 2019 and Nemeto and López González 2021).

Drawing upon the Digital Policy Alert and the Global Trade Alert, two extensive independently collected tallies of pertinent public policy intervention that are based almost entirely on official records, the purpose of this report is to fill in this evidence gap. In so doing, the intensification in recent years of legal and regulatory initiatives by governments of the world's largest economies that target various aspects of the digital domain will be laid bare. The Visible Hand has been busy since ECIPE's pathbreaking report was published in 2018—yet recent developments should be seen in the light of policy initiatives undertaken since the Global Financial Crisis.

Of particular interest here is whether public policy intervention to shape and nurture the digital economy *favours* certain (typically national) firms or threatens to *fragment* the digital commerce, terms which are outlined in greater detail in the next chapter. For the purposes of this report, the digital economy is broadly conceived to include every step in the supply chain from the extraction and sale of critical minerals needed to produce information technology hardware to the machinery necessary to produce that hardware, software development and sales, and the downstream industries that deploy digital technologies to meet their customers' needs. In short, digital technologies should be viewed as general-purpose technologies that have pervasive economic, political, and social effects at home and abroad.

A distinctive feature of the approach taken in this report is to document, classify, and assess policy intervention from the "bottom up". While high-level strategy statements by governments concerning various digital matters (such as Artificial Intelligence) are potentially significant, the focus here is on tangible policy steps that have been implemented or that are expected to be implemented in the future.

In the approach taken in this report, the translation of official intent into state action is what counts. Consequently, this assessment is based on what governments do, not what they say they will do nor what they claim other governments are doing. Previous reports of the Global Trade Alert have shown that the facts relating to government intervention are often at odds with official narratives, frequently to the detriment finding collaborative solutions to apparently problematic policies that are said to create cross-border spillovers.[5] Given the centrality of the digital domain to contemporary life around the world, policymakers should not be waylaid by one-sided, incomplete, and incorrect assessments of domestic and foreign state intervention.

The uneven deployment of digital technologies

An important factor influencing the design of policy and regulatory initiatives towards the digital domain is the degree of deployment of associated technologies in the first place and their use. To this day these vary markedly across nations as the maps in Figures 1 and 2 show. With respect to individual use of the internet, there are 34 nations where more than 90% of the population make use of the internet. Figure 1 shows that those nations are concentrated in North America, Western Europe and certain parts of the Middle East.[6] In contrast, there are 70 nations where only a minority of the population uses the internet. It should come as no surprise, then, that concerns about the "digital divide" and how the address it are raised in national and international fora.

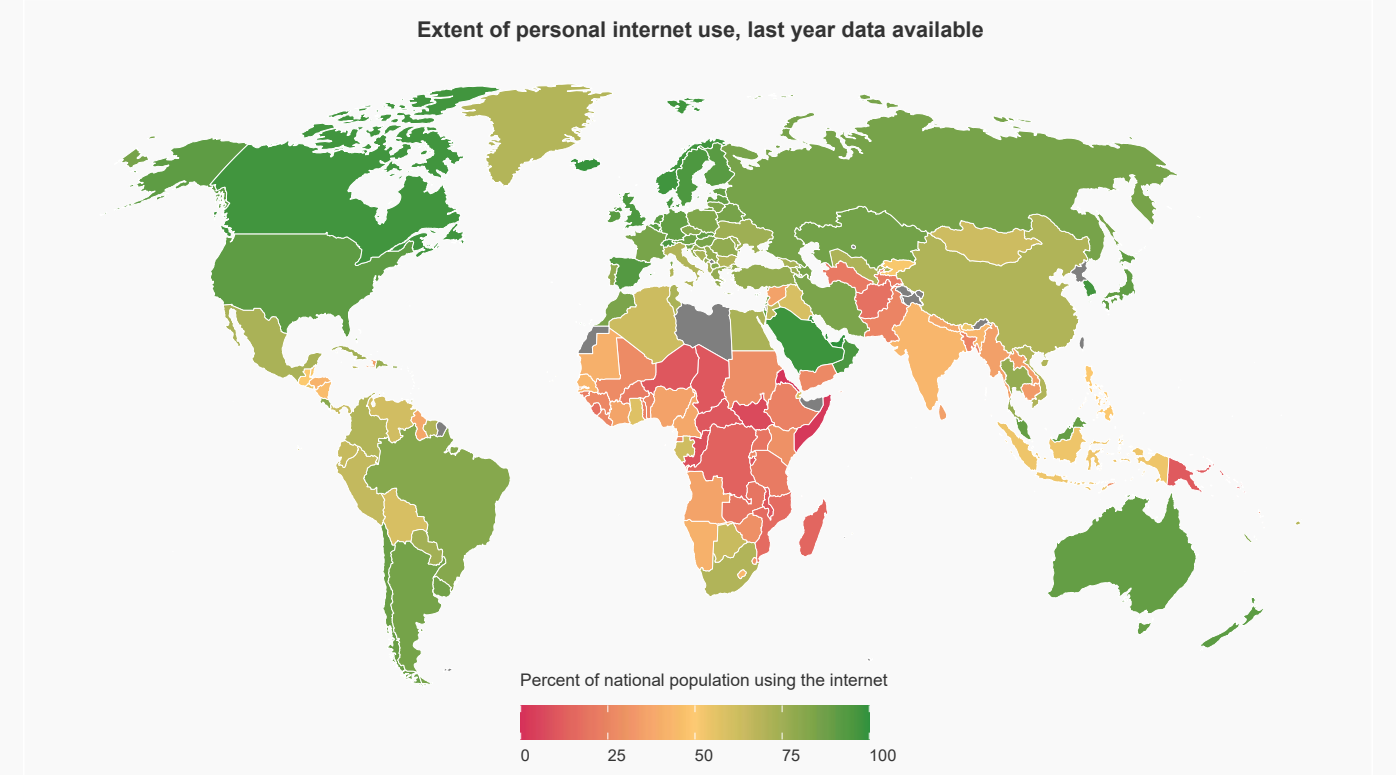
4 The United States Trade Representative (USTR) includes policy interventions by foreign governments affecting the digital domain in its annual tally of commercial policies thought to harm American commercial interests (the latest being USTR 2022). Evenett and Fritz (2021a) compare the annual tallies of relevant public policy intervention in ECIPE (2018) and in the various annual USTR National Trade Estimates reports. Fritz (2022) compares the entries in USTR (2022) with those found in the Digital Policy Alert.

5 The 22nd and 28th Global Trade Alert reports assessed whether various frequently trumpeted claims made about excess capacity in certain sectors and corporate subsidies, respectively, held up to scrutiny when confronted with evidence based on extensive data collection efforts. The conclusions drawn from such detailed evidence collection called for a more balanced assessment of policy dynamics in major trading economies.

6 Australia just falls below the 90% threshold.

FIGURE 1

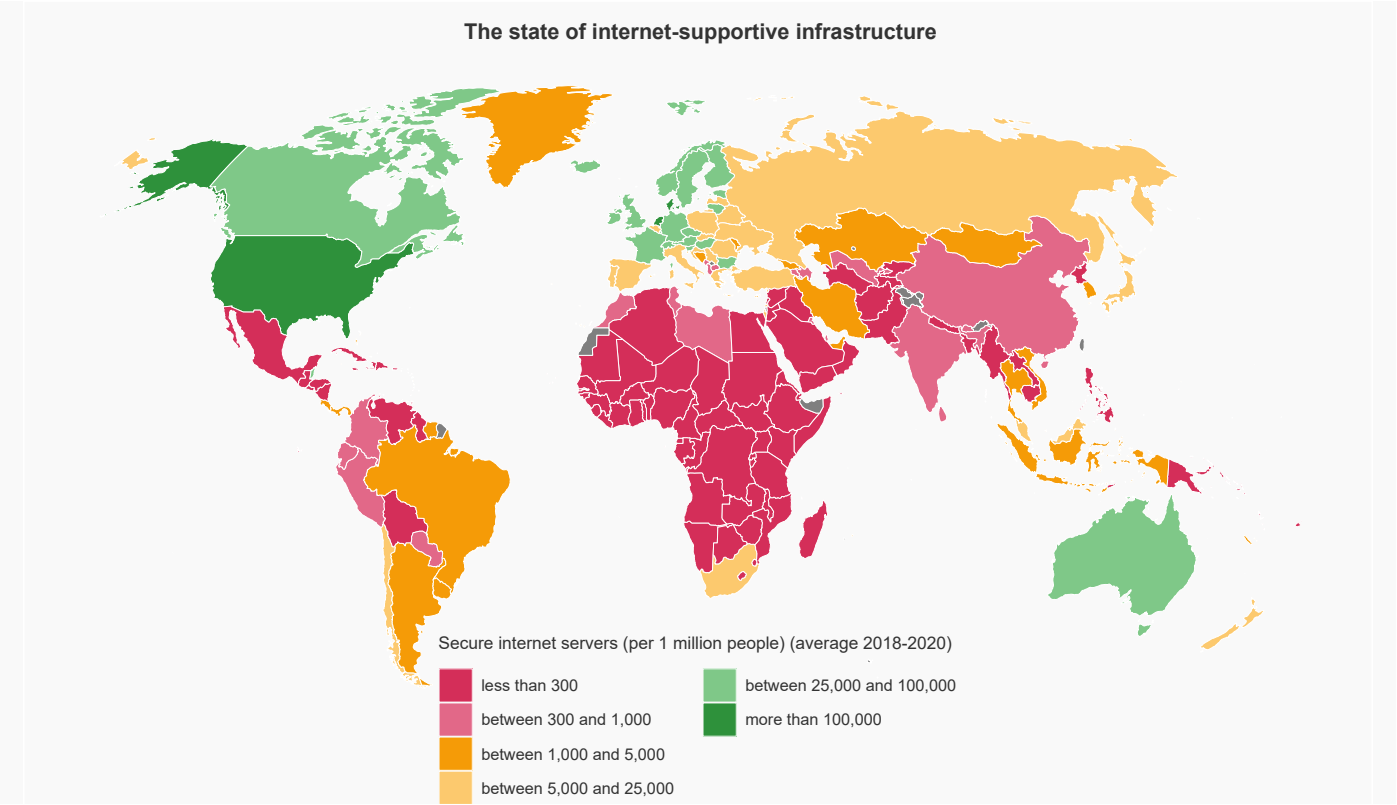
Legitimate concerns about a “Digital Divide” remain



Source: World Development Indicators.

FIGURE 2

Significant disparities exist in internet-supportive infrastructure



Source: World Development Indicators.

If anything, cross-country differences in the infrastructure needed to support digital technologies, electronic transmissions, and electronic commerce are starker, as shown in the map in Figure 2. That map reveals the number of secure internet servers per million people in each jurisdiction during the years 2018-2020[7], which is one indicator of the state of digital infrastructure. A total of 86 jurisdictions have less than 300 secure servers per million persons. In contrast, the United States has over 110,000 secure servers per million of its population. Denmark, the Netherlands, the Seychelles, and Singapore have an even higher ratio than the United States. To the extent that governments rely on the private sector to invest in the infrastructure to support digital technologies then the incentives created by public policy matter.

Given the focus in this report on the cross-border as well as the national consequences of public policy towards the digital domain, indictors of the private sector's willingness to deploy digital technologies abroad are of interest. Alas, no such comprehensive database of corporate deployment exists. However, the Japan External Trade Organization (JETRO) conducts regular surveys of Japanese firms with operations abroad from which insights can be gleaned.[8] Fortunately, the same questions are often asked of Japanese firms operating in different regions of the world economy.

As the first numerical column of Table 1 makes clear, most of the survey respondents come from Japanese firms operating in Asia. However, a lot of survey responses relating to commercial operations in Europe and North America are available. Interestingly, it is not the case that Japanese firms deploy digital technologies more often in higher per-capita income countries and regions. Africa and Oceania are the only regions where more than half of Japanese firms already use digital technologies. Perhaps surprisingly, 28.6% of the survey respondents with operations in Asia said they had no intention of using digital technologies, higher than any other region.

Digging further, Table 1 reveals that a majority of Japanese firms operating in East Africa, Southern Africa, the Philippines, Singapore, Central and Eastern Europe, Canada, Australia and New Zealand already deploy digital technologies in those markets. Only 35.4% of Japanese firms operating in Western Europe currently deploy digital technologies, a level well below that found in North America. Furthermore, Japanese executives report high levels of uncertainty about the use of digital technology in Western Europe (see the last column of Table 1). The latter findings beg the question of whether Japanese firms have delayed the deployment of digital technologies in Western Europe because of the far-reaching regulatory initiatives affecting the digital economy proposed and enacted by the European Union. What is clear looking across Table 1 is that Japanese firms have a choice as to whether to deploy digital technologies and evidently they have differentiated between national and regional circumstances.

Table 2 reveals differences in the willingness of Japanese firms to deploy key digital technologies across regions of the world economy. Cloud, e-commerce, and digital marketing technologies are deployed most often. Robots and technologies associated with the Internet of Things are deployed by over 20% of respondents in Asia, Oceania, and North America—and considerably less often in Europe. E-commerce tools are deployed much less often by Japanese firms operating in Europe as compared to the other three regions mentioned in Table 2. More generally, when comparing the entries in the "Europe" column in Table 2 with the columns for other regions and nations, the adoption of digital technologies by Japanese firms in Europe is lower. Deployment by Japanese firms abroad of technology associated with virtual reality, augmented reality, fintech, and blockchain is in its infancy, begging the question of what factors, if any, are holding back deployment.

Public policy could be one such factor. JETRO is rather artful in the questions it puts to the executives of Japanese multinational firms about the digital policies of foreign governments. Rather than asking respondents to identify problematic policy, JETRO asks them to comment on certain "policy items companies are interested [in] with respect to use of digital technologies" in Europe and North America. The results are summarised in Table 3.

Only two types of digital policy were identified by more than 20% of respondents: one relating to "sensitive information" and another to the "cross-border transfer of sensitive information." If the respondents from Japanese companies had privacy regulation in mind, then maybe it is not surprising that five percentage points more respondents thought this was relevant in Europe than in North America. With respect to cross-border transfers of data, the percentage of Japanese respondents indicating this was a factor in Europe is slightly larger than in the United States but less than in Canada.

7 A three year timeframe was taken so that no one year's data skews the findings.

8 The survey results can be downloaded from this URL: https://www.jetro.go.jp/en/reports/survey.html

TABLE 1

Deployment of digital technologies by Japanese firms is highest in Africa and Oceania

Use of digital technology by Japanese firms in their overseas commercial operations					
Region/Sub-Region/Country	Number of survey respondents	Survey answer (Percent responding)			
		Already using it	Plan to use it in the future	No plan to use it	Not sure at this time
Africa	254	52.4	20.1	8.3	19.3
North Africa	56	46.4	21.4	8.9	23.2
East Africa	59	52.5	48.6	6.8	22.0
West Africa	52	40.4	36.5	9.6	13.5
Southern Africa	87	63.2	10.3	8.0	18.4
Asia	4279	40.6	22.2	28.6	8.6
ASEAN	2584	40.3	22.3	8.8	28.6
Philippines	85	52.9	21.2	4.7	21.2
Singapore	463	53.4	20.5	5.4	20.7
Northeast Asia	1313	39.9	22.1	11.0	27.0
China, Hong Kong, Macau and Taiwan	1213	39.2	22.2	11.3	27.2
South Korea	100	48.0	21.0	7.0	24.0
Southwest Asia	382	44.5	22.0	8.4	25.1
India	273	43.6	22.3	8.4	25.6
Europe	858	37.4	22.4	7.3	32.9
Western Europe	757	35.3	22.7	7.8	34.2
Central and Eastern Europe	101	53.5	19.8	4.0	22.8
Russia	84	39.3	22.6	8.3	29.8
Latin America	486	36.8	24.9	8.8	29.4
Argentina	39	43.6	25.6	10.3	20.5
Brasil	110	48.2	21.8	7.3	22.7
Chile	40	32.5	30.0	10.0	27.5
Colombia	20	45.0	30.0	10.0	15.0
Mexico	244	30.3	24.2	9.8	35.7
Peru	33	39.4	30.3	3.0	27.3
Middle East	226	48.2	20.4	4.9	26.5
North America	964	48.1	19.2	6.4	26.2
Canada	125	52.0	20.8	5.6	21.6
USA	839	47.6	19.0	6.6	26.9
Oceania	188	58.0	14.4	4.8	22.9
Australia	142	57.8	15.5	5.6	21.1
New Zealand	46	58.6	11.0	2.3	28.5

Source: JETRO Surveys on Business Conditions of Japanese-Affiliated Companies, 2021.

TABLE 2

Cloud-based and e-commerce technologies have been rolled out most often by Japanese firms operating abroad

Use of digital technologies Multiple answers permitted (% of respondents)				
Digital Technologies	Asia and Oceania	Europe	Canada	USA
Cloud	58.8	NA	NA	NA
E-commerce	45.0	19.9	58.6	59.1
Digital Marketing	29.7	NA	NA	NA
Robots	21.0	12.6	22.4	32.2
IoT (Internet of Things)	20.5	9.7	22.4	26.4
Robotic Process Automation (RPA)	20.4	NA	NA	NA
Big data	14.3	6.1	20.7	15.6
Artificial Intelligence (AI)	13.5	6.4	13.8	17.4
3D Printing	10.7	9.2	12.1	22.7
Virtual reality (VR)/Augmented reality (AR)	6.3	NA	NA	NA
Fintech	5.3	2.3	1.7	5.8
Blockchain	2.6	NA	NA	NA
Number of survey respondents	*1786*	*858*	*58*	*379*

Source: JETRO Surveys on Business Conditions of Japanese-Affiliated Companies, 2021.

TABLE 3

Japanese firms trading overseas have a keen interest in data governance policies in foreign trading partners

Relevance of policies relating to the digital domain Multiple answers permitted (% of respondents)			
"Policy items companies are interested [in] with respect to use of Digital Technologies"	Europe	Canada	USA
Sensitive information subject to laws and regulations	41.7	36.8	36.7
Cross-border transfer of sensitive information	20.0	24.8	19.6
Requirement of installing a server and/or requirement of storing data within the country	12.4	8.5	13.3
Digital taxes	6.5	8.5	10.6
Requirement for technology transfer	3.8	5.1	5.4
Requirement of disclosing source codes and algorithms	2.6	3.4	3.1
Nothing in particular	45.5	50.4	53.1
Number of survey respondents	*780*	*117*	*784*

Source: JETRO Surveys on Business Conditions of Japanese-Affiliated Companies, 2021.

Interestingly, less than 15% of Japanese firms with operations in Europe and North America recognised local server requirements and data storage requirements as items they are interested in. The percentages for digital taxes, technology transfer requirements, and requirements to disclose source codes and algorithms are even lower. Care is needed in interpreting these findings as not every respondent has the same degree of commercial exposure abroad. Nevertheless, the findings of the JETRO survey suggest that Japanese firms can differentiate between policy and regulatory interventions in high per-capita income trading partners. Moreover, these survey results show that corporate interest in requirements on cross-border transfer of information is not confined to policy developments in developing countries.

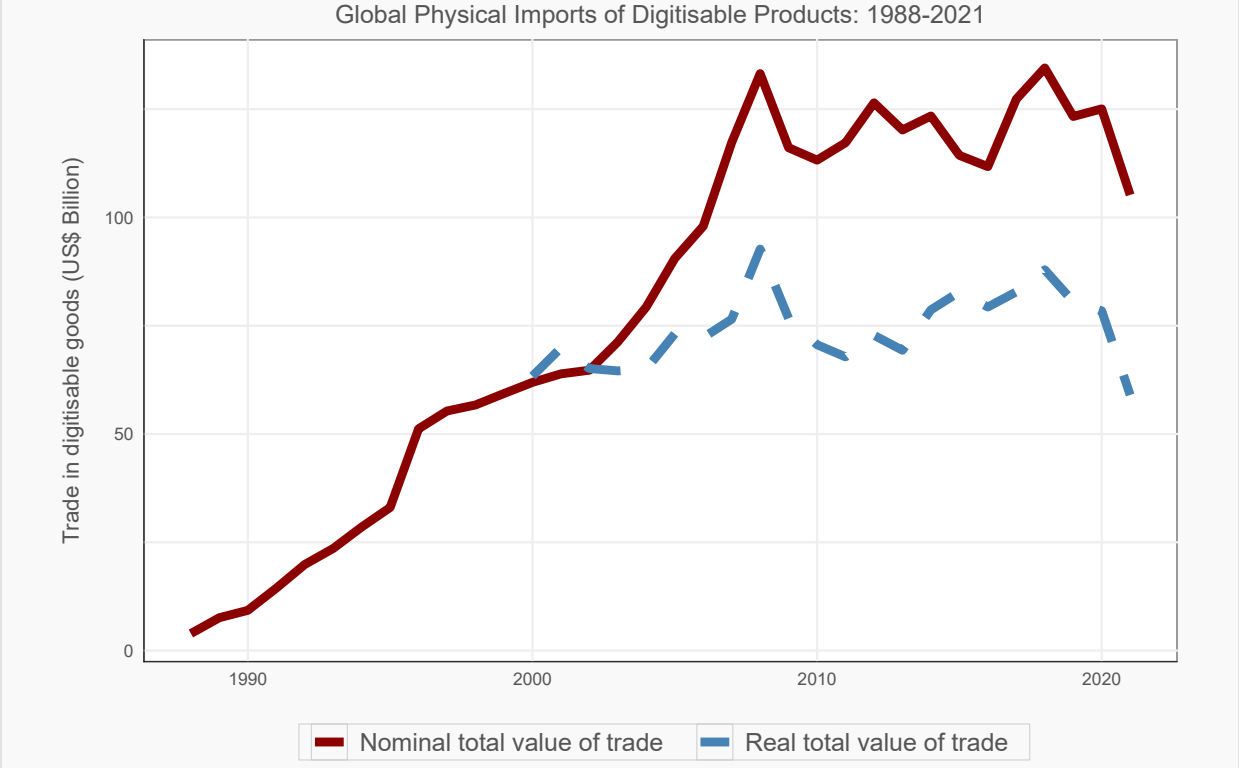
One consequence of the spread of digital technologies is that some physical products that used to cross borders through custom houses can now be delivered digitally. The question arises as to whether customers have taken the opportunity to switch to digital delivery and, in turn, whether service trade is substituting for goods trade. As Figure 3 shows, there is evidence to support this proposition. A number of studies have sought to track the total value of global trade in "digitisable" products over time (UNCTAD 2000, WTO 2016, Banga 2019). Following these studies, information was collected on the total value of global trade in 49 Harmonised System (HS) product codes from 1988 to 2021 thought to represent digitisable products.[9]

The total nominal value of global trade in these 49 products was plotted over time and, from 2000 on, given the availability of a price index for globally traded goods, the real value was plotted as well. Figure 3 shows the variation over time in the nominal and real global value of trade in digitisable products. The results are striking. The Global Financial Crisis appears to mark a turning point, with the nominal and real value of global trade in these products stagnating or falling thereafter.

Multiple factors could be responsible for this shift in trade flows, including the decision by member governments of the WTO in 1998 to refrain from imposing customs duties on electronic transmissions. At a minimum, it suggests that the progressive deployment of digital technologies is altering cross-border trade patterns. Some perspective is needed here, however, as the total amounts of trade being substituted are, at present, are only a tiny fraction of $22.4 trillion of merchandise trade recorded in 2021 (WTO 2022).

FIGURE 3

The nominal and real value of physical imports of digitisable products has been stagnant since the Global Financial Crisis



Note: The World Trade Monitor only reports the average price of trade in goods from 2000.
Data sources: UN COMTRADE and World Trade Monitor.

9 See Appendix Table A.1. of Banga (2019) for a list of these products.

Organisation of this report

In addition to the Executive Summary and this chapter, the remainder of this report comprises nine chapters. The next chapter introduces the notions of favouritism and fragmentation, describes how they manifest themselves in terms of policy and regulation, and highlights their potential effects, in particular their adverse domestic and cross-border effects. In so doing, the case is made for nationality-blind public policy intervention that seeks to limit the fragmentation of the digital domain.

Concerns about state-induced fragmentation of the digital domain would gain little traction if there were little by way of new policy and regulatory initiatives. Chapter three of this report demonstrates that this is not the case—public policy intervention has burgeoned over the past decade, in particular since the start of 2020. The point made in this chapter is not that all such state intervention is bad rather that, given the reality of extensive cross-border commercial ties, the possibility that national policymaking—which often takes place in isolated regulatory silos—is creating cross-border effects that need to be taken seriously.

The heightened policy activity documented in this report is particularly worrying in the context of the apparent disinterest in broader international coordination on policies affecting the digital domain. The plurilateral accord being negotiated at the World Trade Organisation is progressing slowly and the recently contested extension of the Moratorium for Customs Duties on Electronic Transmissions does not bode well for the future.

Chapter four of this report deploys the Global Trade Alert database to examine the frequency, form, and scale of liberalising and selective or discriminatory public policy intervention in the digital domain. That information is complemented by evidence on extensive subsidisation of firms operating along the supply chain of the digital economy. Together these two chapters, which comprise the first section of the report, demonstrate the prevalence of explicit and implicit fragmentation of global digital economy. Fragmentation is already the reality.

The second section of the report goes in further detail into the regulatory changes introduced since 1 January 2020. Drawing upon the inventory of public policy intervention in the Digital Policy Alert, chapter six provides an overview of relevant regulatory developments. More granular cross-country analyses of state initiatives in the areas of data governance and content moderation are presented in chapters seven and eight, respectively. In all three chapters, the links between public policy developments and the potential for fragmentation of the digital domain are explicated.

In the third section of this report, the implications of the evidence presented in earlier chapters for policymaking are explored. The progress made in regional trade agreements in devising new rules for policies affecting the digital economy has not been translated yet into new global understandings. This chapter includes suggestions for what those initiatives might be, including making the case for greater transparency, monitoring of government policy, peer reviews, and opportunities to learn about and share better practices. The case is made for an integrated—as opposed to a siloed—perspective on the development of policy and on the need for fora that encourage a systemic assessment of the consequences of unilateral state action.

The final chapter of this report explains what the Digital Policy Alert and Global Trade Alert initiatives are and describes their relationship to the St. Gallen Endowment for Prosperity Through Trade. Acknowledgements to those who contributed to and supported the preparation of this report can also be found in this, the tenth, chapter. Following this chapter are the country annexes on each G20 member that are a standard feature of our semi-annual reports.

CHAPTER 2
THE VISIBLE HAND AND FRAGMENTATION

Once broadly conceived, it should come as little surprise that many different public policies affect the digital economy. That is, there are plenty of ways for the Visible Hand to leave its mark. Export bans can prevent the shipment of Rare Earth minerals abroad. "Industrial policies"—perhaps better thought of in the digital context as sectoral promotion policies—can involve tax breaks, other subsidies, and, where goods cross borders, barriers imposed to limit competition from imports or from foreign direct investment.

In addition to these traditional trade and investment policy measures, a raft of legislation covers the operation of firms that gather, transfer, analyse, deploy, and even sell data in their commercial operations—examples of types of data governance. Regulations concerning operations, content creation and management; registration and licensing; as well as the enforcement of competition law are pertinent too. Thus, any attempt to paint the landscape of policy intervention in the digital domain must adopt a broad canvas.

Moreover, the possibility should be accepted that some policy intervention bearing upon the digital domain can have effects on individuals, firms, economies, the environment, and on the capacity and effectiveness of government action in other countries. Those effects can be economic in nature but need not be. These cross-border effects are often referred to as spillovers and are an inevitable consequence of living in a world of connected sovereign states. Useful inventories of public policy should record the source of those spillovers—facilitating the assessment of the nature and scale of the cross-border repercussions of the Visible Hand.

Given the public disagreements between governments in recent years over the regulation and taxation of digital commercial activities, there is no reason to suppose that the effects of digital law and regulation are confined within the borders of the implementing nation. Like it or not, that those cross-border effects affect foreign business inevitably adds a trade policy dimension to regulation of the digital domain.

Understanding the policy-related sources of those cross-border effects, critically evaluating their apparent rationale, and assessing their relative effectiveness are ways in which an international trade perspective can add substantial value to deliberations on unilateral state action that bears upon the digital domain.

Fortunately, international trade analysts and policymakers have long had to grapple with similar matters, starting with the analysis of policies to address so-called non-economic objectives in the 1960s (Johnson 1960, Bhagwati & Srinivasan 1984, Winters 1988, Maneschi 2004). That is, in assessing situations where governments pursue—for whatever reason, including the furtherance of cherished societal values and goals—policies that depart from the principles of equal treatment of domestic and foreign firms, customers, and other parties engaged in cross-border commerce.

Two important principles for policy design following from the analysis of such situations are (a) where a market failure needs corrective public policy, intervention that *directly* remedies that failure is preferred to *indirect* interventions and (b) that non-economic objectives should be pursued by policies that reduce the gains from market exchange the least.

The same analyses revealed that, for most public policy problems, trade and investment policy instruments that discriminate against foreign commercial interests met neither condition. That is, some even-handed policy intervention performs better (Bhagwati & Srinivasan 1969, Baldwin 1982). The following examples, drawn from policy interventions implicating the digital economy, reveal the enduring relevance of these findings concerning the optimal design of public policy.

Selective promotion of digital commercial activity: Why Favouritism Matters

When a government favours a local firm or sector—for example, as Russia has done through a requirement that its public sector agencies purchase only domestically

written and produced software—this reduces the commercial opportunities for foreign suppliers of competing goods or services. Unsurprisingly, when a government discriminates against foreign bidders in this manner, it attracts scrutiny from trading partners.[10]

When faced with such policy-induced favouritism, it is important to identify the ultimate rationale for the public policy intervention. If that rationale is to address a market failure thought to be holding back the growth of a domestic software firm or sector, then the next step is to ascertain whether the proposed favouritism best addresses the market failure in question.

To continue the example outlined above: if lack of finance is holding back the domestic software sector, then any proposed public procurement policy favouring domestic software ought to be tested against alternative policies—such as loan guarantees—that could directly address any unwillingness of banks to lend to (potentially high risk) software firms. Should loan guarantees be found to better address the market failure, then restricting foreign market access to national procurement contracts is unnecessary.

Consequently, any proposed state favouritism should be tested against a range of plausible alternative policies, in particular those that result in less or no favouritism.[11] Those alternatives can be informed by experience in other nations, putting a premium on inventories of what steps governments have taken and ex-post assessments of the effectiveness of such actions.

Not all favouritism towards selected national firms or sectors discriminates *explicitly* against foreign rivals. When a public body offers a subsidy—taken, as is customary, to involve a transfer of state resources—to a favoured firm, then no attempt is made to formally impede access by foreign firms to the markets of the subsidy-giving jurisdiction. However, the competitive strength of the foreign firms vis-à-vis the subsidised local firm has weakened and may result in the former losing sales. The commercial disadvantages arising from such subsidies tend to attract criticism from foreign governments.

Corporate subsidies have long been a bone of contention between trading nations. Agricultural subsidies—which some policymakers have sought to justify on environmental and food security grounds—have divided members of the World Trade Organization for decades, well before digital technologies came to the fore. The past decade has seen numerous accusations levied at China for its so-called non-market support of firms and industries. It turns out, as our 28th Global Trade Alert report showed, that the European Union and United States have favoured local firms with plenty of subsidies as well (Evenett and Fritz 2021b).

The cross-border spillovers created by those subsidies and the potential for mutually destructive subsidy races between governments have long concerned trade analysts. A priori, there is no reason that the cross-border ramifications of corporate subsidies to firms developing, adopting, and deploying digital technologies and data are any different from those of yesteryear. Indeed, the current subsidy race in semiconductors, which involves outlays of tens of billions of US dollars by governments in Asia-Pacific, Western Europe, and the United States, stands as a reminder that, while certain digital technologies are novel, the policies to support them are not.

Pursuing non-commercial goals, including cherished societal goals

International trade considerations can also contribute positively to deliberations over regulations that on the face of it have nothing to do with cross-border commerce. Those regulations could include the pursuit of widely accepted societal priorities, such as privacy, protection of public morals, and redressing excessive corporate power.

Such regulations may result in the costs of firms rising; in constraints on a firm's operations and pricing; and in the manner of their engagement with customers, rivals, and suppliers. In turn, these measures may go so far as to prevent market entry and associated sanctions may involve sizeable fines, operational restrictions, or the criminal liability of individual employees.

There is plenty at stake here for firms operating in the digital domain, in particular those whose business models are such that their efficiency rises with scale. Small and medium-sized enterprises (SMEs) are particularly vulnerable to losses in their global customer base on account of complex and varied regulatory requirements.

Typically, in trade policy circles, the starting point is to accept that the government has a right to regulate. To be clear, the harm done by hacking, the inappropriate sharing and misuse of personal data, and the improper development and use of Artificial Intelligence are just some of the areas where there is a strong case for regulation. That is not contested.

The next step is to examine the extent to which the objectives of a regulation could be attained without unduly sacrificing the benefits of cross-border commerce, which

10 Perhaps for this reason, some refer to policy interventions that involve such explicit unequal treatment of foreign firms as digital trade barriers, although it should be noted that the latter term is used more loosely by others.

11 The recommendation to adopt the least trade restrictive policy that attains a stated government objective is well known and widely accepted in trade policy circles.

are potentially significant given the pace of innovation in the digital economy. Here, provisions in a proposed regulation are assessed in terms of (a) whether they treat domestic and foreign entities equally, (b) whether the regulation and its administration are transparent and predictable, and (c) whether they offer the same due process rights to all commercial parties implicated by the regulation. Failings in any of these three regards have been known to chill cross-border commerce.[12]

When a proposed regulation contains a provision that discriminates against foreign commercial interests or directly or indirectly privileges locally based or national firms, then the necessity of the discrimination or privilege should be reviewed. Here this amounts to examining whether the ultimate public policy objective is better served by another available policy instrument or action, including whether the alternative affords equal treatment to all corporate parties or inflicts less or no cross-border harm on trading partners. If a reasoned and evidenced case can be made that a particular discriminatory provision is necessary and least damaging, then a potentially satisfactory way to reconcile the right to regulate with international economic integration may have been found.

There is, of course, the possibility that a government enforces a regulation that has a stated non-commercial purpose in a manner that in fact discriminates against foreign commercial interests. This is not new, nor is it a feature found solely in the regulation of the digital domain, as international trade hands well know. Here, transparency in official decision-making and due process rights for foreign firms, including the right to appeal regulatory decisions to independent courts, are valuable.

Moreover, clear separations between regulatory and foreign and national security considerations build confidence as well. Proponents of regulating the digital domain in the pursuit of cherished social goals should be vexed when regulatory enforcement is hijacked for industrial policy or other purposes. Indeed, on this important matter there ought to be common ground between national proponents of non-discriminatory societal regulation and foreign governments and commercial interests.

What this approach to devising and assessing public policy intervention does not do is give governments a "pass" on a proposed regulation just because the purported objective of the policy intervention is some cherished social goal. This approach stands in contrast to those voices that have sought to exclude outright commercial policy considerations from debates over certain regulations of the digital economy and from those—including some courts—that have asserted the primacy of certain domestic imperatives over commercial policy considerations. The reality is that regulation of the digital economy is implemented in a globalised world economy. Pursuing cherished values and social goals through regulation is not an open invitation to unduly crimp the benefits a nation derives from cross-border commerce.

The notion of fragmentation of the digital economy—and why it matters too

While international trade economists have typically referred to favouritism, discrimination, and integration[13] to characterise the form and consequences of policies that decouple national from global *goods* markets, the term fragmentation is often used in the deliberations on public policy in the digital domain. This may be confusing, as the term fragmentation is used by many international trade analysts to refer to the slicing up of production processes for goods into multiple stages located in different economies, resulting in international or global value chains.

What is meant by the term fragmentation in the digital domain? A useful starting point is the discussion of *internet fragmentation* by Drake, Cerf and Kleinwächter (2016). Motivated by assertions from experts and businesspeople that "the Internet is in some danger of splintering or breaking up into loosely coupled islands of connectivity" (page 3), these authors identify three sources of internet fragmentation: technical,[14] governmental,[15] and

12 Good regulatory practices including transparency on the political intent and public engagement through broad stakeholder consultations help regulators avoid such pitfalls.

13 That analysts of the digital economy tend not to refer to the degree of integration of markets for digitally delivered goods and services can be understood. In traditional goods markets, international trade economists assess the degree of integration by the extent to which the prices for the same product differ across national markets. Those price differences are thought to narrow as trade barriers, transport costs, and information asymmetries narrow. As price differences, some trade barriers, and international transport costs can be measured, the notion of integration has empirical counterparts—meaning that the degree of goods market integration can be measured and contrasted across space and time. The application of this logic is problematic in the digital domain, as prices may not be observed and the subscription revenue models of many firms operating in the digital economy imply that the incremental price of an additional unit of service enjoyed is zero. Cross-country and intertemporal comparisons of zero prices may reveal little about impediments to cross-border delivery of services.

14 Defined to be "conditions in the underlying infrastructure that impede the ability of systems to fully interoperate and exchange data packets and of the Internet to function consistently at all end points".

15 Defined to be "government policies and actions that constrain or prevent certain uses of the Internet to create, distribute, or access information resources".

commercial.[16] These three factors result in departures from "an Open Internet", taken by these authors to be a situation where "every device on the Internet should be able to exchange data packets with any other device that was willing to receive them" (page 10). They rightly note that this definition presupposes access to the internet in the first place, a condition that regrettably is still not met in all parts of the world.[17]

Drake et al. contend that the degree to which these sources of fragmentation exist differ across place and time, with the implication that the degree of internet fragmentation experienced by individuals and firms may vary across the globe. Moreover, they argue that the extent of internet fragmentation may be difficult to measure, which, if true, introduces hurdles for empirical assessments of the causes of fragmentation and its extent.

Noteworthy in their approach is that governments are not the only source of fragmentation. To the extent that corporations influence—perhaps through their research and development activities—the degree of technical fragmentation, then there are two channels through which corporate action could put the Open Internet at risk.

At this point, it is worth introducing two further distinctions made by OECD experts,[18] that is between digital fragmentation and regulatory fragmentation, the latter being one source of the former. Furthermore, it is useful to distinguish between regulatory fragmentation and regulatory homogeneity. For a given type of law, regulatory homogeneity among a group of nations is said to exist when both of the following two conditions are met (a) each government in that group has enacted the law in question and (b) there are no material differences across the group in the provisions of that law.

Critically, from the global perspective, for a particular law pertaining to the digital domain regulatory fragmentation can coexist with regulatory homogeneity within certain groups of nations. For example, a group of nations may have similar laws banning cross-border transfers of data: their regulatory regimes on this matter are aligned, but commercially relevant data flows are impeded and so digital fragmentation results.

The Global Commission on Internet Governance noted in their 2016 report that fragmentation could arise in several "layers" of the internet: infrastructure, logical, and institutional. As far as the latter is concerned, "different legal regimes and regulatory environments fragment the norms and laws that govern cyberspace" (GCIG 2016, page 52). In addition, the Commission argued that certain private sector practices ("Many companies are now developing a number of propriety platforms that limit the traditional openness of the Internet" page 52) and geopolitical tensions threaten to fragment the internet.

The Commission also explained why fragmentation matters. In their report they argued that fragmentation infringes upon individual rights and imposes meaningful economic costs:

> *These forms of fragmentation are costly for individual Internet users and for the global economy. Fragmentary legal systems requiring, as an example, local data storage threaten to expel financial services that cannot afford the costs. More generally, the restriction of the free flow of data tends to lead to significant reductions often over one percent to a nation's GDP per capita with even larger reductions in investment exports and aggregate welfare. At another level, state-imposed restrictions on content fragment the system and impinge upon the right of individuals to free expression.* (page 52)

In its *Digital Economy Report 2021*, UNCTAD highlights the risks created by fragmentation, in particular as they relate to developing countries and the potential for both commercial and inter-governmental collaboration:

> *… there is a risk of fragmentation in the digital space and of the Internet. Overall, there is a risk that a silo-oriented, data-driven digital economy will emerge, which goes against the original spirit of the Internet as a free, decentralized and open network. This would be suboptimal in economic terms, as more gains are likely to be obtained from interoperability.*
>
> *Fragmentation in the data-driven digital economy would hamper technological progress, reduce competition and enable oligopolistic market structures to emerge in some areas, and lead to more government influence in others. This might have significant negative impacts for most developing countries. Fragmentation would reduce business opportunities, as the access of users and companies to supply chains would become more complicated, and data flows across borders would be restricted. There would also be more obstacles for collaboration across jurisdictions.* (page xviii)

Unless appropriate international standards and collaborative mechanisms are put in place, the pace of digital innovation and the spread of digital technologies could also result in crises. Price (2019) argued that factors similar to those responsible for the Global Financial Crisis of 2008–9 are at work now in the digital economy, namely, "regulation lagging behind innovation; companies and

16 Defined to be "business practices that constrain or prevent certain uses of the Internet to create, distribute, or access information resources".

17 Therefore, fragmentation differs from access to the internet in the first place; see the discussion in the last chapter.

18 Email correspondence with Javier Lopez Gonzalez and Janos Ferencz.

governments failing to appreciate the build-up of risks; and ineffective international cooperation mechanisms among governments for assessing and addressing risks".

Price (2019) highlights the following first order socio- and economic risks from policy-related digital fragmentation and the need for collective action to address them:

> *The financial crisis was devastating, but given the volume, speed and complexity of data-driven systems, a major digital crisis could be just as crippling. Imagine a freeze or failure of global navigation, air-traffic control or telecommunication systems. Or imagine a disruption of the computer programs operating our stock markets or defense systems. Imagine also the cost of having lifesaving medical treatments blocked if differing standards on data analytics among countries caused the same scientific test data to yield contradictory results.*
>
> *As our dependence on data-intensive technologies increases, so, too, does the need for common regulatory principles and enhanced global cooperation.*

These statements—and a growing body of research showing the costs of poorly chosen policies to regulate the digital domain—highlight what is at stake (Van der Marel, Lee-Makiyama, and Bauer 2014; Van der Marel, Lee-Makiyama, Bauer, and Verschelde 2016; Frontier Economics 2021; Van der Marel and Ferracane 2021). That so many business models of companies that deploy data, or that use digital technologies to deliver goods and services across borders, become more efficient as they scale their operations accounts in part for the corporate stake in limiting regulatory fragmentation (as some of the statements in Box 1 attest).

To the extent that the incentive to innovate and invest increases with the size of the total potentially addressable market (which can include foreign customers), then these companies' customers have a stake in limiting regulatory fragmentation as well. Those customers include downstream corporate buyers, including small businesses, the implication being that those harmed by unnecessary digital fragmentation are not confined to the behemoths of the digital economy. By the same token, governments of smaller economies need to consider carefully the consequences of deviating from international regulatory practices, not least in terms of the potential exit by digital foreign suppliers. The adverse effects of poorly designed policies towards general-purpose technologies—such as digital technology—range far and wide.

Box 1: Corporate assessments of Fragmentation and their responses

"I think the most likely scenario now is not a splintering, but rather a bifurcation into a Chinese-led internet and a non-Chinese internet led by America.

If you look at China, and I was just there, the scale of the companies that are being built, the services being built, the wealth that is being created is phenomenal. Chinese Internet is a greater percentage of the GDP of China, which is a big number, than the same percentage of the US, which is also a big number.

If you think of China as like 'Oh yeah, they're good with the Internet,' you're missing the point. Globalization means that they get to play too. I think you're going to see fantastic leadership in products and services from China. There's a real danger that along with those products and services comes a different leadership regime from government, with censorship, controls, etc.

Look at the way BRI works – their Belt and Road Initiative, which involves 60-ish countries – it's perfectly possible those countries will begin to take on the infrastructure that China has with some loss of freedom."
Eric Schmidt, former CEO, Google, 20 September 2018 (https://www.cnbc.com/2018/09/20/eric-schmidt-ex-google-ceo-predicts-internet-split-china.html)

"I think there is a dual concern — standardization across the globe and higher protection, whether it is data or infrastructure protection."

"We all know that infrastructure should be well-protected, otherwise it's going to put everything at risk at the same time."
Bernard Charles, CEO, Dassault Systèmes, 23 January 2019 (https://www.cnbc.com/2019/01/23/splinternet-safety-more-important-than-standards-software-ceo-says.html)

"There's been a lot of let's say 'tension' between different countries for some time…We've been talking for some time about the potential of something called the "splinternet,' or the fracturing of the overall cyberspace into different areas."

"Our point of view is that the [tension] is detrimental to the efficiency of what we're trying to do."

"To have to put together different types of ads for different types of regions because of different rules is just more expensive and makes more friction. Obviously, we would like everyone to work cooperatively."
Glenn Fogel, CEO, Booking Holdings, 7 August 2020 (https://skift.com/2020/08/07/u-s-china-tensions-could-roil-internet-usage-rules-hurting-online-travel-booking-ceo/)

"Whether it's Zoom or any other technology company, the calculus is different because the businesses are different. As a company, we're obviously not happy about the fragmentation. We've run into some challenges in China, but I don't think that we have yet seen it impairing our ability to operate globally and benefit from scale. Even if our ability to access certain markets were interrupted, I believe it would be a pain in the neck, but an incremental pain in the neck, not a catastrophic one."
Josh Kalmer, Global Head of Public Policy, Zoom, 2 November 2020 (https://cltc.berkeley.edu/2020/11/02/whats-at-stake-in-digital-fragmentation/)

"Data localisation comes with overheads. Inhibiting cross-border data flow and data sharing can deny access and benefits of the cloud technology, including big data processing, machine learning, etc. to Indian companies."

"Enabling the free flow of data across borders is crucial for India, especially if it wants to achieve its goal of becoming a $5-trillion economy by 2025… There is so much opportunity for SaaS unicorns in India. It is a bit of a blocker that comes in [with localisation]."
Rahul Sharma, President, Amazon Web Services (AWS), India and South Asia, 11 January 2022 (https://www.outlookindia.com/website/story/business-news-why-amazon-wants-the-indian-government-by-its-side-to-win-the-cloud-war/409046)

"We may make changes in our products, in anticipation of some of these regulations. For example, if you take an area like Google Play, we've been thinking hard about what kind of changes can be made, and some of it is to address regulatory concerns. Some of it is done to address developer concerns. Similarly, on Google Cloud, we are supporting data sovereignty in some countries."
Sundar Pichai, CEO, Alphabet, 26 May 2022 (https://economictimes.indiatimes.com/tech/technology/google-pursuing-licensing-deals-with-publishers-ceo-sundar-pichai/articleshow/91795738.cms)

"We are in a state of fragmentation…The question is, how much more fragmented will we become?"
Sean Heather, Senior Vice President, International Regulatory Affairs and Antitrust, U.S. Chamber of Commerce, 2 March 2022 (https://www.axios.com/2022/03/02/ukraine-conflict-splinters-global-internet)

"…on the Internet, you will see what's called the "splinter net", where you'll have a Chinese internet and a Russian internet. In both goods and services, there will be splintering."
Nandan Nilekani, Co-Founder, Infosys, 30 March 2022 (https://economictimes.indiatimes.com/news/company/corporate-trends/we-should-make-india-the-go-to-place-for-global-business-indian-ceos/articleshow/90527303.cms?from=mdr)

Concluding remarks

Digital technologies of different types now pervade commerce, politics, and society. In almost every jurisdiction, associated innovation outpaces extant regulation; however, governments are determined to catch up now that both the risks as well as the upside of digital technologies have become apparent. The Visible Hand purposefully grapples for the digital tiller.

Given the strength of cross-border ties between people and between markets, it would be remarkable if the effects of the current wave of public policy intervention in the digital domain were confined within the borders of implementing governments. Even if there were no cross-border spillover effects, that digital technologies are increasingly seen as central to national economic strategy and to national defence places public policy intervention towards the digital domain at the centre of the growing geopolitical rivalry witnessed in recent years. One way or the other, policies affecting the digital domain are becoming a central pillar of economic statecraft.

Uncoordinated unilateral policy initiatives towards the digital domain are likely to be costly at home as well as increasing the risks of further crises in and disruption to the global economy. A pre-requisite for sound national policymaking and for enhanced cooperation between governments is reliable information on the steps governments have already taken to shape and nurture the digital components of their economies. The next three chapters of this report shed light on the actions that governments have taken in this regard since the Global Financial Crisis.

CHAPTER 3
THE VISIBLE HAND AT WORK IN THE DIGITAL DOMAIN: A GLOBAL PERSPECTIVE

Concerns about fragmentation of the digital domain don't make much sense if there has been little unilateral public policy intervention in the first place. So, the first task is to check in the world's largest economies whether there has been an acceleration in law making, regulation, and commercial policy initiatives affecting the digital domain. Drawing upon two extensive inventories of planned and implemented state action, the purpose of this chapter is to lay out what governments have done, what measures they have in the works, and differences across states in their attempts to shape and nurture the digital domain.

This chapter and the rest of this section of the report draw upon the information collected on different types of pertinent public policy intervention by the Digital Policy Alert (DPA) and Global Trade Alert (GTA) teams. While these inventories of policy intervention share some characteristics, there are important differences between them. In what follows, each dataset is explained in turn.

Before that, however, a comment on the economic activities covered by the digital domain is in order. In this report, a whole-of-supply-chain approach is taken. That is, attention does not focus only on commercial activities that make extensive use of digital technologies to deliver goods and services to customers (such as well-known so-called platform companies like Alibaba Group, Amazon, Baidu, Facebook (Meta), Google, JD.com, Microsoft, Tencent Holdings, and the like).

Consideration is also given in this report to the raw materials used in the manufacture of digital technologies and to the design and production of hardware and software. Therefore, policies affecting the supply of Rare Earths, lithium, semiconductor production, and companies such as information communications infrastructure providers (e.g. Huawei) and producers of software (e.g. Microsoft, Oracle, and SAP) are all within scope.

The Digital Policy Alert inventory of policy and regulatory acts since 2020

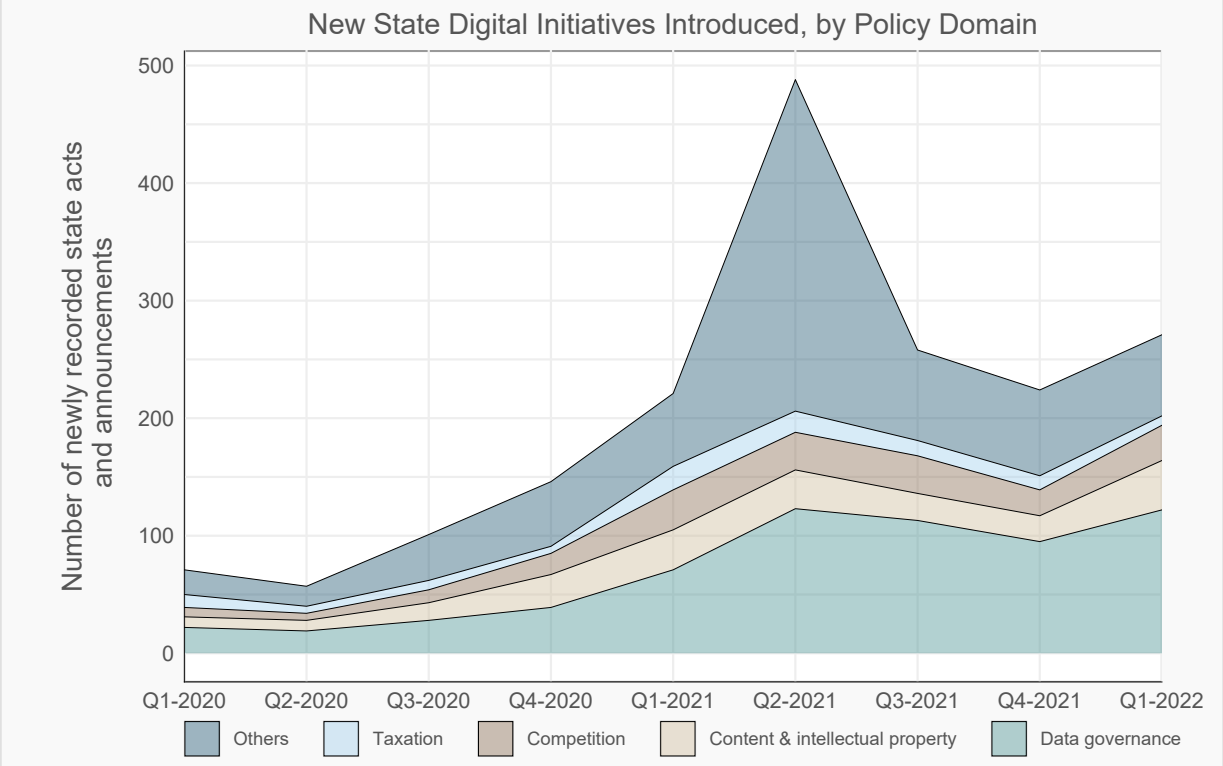
The Digital Policy Alert (DPA) tracks the various steps that governments have taken or plan to take in over 20 areas of digitally related economic activity (from upstream semiconductors and infrastructure providers to downstream firms that supply goods and services to customers through digital technologies). A total of 11 areas of public policy (from competition law through to taxation) are covered by the DPA. The recording of policy intervention in the DPA focuses on the steps taken by national and sub-national governments and regulatory authorities in the European Union, the group of G20 nations, and Switzerland (although measures taken by other nations have been recorded too).

Entries in the DPA track the evolution of a public policy intervention from proposal through to implementation and potentially revocation or expiration. For example, one recent entry relates to a consultation by the Australian government into a Crypto Asset Secondary Service Provider Licensing Regime. The start of the consultation (on 21 March 2022) was recorded in the DPA, and an update on 27 May 2022 was provided when the consultation concluded. The entry in the DPA database includes hyperlinks to the official public announcements. This entry was then classified in terms of the policy area implicated (here a registration or licensing requirement), the policy instrument implicated (here an operational license requirement), the regulated economic activity (digital payment provider), implementation level (nation), branch of government responsible (executive), and government body responsible (the Australian Treasury). In this manner, an extensive queryable database—along any of the dimensions just mentioned was assembled.

As of this writing, the DPA database contains information on 2,999 events relating to 1,731 distinct public policy interventions affecting the digital economy that have been announced or implemented since 1 January 2020.

FIGURE 4

Regulations in four legal domains dominate policy intervention in Western Europe and the G20



Source: Digital Policy Alert.

Easy to interpret graphs are available on the DPA website and allow the quantum of public policy intervention to be assessed, it being understood that the effects of each intervention may differ.

Similarities in public policy intervention across nations or economic activities have been identified and written up as "threads", further facilitating the interpretation of relevant policy dynamics. As of this writing, six threads are available, some relating to the policy reaction to the invasion of Ukraine and others to topical matters, such as the enforcement of competition law.

Figure 4 plots the number of quarterly policy interventions recorded in the DPA database from the start of 2020 through to the end of the first quarter of 2022. The five most frequently recorded areas of law and regulation are reported along with a catch all "other" category. As is evident, even over this relatively short period of time (nine quarters) there has been a trend increase in the number of quarterly policy interventions announced or implemented—rising from 71 state initiatives in the first quarter of 2020 to 217 steps recorded in the first quarter of 2022.

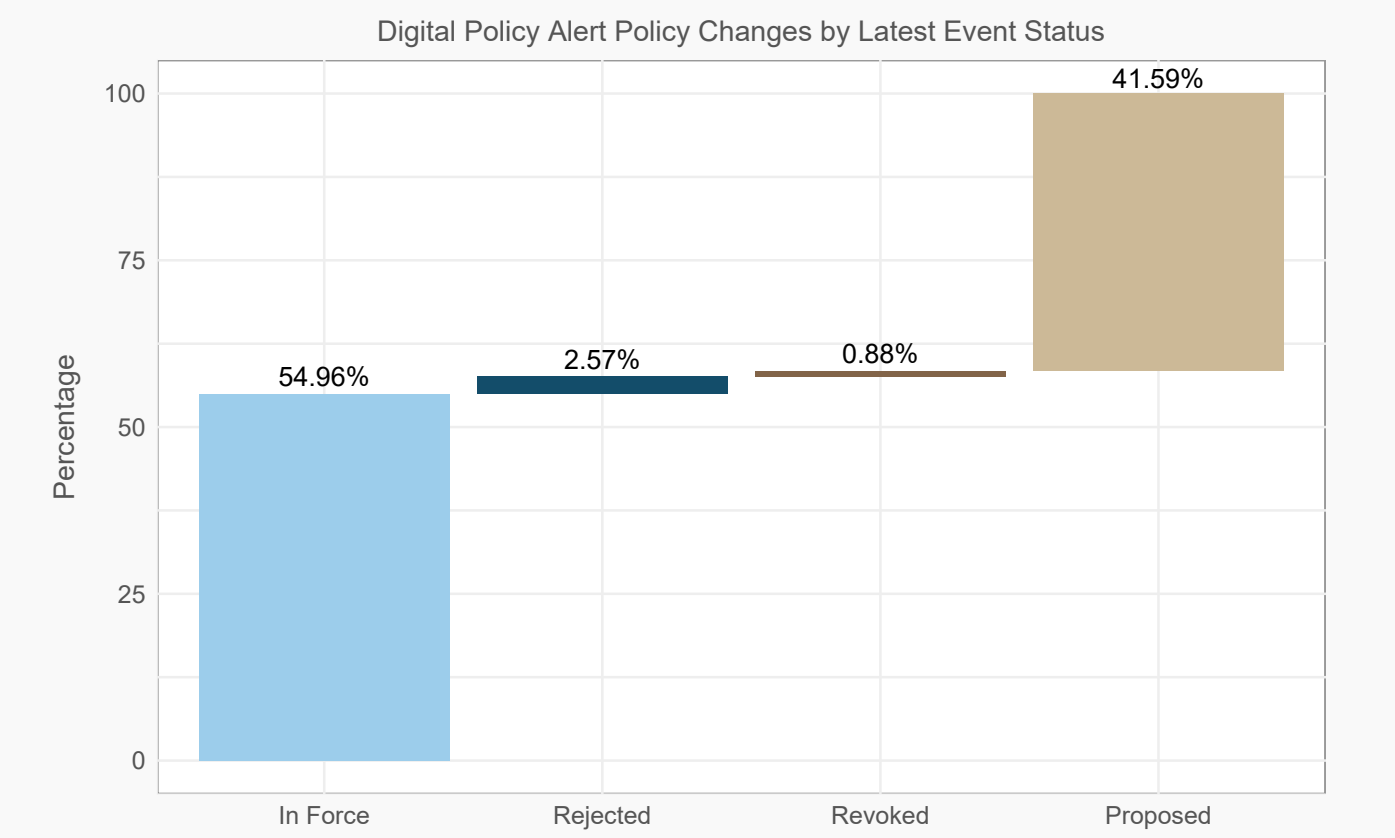
Laws and regulations relating to various aspects of the treatment of data (so called "data governance") stand out as the most common form of public policy intervention in the digital economy. A total of 632 state initiatives in this domain of policy have been recorded by the DPA team, three times the amount of the second most common policy area documented (content regulation and intellectual property). A total of 193 competition law changes or enforcement actions have been recorded since the start of 2020, which speaks to the steps taken by governments seeking to rein in what they perceive as anti-competitive practices. In addition, 102 changes to tax law or its administration in the digital economy have been recorded.

These findings demonstrate that focusing on one or a few areas of law or regulation misses pertinent unilateral state acts. Put differently, governments in the major trading economies are deploying a wide range of tools to shape and nurture the digital domain.

As the DPA tracks the stages of public policy intervention, it is possible to ascertain what percentage of the recorded public policy intervention are in force, are proposed but yet to come into force, have been implemented and revoked, and have been initiated and action ultimately rejected. Figure 5 reveals that just under 55% of the entries in the DPA relate to public policy interventions that have been implemented and, as of this writing, remain in force.

FIGURE 5

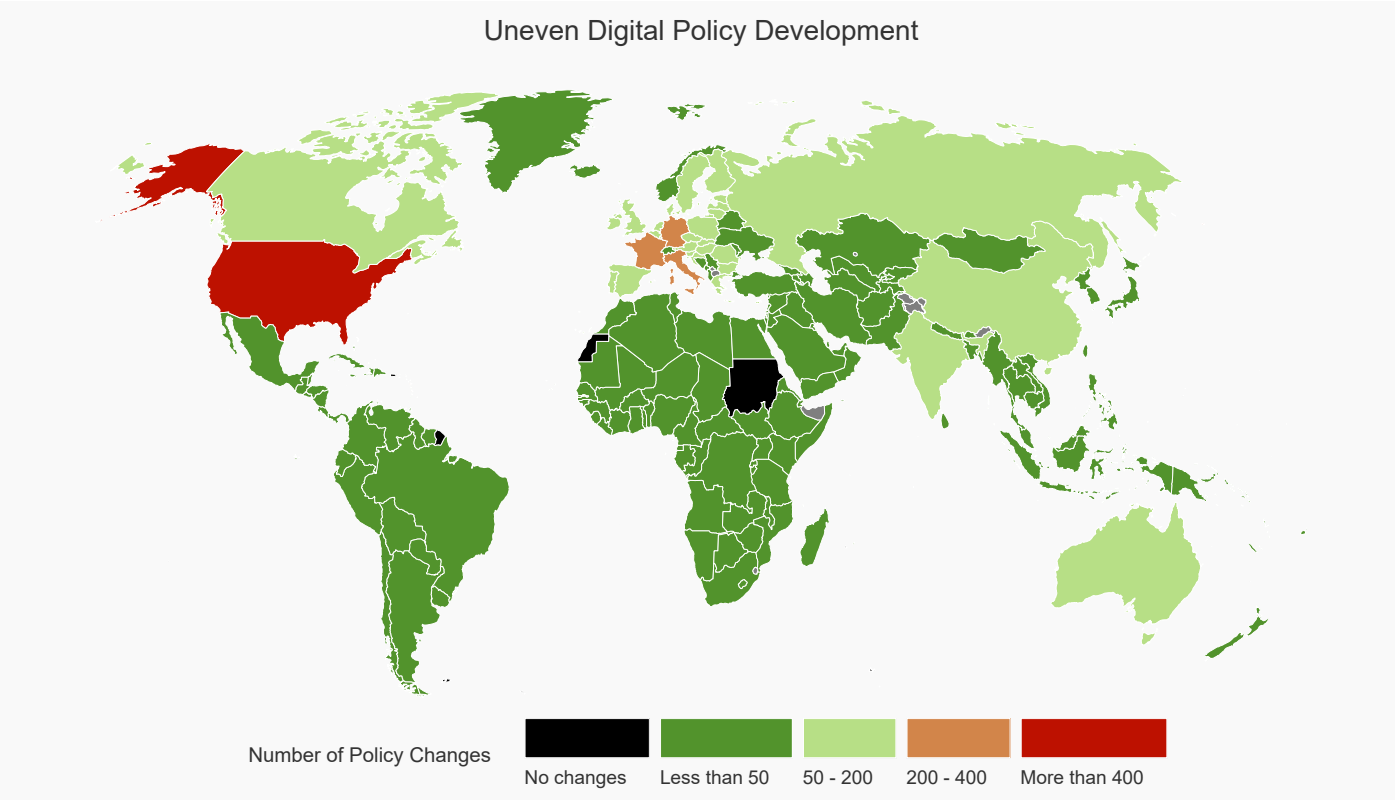
There is plenty of digital law and regulation in the pipeline



Source: Digital Policy Alert.

FIGURE 6

Continental European nations and the United States have introduced the most laws and regulations since 2020



Source: Digital Policy Alert, policy changes implemented or proposed from Q1 2020 to Q1 2022

Another 41.5% of DPA entries refer to state legal and regulatory initiatives that are in the pipeline, indicating that the Visible Hand will be felt more in the digital economy in the quarters and years ahead. Very few state initiatives announced since the beginning of 2020 have been rejected or revoked, suggesting that most announced state measures translate into governmental action.

Resort to law and regulation of the digital economy has been uneven across the globe, as shown in the map in Figure 6. Given the country focus of the DPA, unsurprisingly North America and Western Europe are revealed to have intervened often. The United States, with its federal system of government and active state governments, has made a total of 469 legal and regulatory announcements affecting the digital domain since the beginning of 2020. France, Germany, and Italy have each made between 215 and 242 announcements. China has been active too, making a total of 125 legal and regulatory announcements.

The countries that are the focus of the DPA's tracking (mentioned earlier) account for 92% of the entries. Still, a total of 55 jurisdictions have made 10 or more legal and regulatory announcements implicating the digital domain since the start of 2020. Policy developments may be uneven across the globe, but in recent years the Visible Hand's growing reach into the digital domain is a global phenomenon.

The Global Trade Alert inventory of commercial policy acts taken since the start of the Global Financial Crisis

The Global Trade Alert (GTA) provides an inventory of commercial policy intervention undertaken since November 2008 when, soon after the start of the Global Financial Crisis, the government leaders of the G20 declared that they would eschew certain types of protectionism. This inventory covers 61 different policy instruments, a minority of which overlap with the Digital Policy Alert. Those 61 policy instruments include classic border measures (such as import tariffs, anti-dumping duties, etc.) as well as behind-the-border measures (including subsidies, public procurement rules, localisation measures, etc.) and policies affecting foreign direct investments.[19]

A noteworthy difference between the GTA and the DPA is that the former classifies each entry according to whether its implementation would alter the relative treatment of the affected domestic and foreign commercial interests. An import tariff increase treats foreign suppliers worse than domestic rivals. This Relative Treatment Standard (RTS) is used to classify public policy intervention as either liberalising or harmful/discriminatory. The latter tends to reflect the very favouritism referred to in Chapter 2. The GTA team takes no position on the WTO legality of a public policy measure, applying the RTS instead.[20]

The GTA collects information on policy intervention primarily from the websites of national and sub-national public sector bodies. In jurisdictions where governments do not maintain or update websites with information on public policy intervention, information from consistent press reports is occasionally used to document state action. Over 97% of the 43,000-plus interventions in the GTA database were recorded using official sources. Like the DPA, entries in the GTA inventory are classified along a large number of dimensions that allow for searches by users. One indication of the widespread use of the GTA database is that at the end of May 2022 a total of 2,860 entries in the Google Scholar database use or mention the GTA inventory.

For the purposes of this report, information was extracted from the GTA inventory on public policy interventions relevant to a broad definition of the digital economy. Specifically, policy intervention relating to the following matters was extracted and aggregated into a dataset:

1 Policies affecting the cross-border trade in metals needed to produce information technology, such as lithium and the group of Rare Earth elements.

2 Policies affecting the manufacture of semiconductors and associated parts and components.

3 Policies affecting trade in the products covered by the existing Information Technology Agreements (ITAs) of the WTO.

4 Policies affecting trade in products recommended for inclusion in a revised ITA, as suggested by ITIF (2021).

5 Policies affecting the products on UNCTAD's list of information and communication technology goods (UNCTAD 2022).

6 Policies affecting a pre-specified list of sectors identified as being part of the digital economy.[21]

7 Other public policy interventions implemented since 1 January 2020 deemed relevant by the GTA team.

19 Technical Barriers to Trade (TBT) are not covered in the GTA monitoring initiative. Readers interested in such measures are referred to the World Trade Organization's ePing portal.

20 For an account of the GTA's evidence collection methodology and its underlying logic, see Evenett (2019) and the GTA Handbook.

21 Specifically, 33 three-digit sector codes in version 2.1 of the United Nations Central Product Classification (CPC) were identified. The list of sector codes employed is available upon request.

TABLE 4

There is considerable overlap in the nine sources that together comprise the GTA Digital Economy dataset

Source	Number of recorded interventions in our Digital Economy dataset	Number of recorded interventions found only in this source	Percent of this source's recorded interventions not found in another source
Sectors identified by GTA Team	7066	2889	40.9%
Interventions identified by GTA Monitoring Team	505	95	18.8%
ITA Original	5213	20	0.4%
ITA Expansion	5537	201	3.6%
ITA proposed by ITIF (2021)	8955	2453	27.4%
UNCTAD (2022)	3627	1	0.0%
Rare Earth HS Codes	315	31	9.8%
Semiconductors HS Codes	6412	375	5.8%
Lithium HS Codes	285	18	6.3%

In effect, information was sourced on nine matters (lithium and Rare Earths being treated separately) to create a database of 13,472 distinct commercial policy interventions taken by governments around the world since November 2008. Just over 2,600 of those policy interventions liberalised some form of cross-border commerce; the rest were discriminatory. Of the discriminatory measures, a total of 8,354 involved some form of subsidy (state transfer of resources to a local firm or firms).

An assessment was also made of the degree of overlap between the nine sources used to assemble what is referred to here as the GTA Digital Economy dataset. The statistics presented in Table 4 imply that just under 55% of the 13,472 policy interventions recorded in this dataset were found in two or more of the sources consulted.

Checks were performed on this database to ensure that no policy interventions that were patently unrelated to digital economy were included. Further robustness checks were performance on the qualitative findings reported in this and the next two chapters of the report. Specifically, the information on public policy intervention deemed relevant by the GTA team and in the proposed extension of the ITA in ITIF (2021) were dropped in turn from the dataset. No major changes in qualitative findings resulted.

Figure 7 shows the build-up over time of traditional commercial policy intervention affecting the digital economy. Specifically, the chart shows the total number of liberalising and harmful policy interventions in effect at the end of each year since 2009. At the end of 2019, the year before any COVID-19-related measures were taken, a total of 1,576 trade and investment reforms affecting the digital economy were still in force. That's the good news.

The bad news is that that total is dwarfed by the 5,857 non-subsidy-related commercial policy interventions in effect at the end of 2019 that harmed foreign interests. The ratio of the latter total to the former is 3.7 to 1 and exceeds the comparable ratio of 1.7 found for the entire GTA dataset. On this metric, from the onset of the Global Financial Crisis to the declaration of the COVID-19 pandemic the digital economy witnessed relatively more discriminatory trade and investment policy intervention than world goods trade overall.

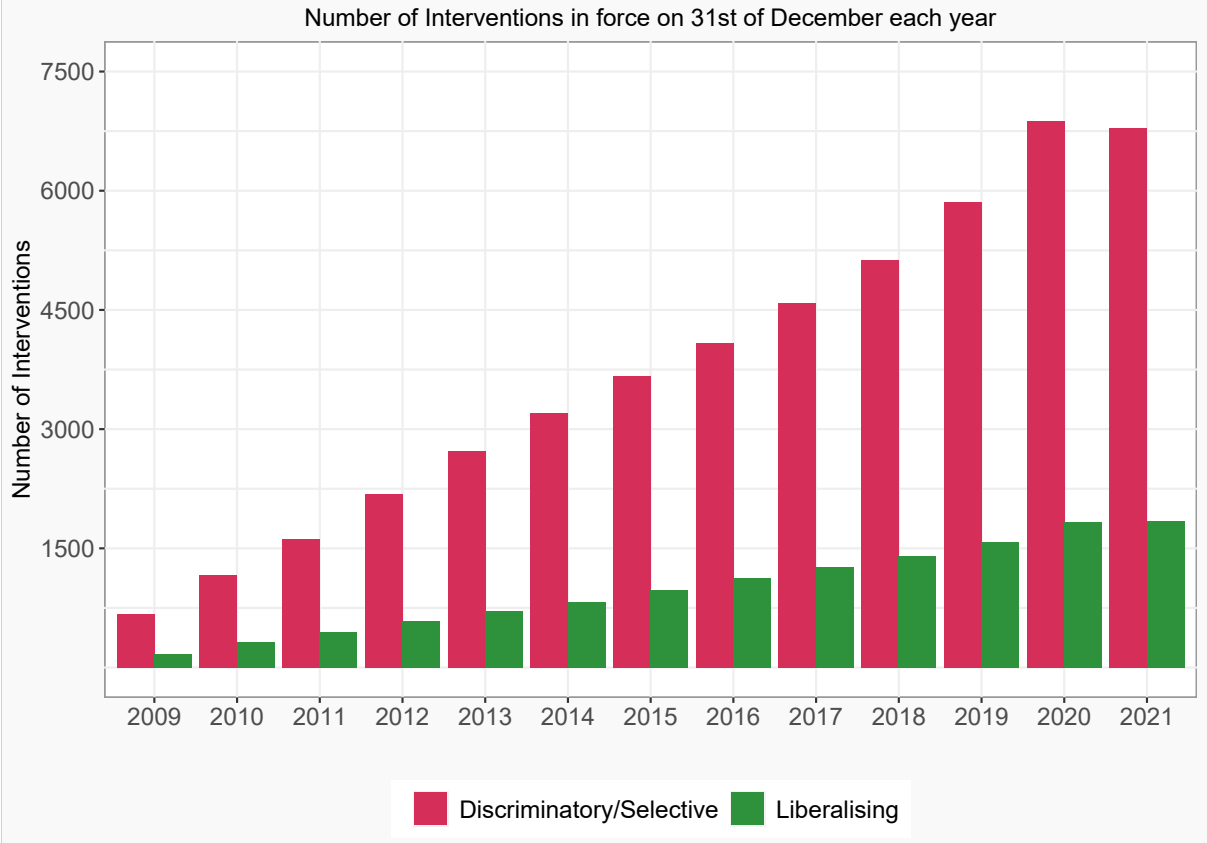
By the end of 2021, the total number of discriminatory measures in force had reached 6,791, just 1% below the peak reached in 2020. The lower total in 2021 needs to be interpreted carefully, as it does not include relevant subsidies received by publicly listed Chinese firms. Information on those subsidies is being published now and, once included, would almost certainly lift the 2021 total above that for 2020.

Are there differences between governments in the form and frequency of non-subsidy support for the digital economy? To avoid pandemic-era public policy responses clouding the comparison, the following discussion applies to policies in force on 31 December 2019. The following six metrics were computed for different nations or groups of nations:

- The share of all policy interventions implicating the digital economy that treat foreign commercial interests worse than domestic interests (harmful/ discriminatory measures).
- The share of harmful policy interventions that take the form of some type of subsidy.
- The share of harmful policy interventions that affect one service sector (sector-specific).
- The share of harmful policy interventions that affect a single trading partner (a necessary condition for policy intervention to "target" a particular foreign nation).
- The share of harmful policy interventions that are firm-specific.
- The share of harmful policy interventions that have a specified revocation or expiry date (time-limited).

FIGURE 7

A decade of favouritism towards local firms engaged in the digital economy



Figures 8-10 involve comparisons across different nations and groups of nations represented in so-called spider plots, each axis of which represents one of the six metrics above.

Figure 8 reveals that, on some of the metrics outlined above, Chinese, EU, and US policy towards the digital economy on the eve of the COVID-19 pandemic was relatively similar. Over 80% of all three jurisdictions' public policy intervention favoured local firms at the expense of companies located abroad. Over 70% of all three jurisdictions' harmful policy interventions were firm-specific; over 80% of harmful interventions were in the form of subsidies. Few measures appear to have targeted single trading partners. One difference is that Chinese policy intervention favoured local service sector firms 14% of the time, the American measures 28% of the time, and those by the European Union 42% of the time.

Differences at the end of 2019 in policy stance towards the digital economy can be found between the higher and lower per capita income members of the G20 (see Figure 9). Taken together, over 93% of the public policy intervention of G7 members and Australia favoured local firms—whereas the comparable percentage for the developing country members of the G20 was 72%. The higher per capita income members of the G20 have discriminatory policy mixes that were more firm-specific, more likely to take the form of subsidies, and more likely to affect business in a service sector.

A comparison of the policy stance across three groups of developing countries is presented in Figure 10. The African Union group and the African, Caribbean, and Pacific (ACP) group of developing countries had similar percentages of harmful policy intervention (around 55% of the total number of implemented measures affecting the digital economy). The comparable percentage for the Least Developed Country (LDC) group was lower at 47%. Smaller shares of LDC favouritism took the form of subsidies, was firm-specific, and implicated service sectors.

In the two chapters that follow, the GTA measures affecting the digital economy are examined further. At this stage, however, the quantum of policy intervention affecting the digital economy is apparent—it has clearly grown steadily since the Global Financial Crisis. Moreover, the preponderance of that intervention favours local firms, suggesting that traditional trade policy considerations about the level commercial playing field (or, more pertinently, its absence) apply with considerable force to the digital economy. Furthermore, there are discernible similarities and differences across WTO members in their policy stance towards the digital economy, which are likely to influence the approach taken by their trade diplomats when negotiating these matters.

FIGURE 8

Perhaps surprisingly, similarities exist in policy mix of China, the EU, and the US towards the digital economy

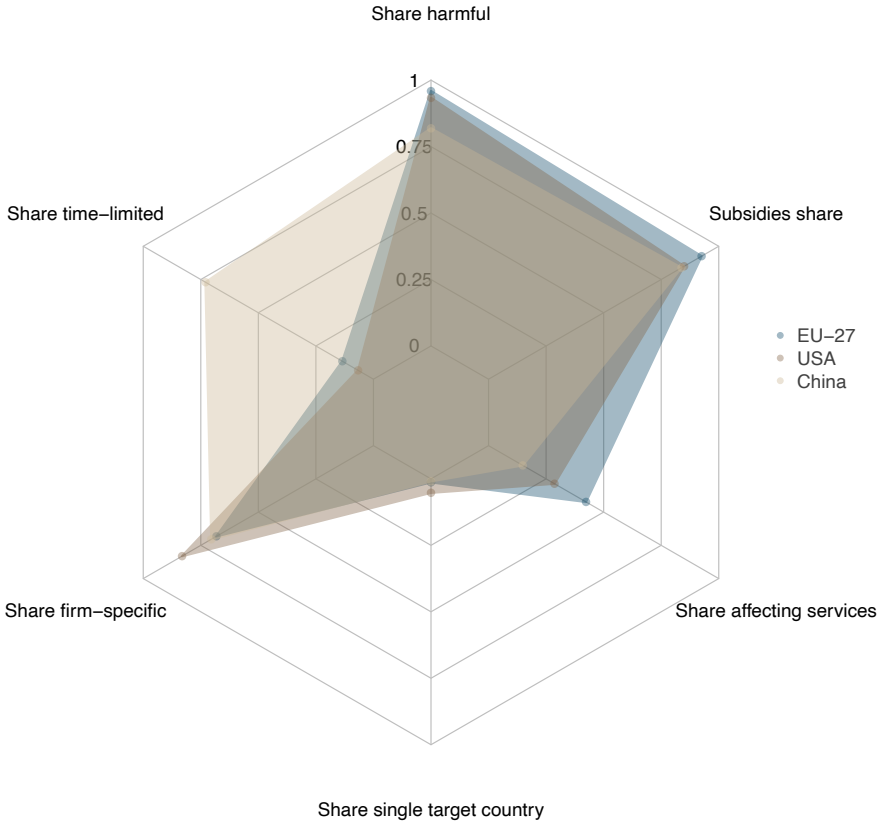


FIGURE 9

A split along per capita income lines exists in the G20 when it comes to policies towards the digital economy

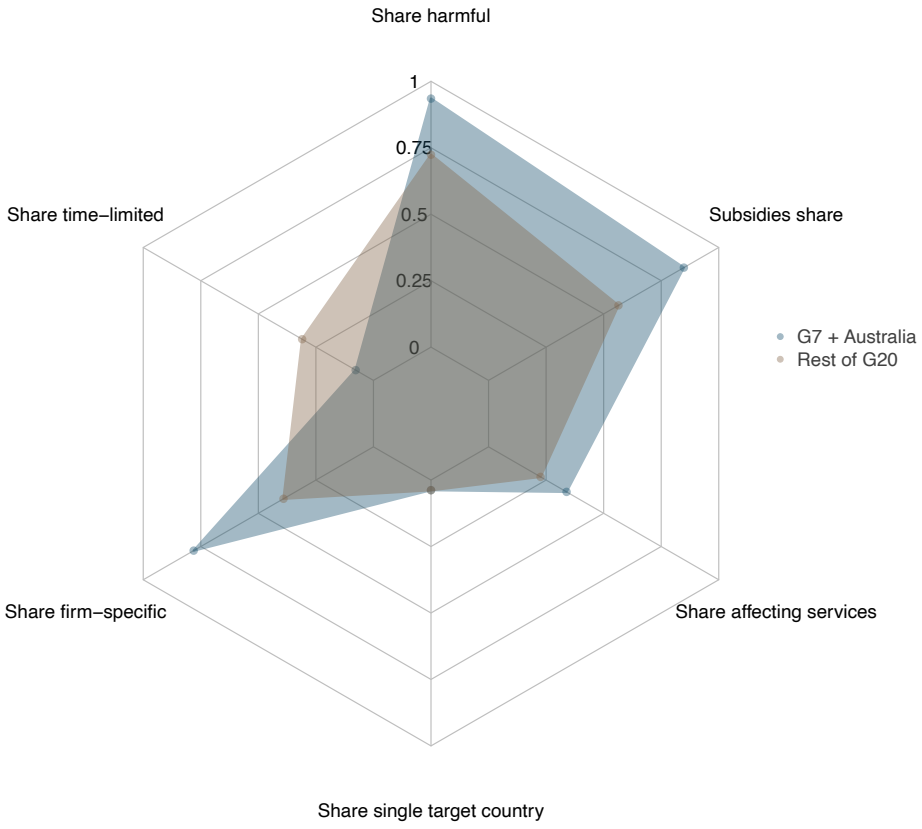


FIGURE 10

Members of the LDC group offer fewer subsidies to firms in the digital economy and target service sector activities less often

Concluding remarks

What do the findings in this chapter imply for the degree of fragmentation of the digital economy? Some care is needed here. The evidence from the DPA reveals an intensification over time in government legal and regulatory action in the digital economy. However, that evidence refers to the quantum of intervention and not to the degree of regulatory homogeneity or divergence (for the latter, see Chapters 6 to 8 of this report). The DPA evidence presented here, therefore, does not immediately speak to the matter of fragmentation—but it does make the case that the Visible Hand has become more active over time and the latter is a pre-requisite for fragmentation.

In contrast, because public policy intervention is classified as liberalising or discriminatory based on the Relative Treatment Standard, the evidence presented here from the GTA inventory suggests there is a growing risk of fragmentation. Care is needed here to differentiate between discrimination that decouples national markets from global markets by erecting trade barriers and policy intervention that favours local firms by awarding them subsidies. Both types of intervention contributed to the totals reported in this chapter, and arguably the former are prima facie sources of fragmentation of the digital economy. It is precisely because the distinction between these two forms of discrimination is important that the next two chapters are devoted to examining the evidence on each in turn.

SECTION ONE
FRAGMENTATION AND FAVOURITISM IN THE DIGITAL ECONOMY

CHAPTER 4
TRADITIONAL TRADE POLICY DISCRIMINATION IS ALIVE AND KICKING

Although much of the discussion on law and regulation affecting the digital economy highlights rules covering data, privacy, taxation matters, or competition law enforcement, traditional commercial policy instruments should not be overlooked. The purpose of this chapter is to summarise and assess the evidence on trade and investment barriers erected by governments in sectors associated with the digital economy.

The evidence presented in this chapter draws upon records of policy intervention in the GTA database that bear upon some facet of the digital economy. The economic activities taken to be part of the digital economy as well as the policy interventions extracted from the GTA database were described in Chapter 3 and in the interests of space are not repeated here. A total of 2,517 policy interventions that discriminate against foreign commercial interests in the digital economy that did not take the form of a subsidy were found in the GTA database. This chapter describes the form, growth of, sectoral incidence, and governments responsible for these 2,517 policy interventions. The chapter concludes with a comparison across the G20 in their resort to trade and investment barriers in the digital economy.

Examples of the types of trade and investment barriers considered in this chapter include:

1 Traditional taxes on imports (import tariffs).

2 Public procurement measures that reserve state contracts for local firms or that favour local firms in bidding processes.

3 Certain measures that impose restrictions on the cross-border operations of firms, including measures that limit the cross-border transfer and use of data.

4 Measures that limit or condition the entry of foreign direct investors or that involve conditions on their operations after entry that are not imposed on local firms.

These matters have become the bread and butter of inter-governmental negotiations on commercial policy and stand apart from the more recent concerns about regulatory fragmentation. Indeed, it may be useful to refer to the discriminatory policy interventions examined in this chapter as traditional ways in which world markets can fragment.

Resort to trade barriers has grown over time and accelerated since 2017

Figure 11 reports the annual totals for the number of new trade and investment barriers introduced in digital economy sectors since 2009. To avoid any single year skewing the interpretation of the evidence (notice the spike of intervention in 2020), a three-year moving average is plotted as well.

Figure 11 reveals that resort to trade and investment barriers has grown steadily over time. In 2009 and 2010 just over 150 new barriers were introduced each year. More recently, the annual average number of new barriers introduced has risen to 250. While the annual average number of new barriers has grown over time, the resort to discrimination against foreign digital firms accelerated after 2017 (and before the COVID-19 pandemic hit).

What form did this discrimination take? Figure 12 answers that question—highlighting the contribution of higher taxes on imports, restrictive public procurement measures, localisation measures, and measures affecting foreign direct investments. Despite two accords at the WTO to eliminate import tariffs on information technology goods, steps to increase taxes on imports associated with the digital economy are the most prevalent form of trade barrier witnessed since 2009. Import tariff increases account for 46% of the trade and investment barriers affecting the digital sectors of national economies. Having written that, the annual totals of new tariff increases fall off from 2018, suggesting that the mix of trade barriers is shifting.

FIGURE 11

A steady increase in discrimination against foreign firms operating in digital sectors

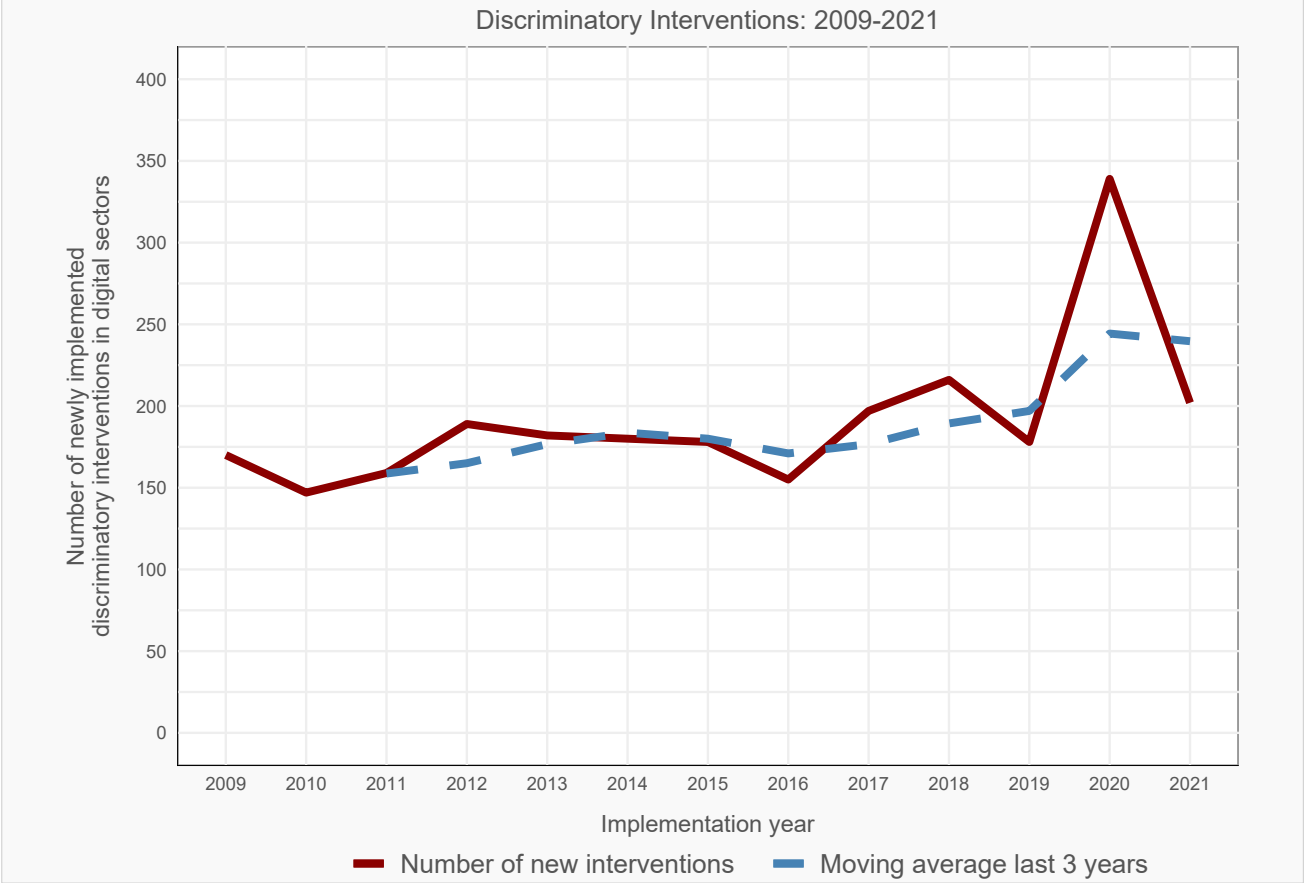


FIGURE 12

Despite the Information Technology Agreements, import tariffs remain the most commonly used form of discrimination against foreign firms

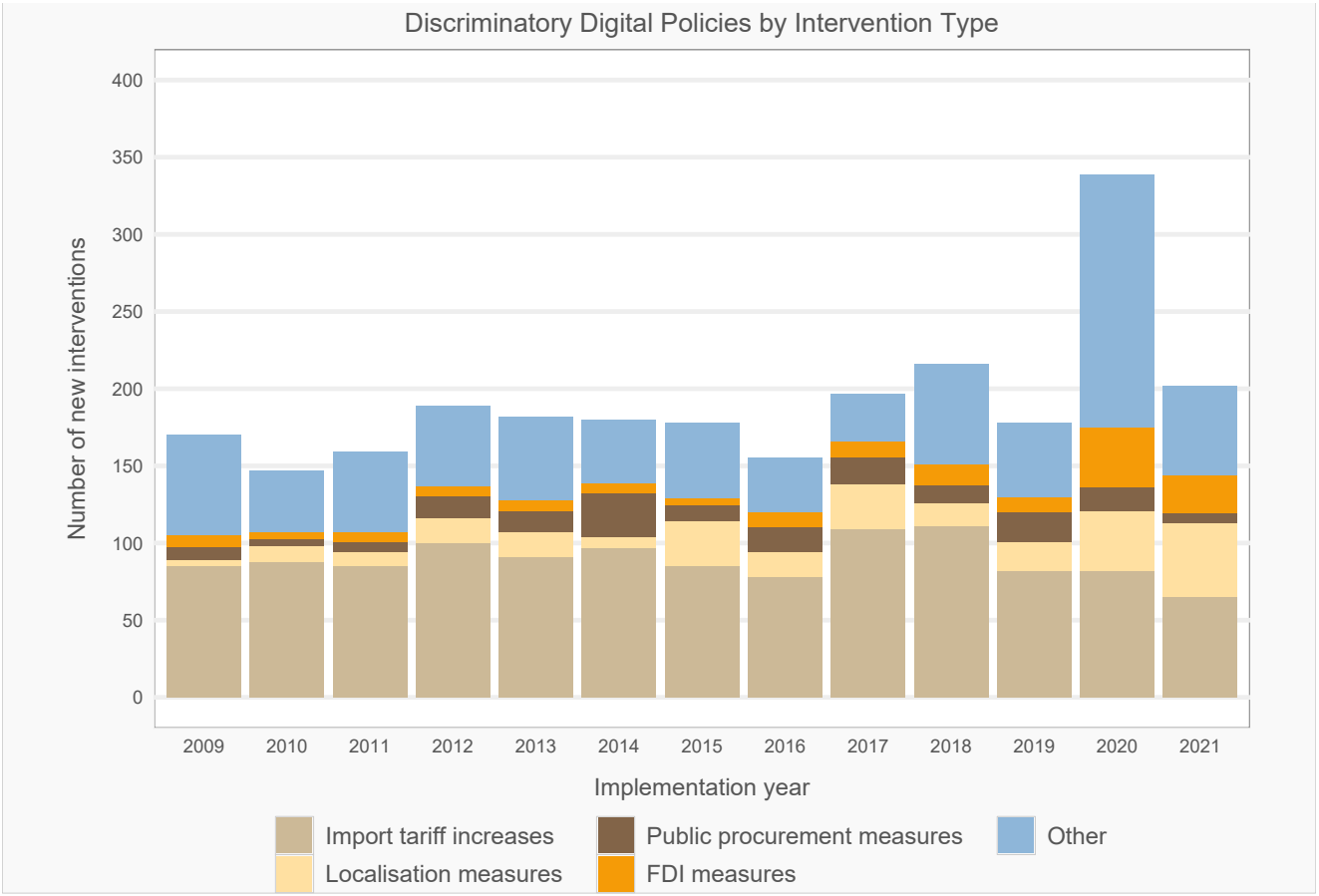


TABLE 5

Nearly 950 import tariff increases imposed since the Global Financial Crisis were still in force on 1 June 2022, most in semiconductors and products proposed for trade reform

Source	Number of import tariff increases in force
Sectors identified by GTA Team	425
Interventions identified by GTA Monitoring Team	18
ITA Original	545
ITA Expansion	578
ITA proposed by ITIF (2021)	834
UNCTAD (2022)	425
Rare Earth HS Codes	35
Semiconductors HS Codes	650
Lithium HS Codes	30
GTA Digital Economy Dataset	*941*

As of 1 June 2022 a total of 941 import tariff increases imposed on goods associated with the digital economy remain in force. Table 5 provides a breakdown of the import tariff increases associated with each of the nine sources of information used to assemble the GTA Digital Economy dataset. Of the 941, 834 relate to goods that are candidates for further expansion of the ITA. A total of 650 of these import tariff increases are found in the semiconductor sector. Very few are found to affect trade in metals critical to the digital economy, such as lithium and Rare Earths.

Figure 12 reveals that the number of unilateral steps taken by governments to direct public contracts to local firms increased in 2019 and 2020. So did the number of measures that discriminated against foreign direct investors in 2020 and 2021. New localisation measures have been a recurring feature of the digital economy trade policy landscape over the past decade—with higher numbers of such fragmentary measures implemented in 2015, 2017, 2020, and 2021. Together, these three trade and investment barriers accounted for 23% of those recorded.

Uneven sectoral incidence and resort to trade and investment barriers

As the sectors affected by trade and investment measures recorded in the GTA database are tagged, it is possible to examine which sectors were hit the most often by discriminatory trade and investment measures. Interestingly, as shown in Figure 13, five sectors together account for over half of the trade and investment barriers imposed on the digital economy since the Global Financial Crisis. They are:

- The sector including monitors and projectors (CPC code 473), hit 383 times.
- The sector including remote communication technologies (CPC code 482), hit 380 times.
- The sector including telephones and apparatus for transmitting data (CPC code 472), hit 377 times.
- The sector including computers and parts thereof (CPC code 452), hit 345 times.
- The sector including semiconductor components (CPC code 471), hit 294 times.

Moreover, six jurisdictions—a statement that treats the European Union as a single customs territory—are responsible for over half of the trade and investment measures affecting the digital economy recorded in the GTA database. China's global share is higher in the earlier part of the last decade and then tails off (see Figure 14). The EU's share falls off after 2018. The global shares of trade and investment barriers imposed on the digital economy imposed by Brazil, India, and the United States rise from 2019 on. Russia's global share varies since 2009 but is unusually large in 2014.

There is also significant variation across the G20 members in their resort to trade and investment barriers in the digital economy, as Figure 15 reveals. The policy mix of Australia and Saudi Arabia is skewed towards localisation measures. In contrast, Russia and South Africa make considerable use of favouritism in public procurement towards local bidders in digital economy sectors; Canada, the United States, and India do so to a lesser degree. The discriminatory policy mix in the EU and Japan is weighed towards controls and conditions on foreign direct investors—this is also the case for Canada and Indonesia, but to a lesser degree.

FIGURE 13

Over half of trade discrimination is concentrated in five economic sectors

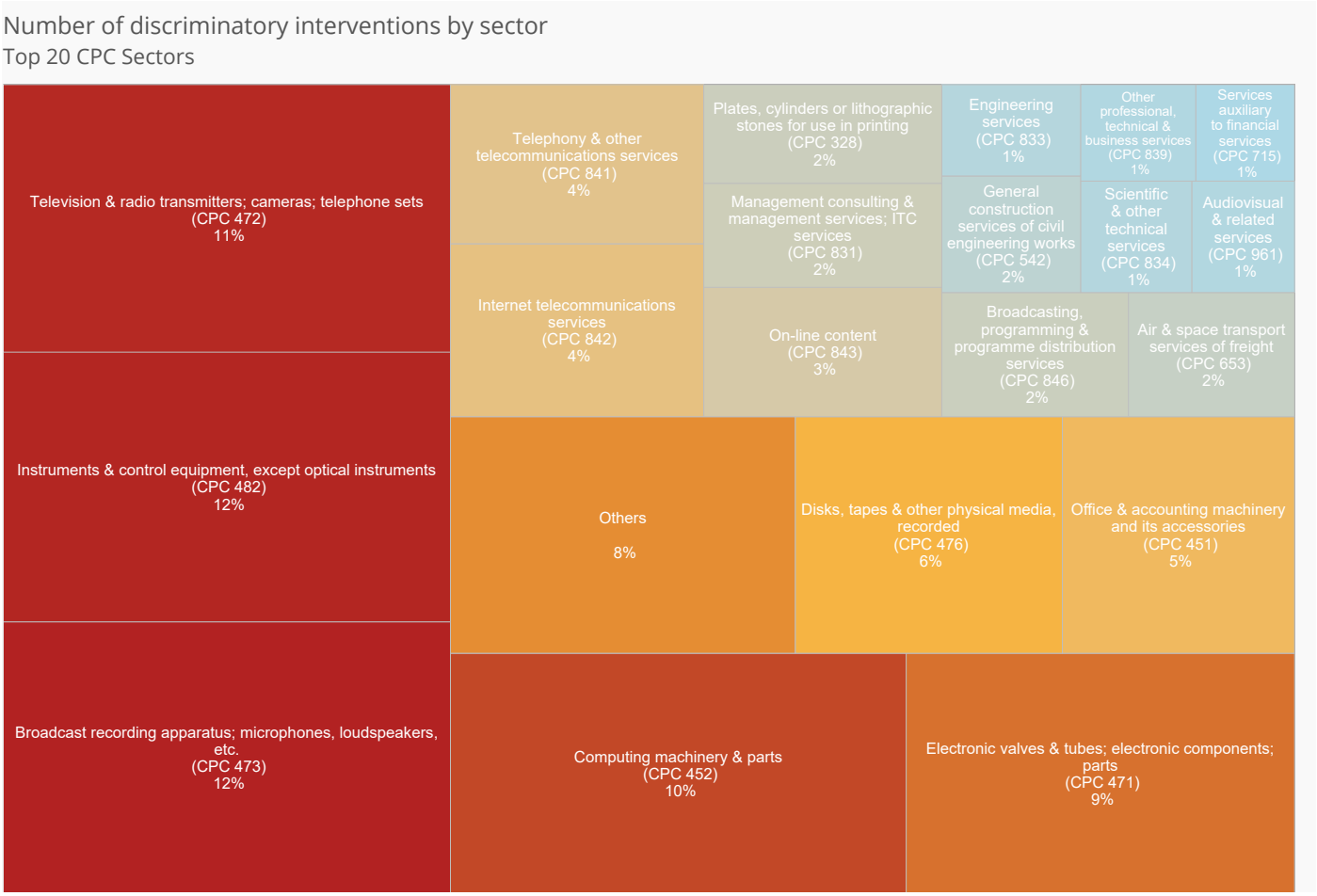


FIGURE 14

Six WTO members are responsible for half of trade discrimination favouring local digital firms

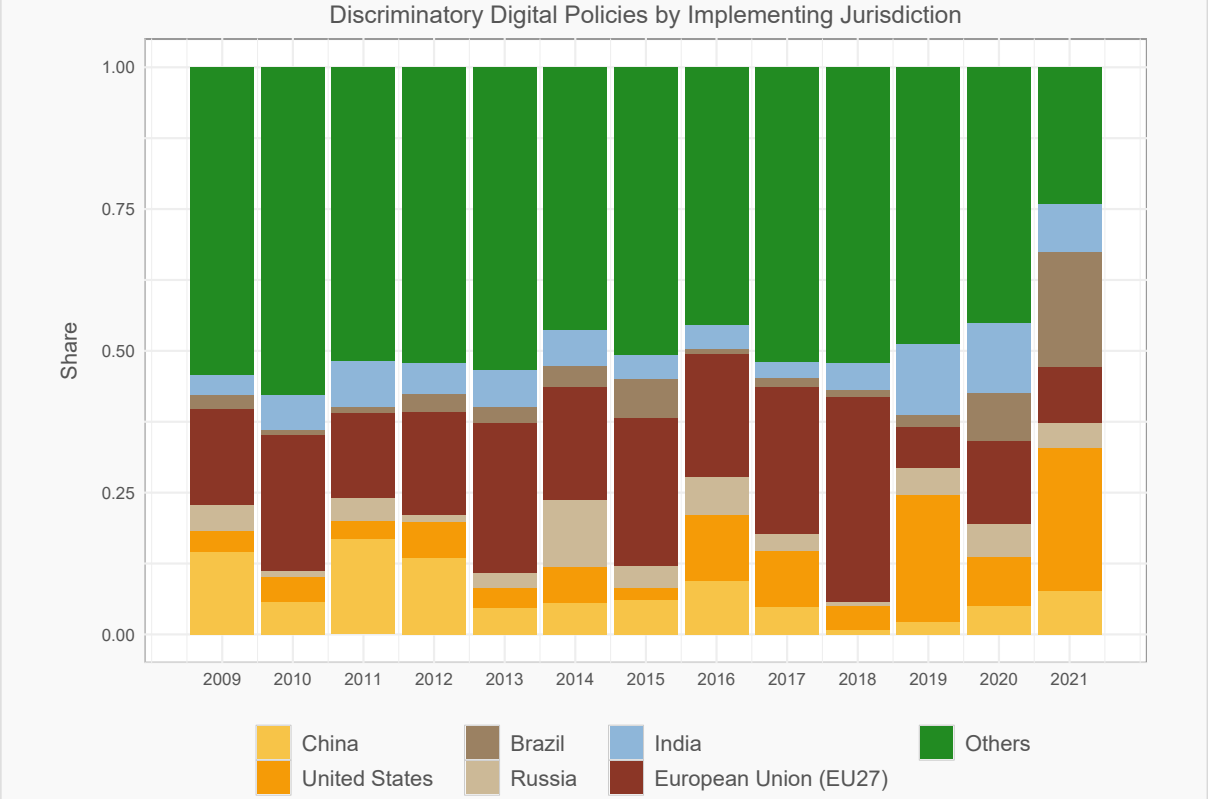


FIGURE 15

G20 members differ markedly in how they promote and protect their digital sectors

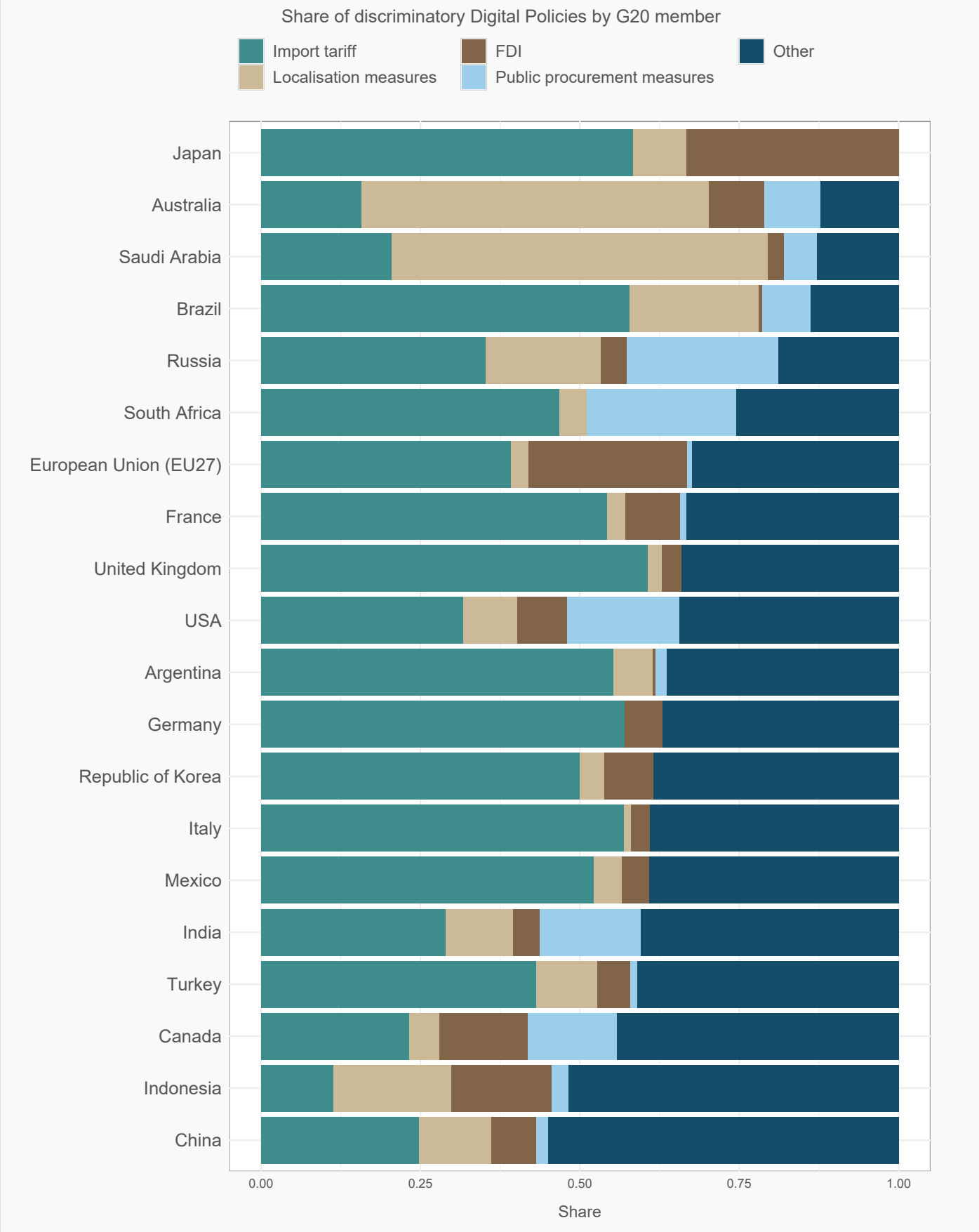
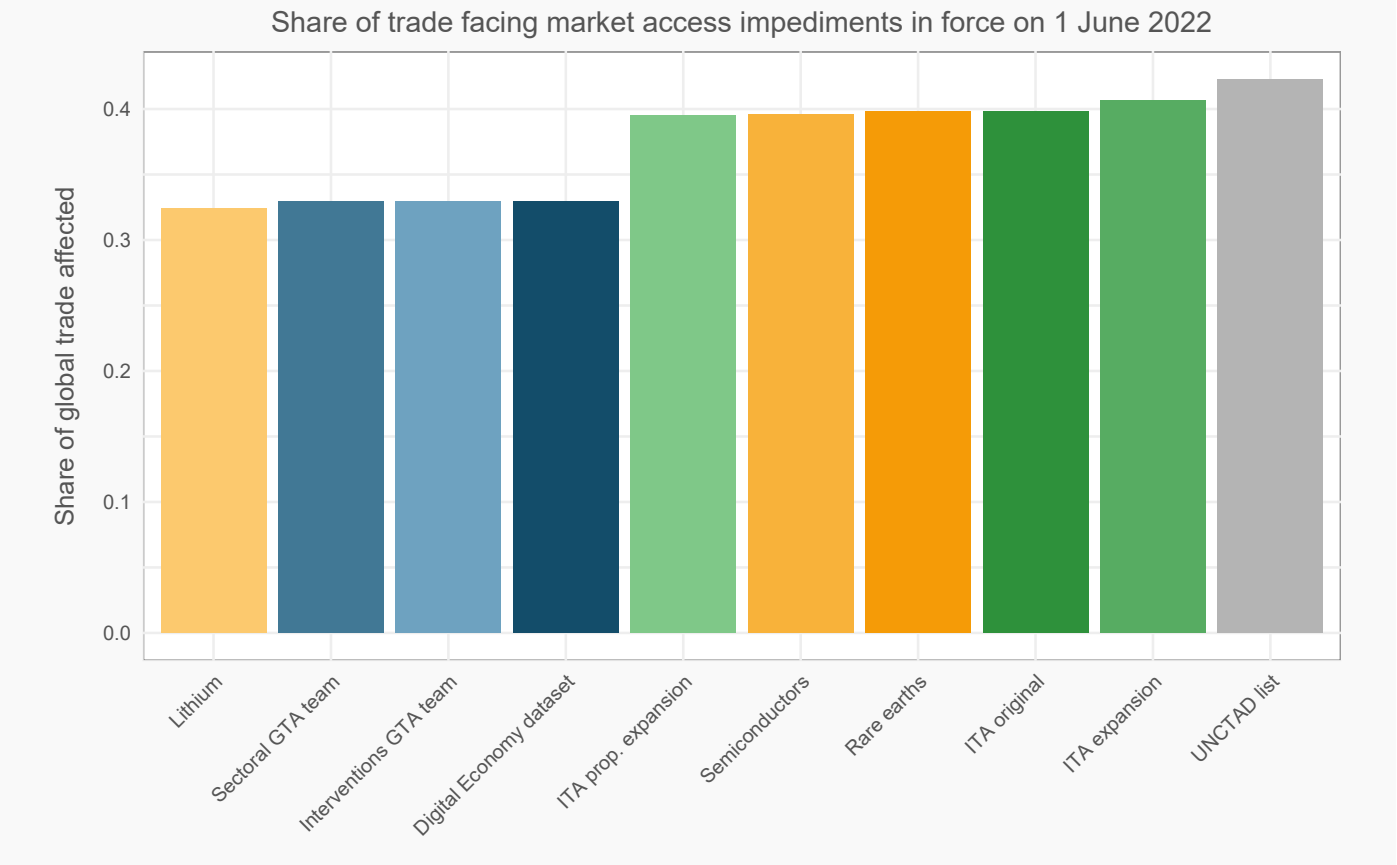


FIGURE 16

More market access impediments are found in downstream digital goods sectors



Market access impediments found more in "digital goods" sectors

Until now, the evidence presented in this chapter has referred to various metrics based on counts of discriminatory policy intervention. What about the value of cross-border commerce potentially covered by trade barriers affecting the goods associated with the digital economy? Using the most fine-grained[22] international trade data available in the UN COMTRADE database, it was possible to calculate the shares of world trade affected by discriminatory trade barriers in force on 1 June 2022 for each of the nine sources used to assemble the GTA Digital Economy dataset and for the whole GTA dataset.[23]

Overall, a third (32.9%) of global trade in goods relevant to the digital economy faced a market access impediment on 1 June 2022 (see Figure 16). The same metric for global trade in all goods is comparable, a finding that may be surprising given the emphasis many governments put on promoting "digital growth". For the metals used to produce hardware the percentage of trade flows worldwide facing market access impediments are in the range of 32-39%.

Down the supply chain—that is, when considering semiconductors, the information and communication technologies on the UNCTAD list, and the products associated with the current and potential future ITA—the percentages of digital products facing market access impediments are higher, in the range of 39.5% to 42.2%. These percentages would likely have been even higher had the WTO ITA agreements not been signed and implemented. Even so, these findings imply there is a significant market access agenda that trade negotiators can pursue.

Concluding remarks

Cross-border commerce in the sectors associated with the digital economy is hampered by a range of trade and investment barriers. Since G20 leaders met in Washington, DC and declared that they would eschew protection almost 5,000 days ago, every other day a trade or investment restriction has been implemented somewhere around the world that fragments markets. If anything, resort to trade discrimination has accelerated over the past five

22 That is, at the six-digit level of disaggregation.

23 These calculations were made taking the pattern of international trade flows in 2019 as the base year.

years. Moreover, significant percentages of global trade in products associated with the digital economy currently face market access impediments.

It is no surprise, then, that trade diplomats and analysts frequently make reference to digital trade barriers and have sought to negotiate some of them away in regional trade agreements and in the ongoing Joint Statement Initiative negotiation at the WTO.

CHAPTER 5
TODAY'S SUBSIDY RACES FOLLOW A DECADE-LONG BUILD-UP OF STATE FINANCIAL SUPPORT

One common way governments support digital economy firms is by awarding them corporate subsidies or by granting them or their customers tax breaks. Subsidies can be awarded all the way along the supply chain in digital economy sectors from upstream activities (e.g. the establishing or expanding of mines to extract Rare Earths) to midstream (e.g. research and development incentives for the design of new IT hardware and software) through to the downstream purchases of digital technologies.

Policymakers may take the view that subsidies can be justified because of the positive knock-on effects on national economies, arguing that digital technologies are a general-purpose technology whose adoption can have far-reaching benefits. However, saying this does not make it so. Moreover, trading partners may take a different view—arguing that subsidies to local firms undermine previously negotiated market access. Worse, subsidy races can arise—as is happening now in the semiconductor industry. The risk is that the gains from subsidies are pocketed by shareholders and employees with little payoff to society and for the taxpayers who fund them.

As noted in Chapter 3, information on 8,354 subsidies and subsidy schemes awarded to firms in sectors associated with the digital economy were found in the Global Trade Alert database. The purpose of this chapter is to examine the trends in the award and incidence of corporate subsidies in the digital domain. This assessment should be seen in the light of an ongoing and often fractious debate between governments about the resort to corporate subsidies and their apparent consequences, such as the development of excess capacity, import surges and dumping of products, and lower than expected levels of profitability.

The analysis presented here builds upon and augments the extensive information collection initiative conducted by the GTA team last year on the subsidies awarded by public bodies in China, the European Union, and the United States (Evenett and Fritz 2021b). It should be noted, however, that this chapter is global in scope and, as will become evident, other governments have been resorting to subsidies as well.

Here, corporate subsidies are defined traditionally—they amount to the transfer of state resources in a selective manner to firms engaged in commercial activity. Those firms may be state-owned or state-controlled as well as privately owned. Subsidies come in at least 16 distinct types (see the list in chapter 3 of Evenett and Fritz 2021b). Some subsidies involve direct financial payments, others in-kind benefits, and yet others involve tax breaks and the like.

One broad class of subsidies are those paid to local firms that strengthen their competitive position in domestic or home markets. Another class of subsidies strengthens competitive positions in foreign markets. For example, a corporate subsidy recipient may receive state-provided financial support when exporting or when acquiring, establishing, or operating a foreign subsidiary.

Subsidy awards in 2019 occurred 70% more often than in 2009

Since the onset of the Global Financial Crisis there has been a steady increase in the number of corporate subsidies awarded to firms operating in digital economy sectors, as Figure 17 shows. In 2009, a total of 416 new subsidy awards or subsidy schemes were introduced. By 2019, the year before the COVID-19 pandemic took hold, that total had risen to 711. Approximately 70% more new subsidies were awarded in 2019 than in 2009. Of course, many more subsidies were granted in 2020 as governments took steps to prop up firms that were adversely affected by lockdowns, supply chain distributions, and sales losses. That year saw 1,303 new corporate subsidies awarded.[24]

24 As data on Chinese corporate subsidies is available with a lag, the total number of recorded new subsidy awards for 2021 is artificially depressed.

FIGURE 17

A decade-long increase in state support for firms operating in the digital economy

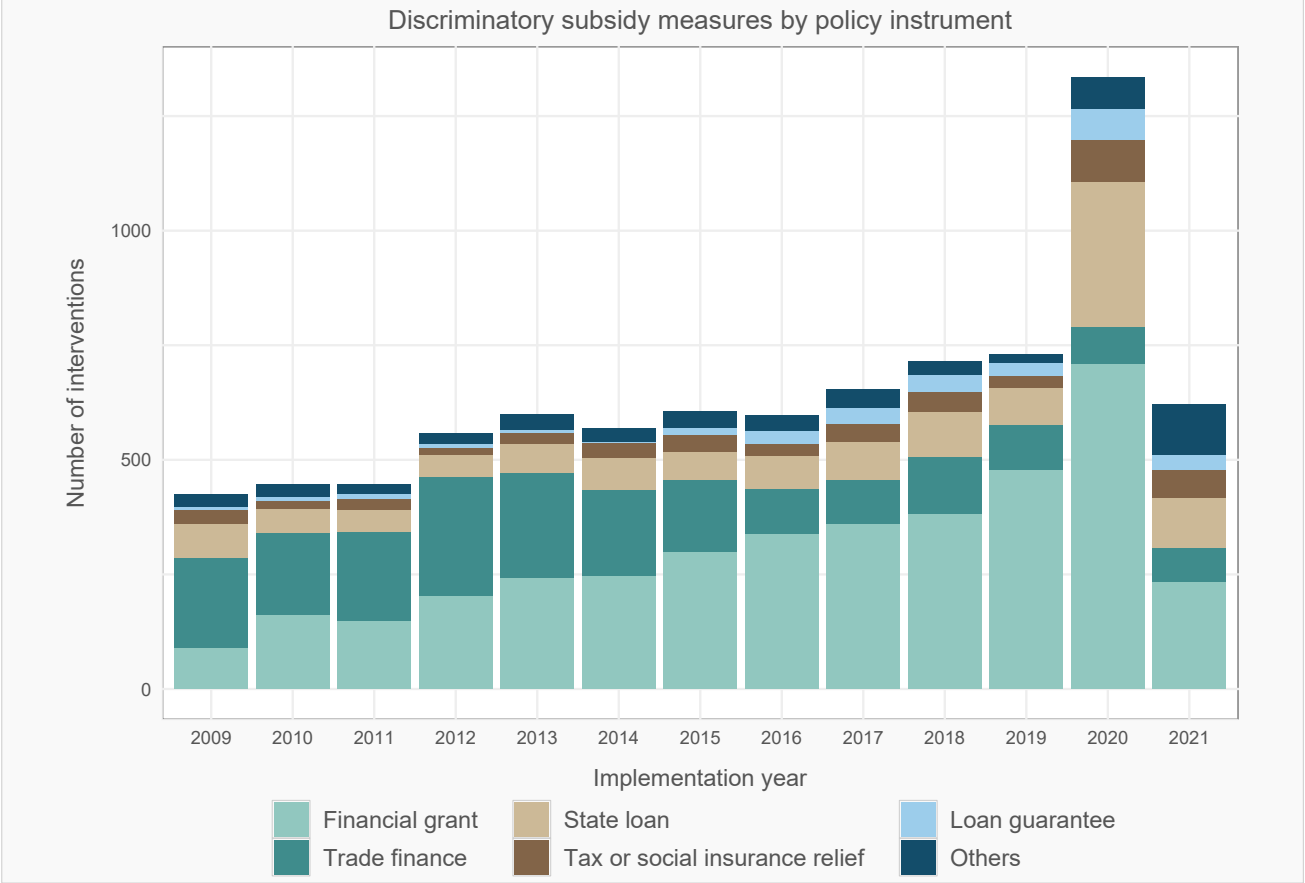
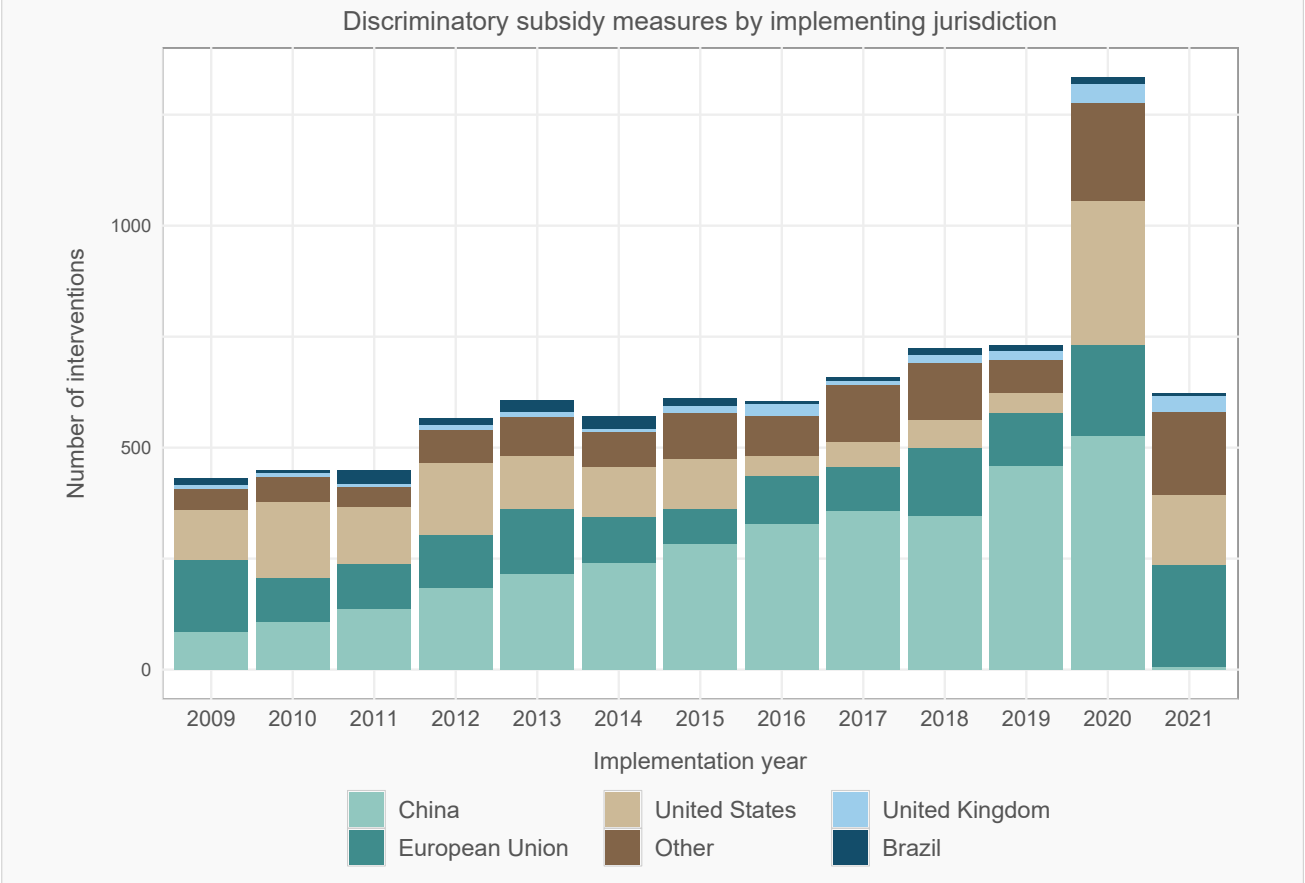


FIGURE 18

The three biggest trading economies account for the lion's share of subsidies



The most common form of subsidy awarded to companies in digital economy sectors are financial grants. Forty-six percent of the recorded subsidies took the form of a cash payment to firms. Moreover, the number of financial grants grew year on year. Governments also provided trade finance measures to strengthen the competitiveness of firms in foreign markets. Since the onset of the Global Financial Crisis, firms in the digital economy sectors have received trade finance support on 1,972 occasions. The third most frequent form of support were state loans—advanced to firms 1,204 times since November 2008. These findings highlight the variety of ways states transfer resources to firms operating in sectors associated with the digital economy.

China, the European Union, and the United States account for 79% of all of the subsidy schemes and subsidy awards to the digital economy (see Figure 18). Note the number of new subsidies awarded by Chinese public bodies rose steadily as the years went by. In contrast, looking back over the past decade, US agencies provided fewer subsidies in later years—although that was to change markedly once COVID-19 hit. The European Union provided a regular stream of subsidies over time and a jump in the number of new subsidies was detected in 2021. All in all, resort to subsidies varies across the major trading economies and over time.

Subsidies appear to be a substitute for explicit trade and investment discrimination

The sectoral incidence of subsidies in the digital economy is revealing. Three sectors stand out in terms of receipt of state largesse (see the box chart in Figure 19); together, they account for approximately 30% of all subsidy awards since November 2008. Producers of computers and associated parts and components (CPC code 452) received subsidies a total of 1,289 times. Similarly, producers of semiconductors and associated parts received 1,027 subsidies (CPC code 471), and firms involved in manufacturing and designing remote communication technologies benefited from subsidy awards on 920 occasions (CPC code 482).

FIGURE 19

Three sectors alone account for 30% of all subsidies granted

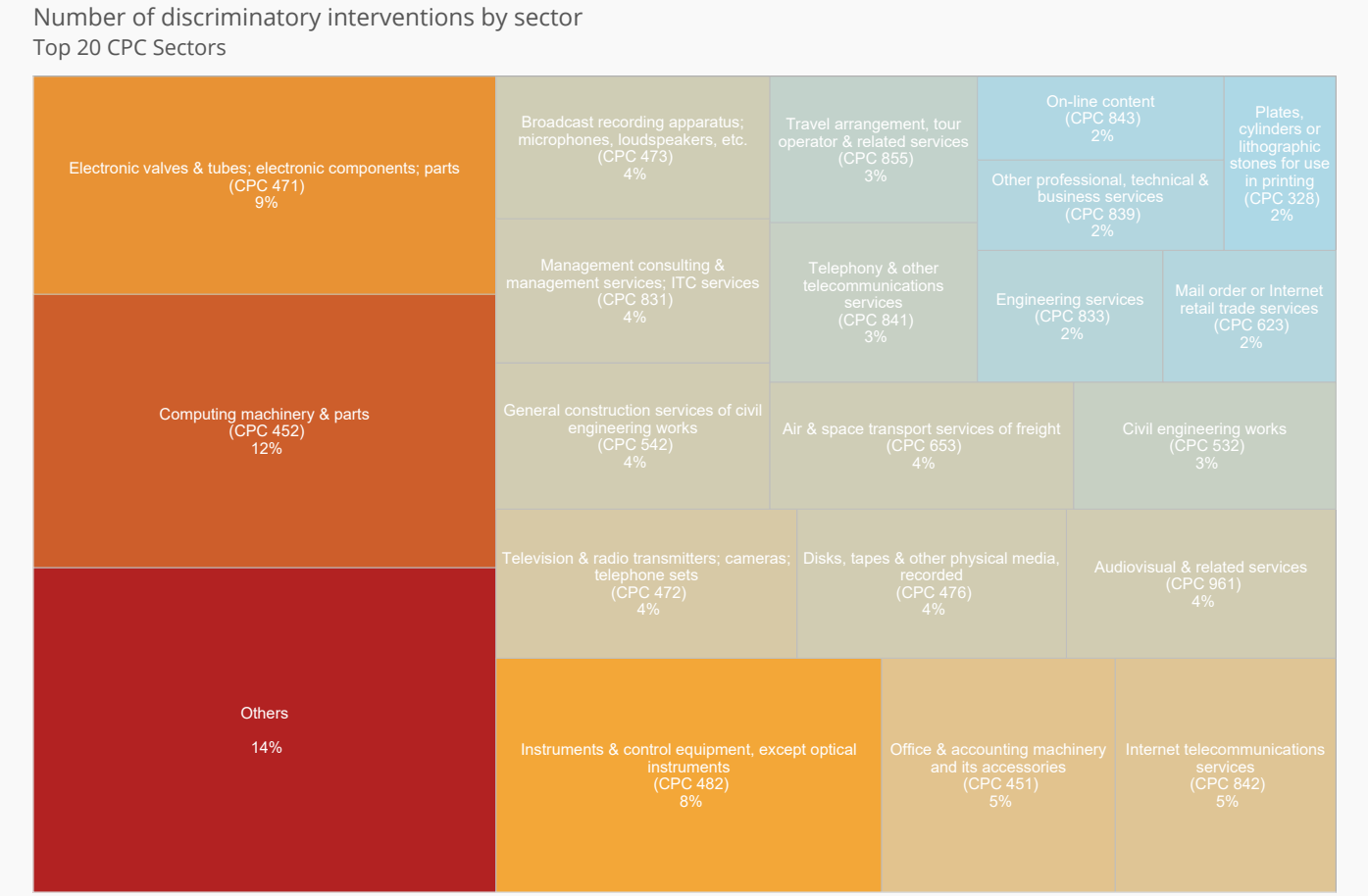
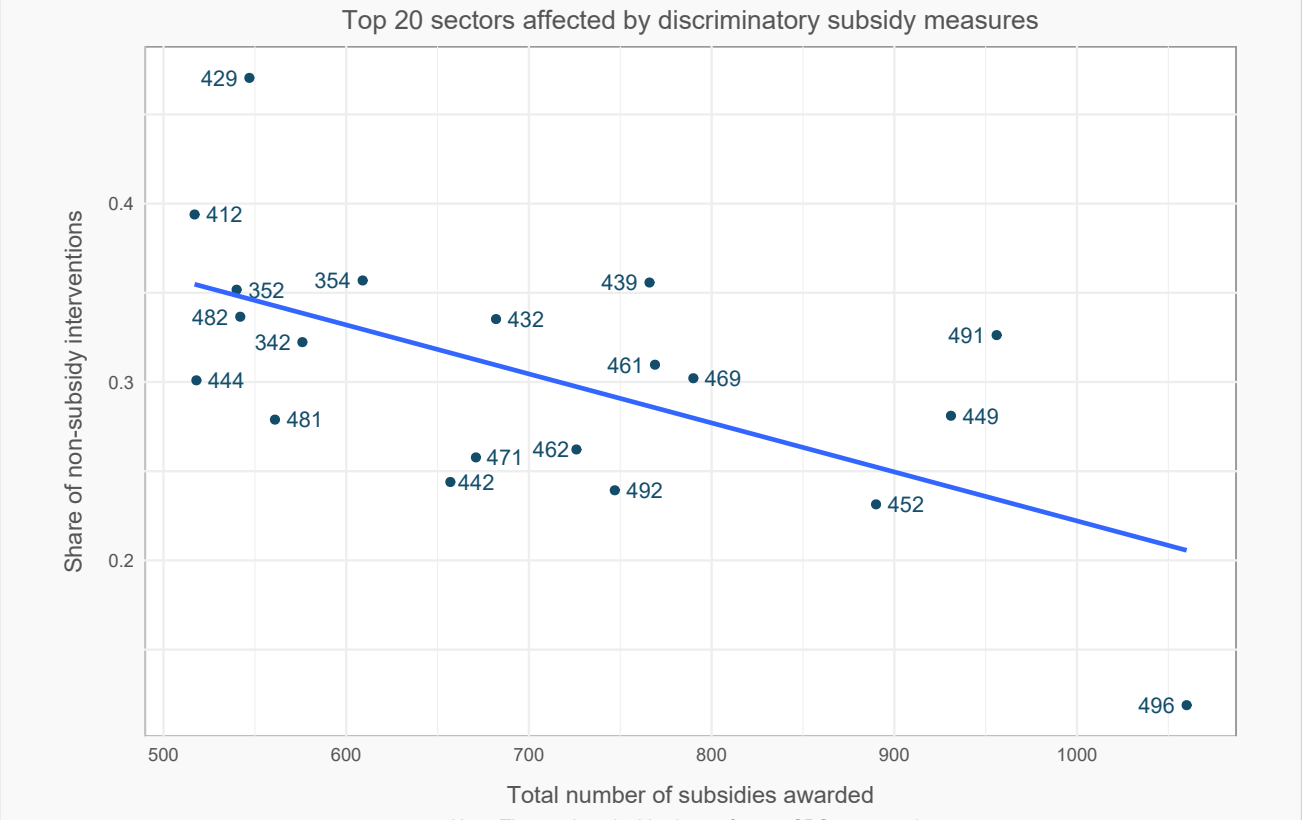


FIGURE 20

Sectors favoured with subsidies tended to benefit less from explicit trade policy discrimination



Note: The numbers in this chart refer to a CPC sector code.

Perhaps the more interesting finding is that subsidy awards and trade and investment discrimination appear to be substitutes for one another. More precisely, in the 20 digital economy sectors that received the most subsidies, there is a strong negative correlation[25] between the number of subsidies received by firms in a given sector and the share of discriminatory measures that do not involve subsidies (see Figure 20). A priori there is no reason why subsidies must be substitutes—complementarity would have been possible; the latter would have manifested itself as a zero correlation in Figure 20. Governments less willing, or perhaps unable, to raise trade or investment barriers may have channelled pressures to favour local firms into subsidies.

Concluding remarks

What are the implications of these findings for the potential fragmentation of global digital commerce? As noted in Chapter 2, at first glance state favouritism in the form of subsidies does not result in barriers being erected between domestic firms and their foreign rivals—in which case domestic and foreign markets *could* remain integrated in the traditional sense. Still, that subsidisation may be objectionable on a host of other grounds—including the longstanding argument that local firms may be subsidised so much that potential foreign entrants limit or abandon plans to supply the distorted local market.

However, the finding that governments appear to substitute trade and investment barriers for subsidies suggests there may be a link between subsidisation and fragmentation after all. Governments with deep pockets may resort to subsidies and there may appear to be less digital fragmentation than in other nations. However, to the extent that pressures for fiscal retrenchment result in reductions in subsidies, then the fiscally constrained governments may replace subsidies with digital trade barriers. This implies that, even in jurisdictions that currently favour digital economy firms through subsidies, the risk of digital fragmentation is still present.

As nations seek to improve their public finances after the extraordinary spending witnessed during the early years of the COVID-19 pandemic, the likelihood grows that finance ministries will take a hard look at subsidy schemes. As a result, states may turn decide to nurture local digital economy firms in the future by imposing more trade and investment restrictions, in so doing further fragmenting the digital domain.

25 The simple correlation coefficient is -0.68.

SECTION TWO
REGULATORY OVERDRIVE IN THE DIGITAL ECONOMY

CHAPTER 6
EMERGENT TRENDS IN REGULATING THE DIGITAL ECONOMY

In this section of the report, the focus shifts to the risk of fragmentation to the global digital economy emanating from unilateral and unaligned domestic regulation and its enforcement. Using information on legal and regulatory changes recorded in the Digital Policy Alert (DPA) inventory, this chapter describes recent trends in regulation affecting the digital economy. It elaborates upon the brief global overview provided in Chapter three and then discusses notable developments in the four prominent policy areas of regulation. Against this background, the following chapters develop and apply an analytical framework that permits a structured, evidence-based evaluation of the fragmentation risk attributable to domestic regulation.

US, EU, and the BRIC economies are the most active

The DPA inventory tracks policy and regulatory changes from their original announcement until their eventual revocation, where appropriate. Sensible aggregation of the information contained in the resulting database provides a sense of the quantum of the policy and regulatory activity. For the period since 1 January 2020, the DPA database includes just over 1,000 entries of binding policy or regulatory changes, an additional over 400 entries of soft law such as regulatory guidance or opinions, and a further 250 entries on regulatory enforcement actions.

When measured on a quarterly basis, the activity was particularly high during 2021 when, on average, four regulatory changes, soft law issuances, or enforcement actions occurred every day.[26] Novel policy announcements have subsequently subsided to only two per day on average, though reporting on the second quarter of 2022 is still ongoing at the time of writing. Even with this diminished pace, the most recent quarter included significant substantive changes such as progress in enacting the EU's Digital Services Act as well as comprehensive data protection laws in US states.

Among the G20 members, the quantum of new regulatory or policy changes since January 2020 was highest in the United States and Europe (see Figure 21). In Europe, announcements at the EU level clearly outnumbered those from national capitals. The single most active central government is the United States, where both the executive and Congress are proposing and adopting a significant number of alterations to the regulatory oversight of the digital economy. Besides the 185 federal-level proposals and changes in the United States, the DPA inventory also includes 133 policy or regulatory changes at the state level (not depicted). In our analysis of fragmentation risk in data governance, we will return to some of these state-level developments as the state governments currently have the initiative in this policy area (see Chapter 7). Besides the EU and the US, China also features prominently as an active legislator and regulator. These three blocks are followed in terms of the number of new policy developments by the other BRIC economies.

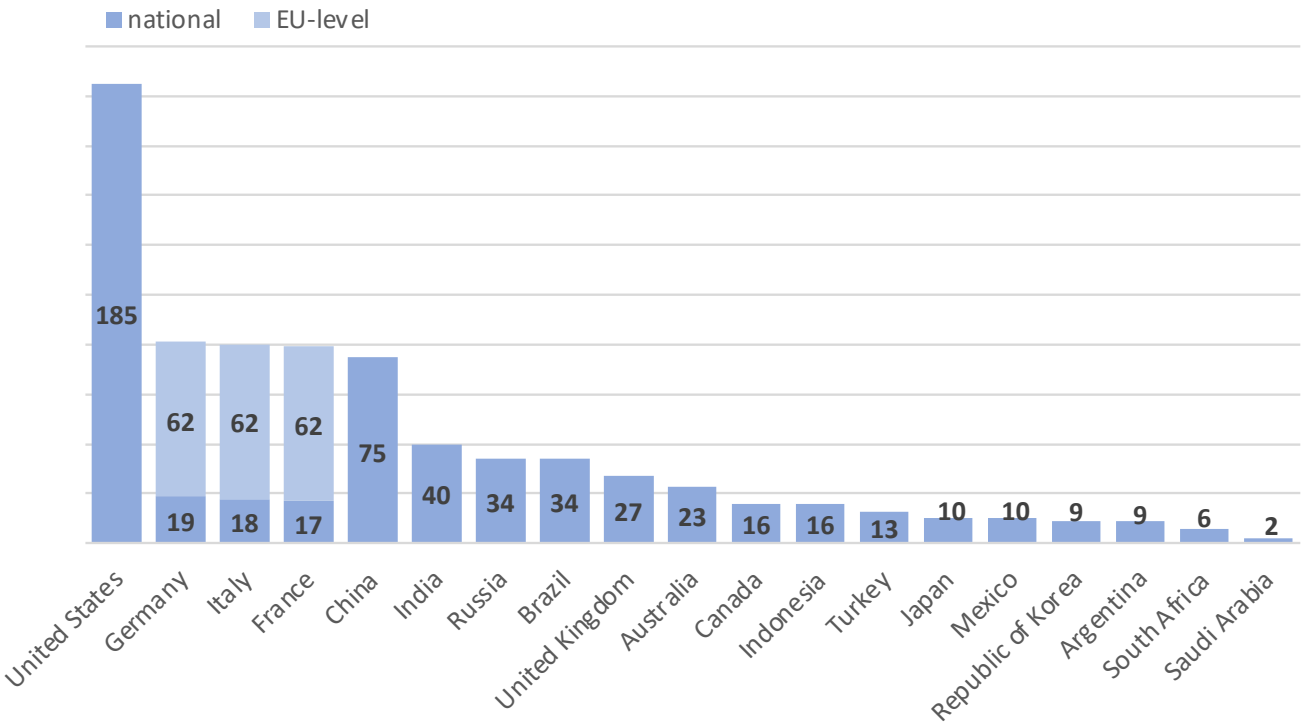
The DPA inventory can be used to discern activity patterns in various policy areas. We deem four policy areas as central to the regulation of the digital economy, namely data governance, content moderation, competition, and taxation. Besides these, the DPA documents further operating conditions including registration requirements or foreign direct investment rules. Each policy area is broken down into different policy instruments that allow for more granular assessments. According to this evidence, data- and content-related policy instruments dominate recent state activity.

Among the five most active policy areas, the different countries in our sample have slightly different emphases (Figure 22). Combining evidence on the three continental European G20 members with the next four most active jurisdictions reveals that regulating data governance is the top policy priority across regions. In all countries except Russia, data governance was the most common among the top five policy areas.

26 But recall the peak in recorded state activity in Q2 2021 shown in Figure 4.

FIGURE 21

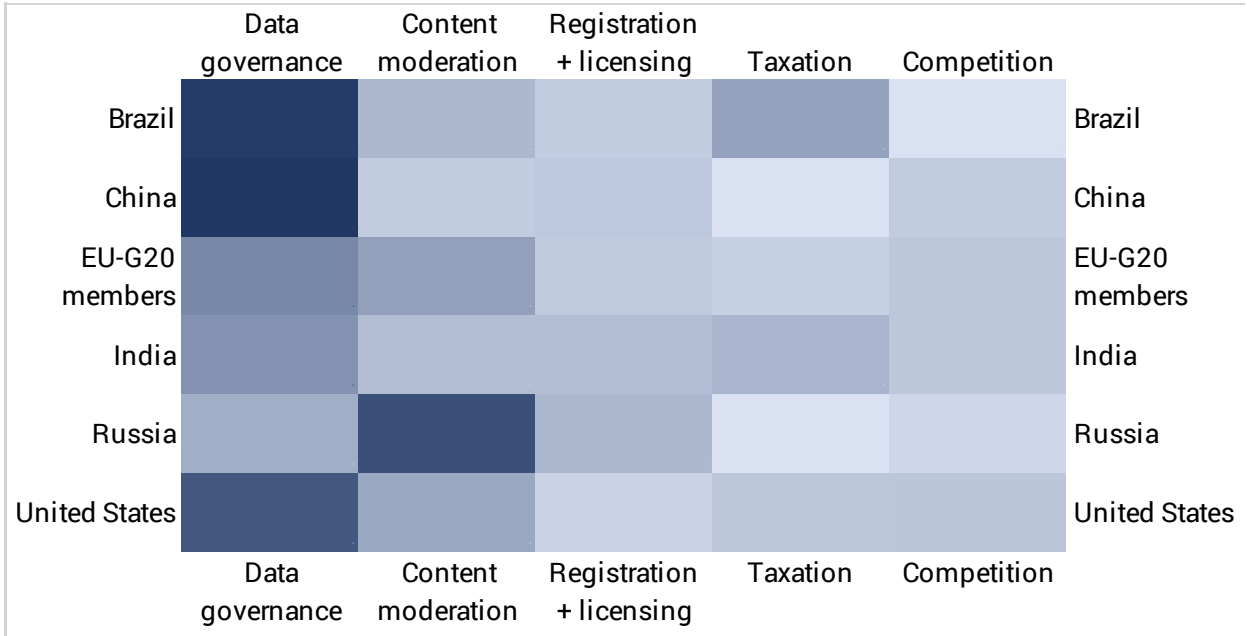
Regulatory and policy activity is most common in the USA and the EU



Note: Number of regulatory or policy changes, excluding soft law or enforcement.

FIGURE 22

New data governance and content moderation rules are commonplace



Note: Darker shades indicate more activity since 1 January 2020.

Even before the attack on Ukraine, content moderation was the most frequently addressed policy area in Russia. In terms of policy and regulatory initiatives documented since the start of 2020, the regulation of misinformation and harmful and illegal speech is the second most common form of intervention in Western countries. Due to their more even distribution of state activity across these policy areas, Brazil and India were relatively more active in taxing the digital economy than their peers (see Figure 22).

Data governance is in regulatory focus

Data governance accounts for one in every three proposed or implemented policy changes in the DPA inventory (see Table 6). In this policy area, policymakers and regulators have to balance the protection of user privacy with the commercial interests of data-driven business models and innovation. Across the G20, policymakers and regulators are fleshing out their data protection and cybersecurity rules. From the perspective of fragmentation risk, the emergence of global or at least regional data protection standards matters most. By regulating international data transfer, domestic data protection rules have spillover effects across borders, as almost all transactions require the exchange of data eventually. Evidence collected in the DPA suggests that currently there are at least two broad approaches to data protection.

The first approach focuses on user privacy and is represented by the European Union. This approach, turned into law through the General Data Protection Regulation (GDPR), combines a range of user rights on how data is handled, with explicit consent requirements for information collection. Firms that want to service European customers have to comply with this user privacy-focused approach. Thanks to the attraction of the single market, the EU can use adequacy decisions that certify compliance of a foreign country's protection rules to promote the user privacy-focused approach abroad. Since the GDPR's implementation, the EU has issued such adequacy decisions for Japan, New Zealand, the Republic of Korea, the United Kingdom, and Uruguay.

The United States federal government and a group of allies champion an alternative approach. Comprehensive data protection laws following this approach do not grant the full spectrum of control rights to the user and refrain from creating business obligations such as data minimisation or the privacy by design principle. In a recent regional effort, that can be seen as supporting this alternative approach, the United States has joined six APEC economies in promoting the Global Cross-Border Privacy Rules (GCBPR). The objective of the joint effort is to establish an international certification system based on the APEC's original Cross-Border Privacy Rules (CBPR), launched in 2011. The CBPR agreement includes

TABLE 6

Data- and content-related policy instruments dominate proposed or adopted changes since the start of 2020

Policy area	Policy instrument	Number of entries in the DPA database
Data governance	Data protection regulation	192
Content	Content moderation regulation	101
Data governance	Cybersecurity regulation	73
Taxation	Direct taxes incl. digital service taxes	47
Competition	Unilateral conduct regulation	33
Registration + licensing	Business registration requirement	29
Registration + licensing	Operational licensing requirement	27
Taxation	Indirect taxes	25
Content	User speech rights	23
Data governance	Data protection authority governance	22

a certification mechanism for corporations to prove they are in compliance with data protection regulations in the signatory states. Though still in their infancy, such efforts to make compliance portable across different jurisdictions are a valuable tool to limit the fragmentation of the digital economy along national lines.

These approaches are further analysed in the next chapter. The assessment presented there includes not only US state-level legislation (in the absence of a federal data protection law) but also other prominent recent legislation, such as the Chinese Personal Information Protection Law (PIPL).

Defining the boundaries of permissible speech and its enforcement

Regulating the boundaries of online content is the second most active policy area in the DPA inventory. As discussed in more detail in Chapter 8, policymakers and regulators have to balance civilian free speech rights with a public interest in curbing misinformation as well as preventing harmful or illegal speech. While preferences vary across countries, online content platforms are affected by online content enforcement practices. The obligations created for businesses include user notification and remedy processes as well as takedown obligations. Several G20 members including Australia, Canada, and France have introduced legislation to make intermediary platforms liable for monitoring lapses in user-generated content. The same is true for the United States, although it is unclear that Congress will pass such a bill anytime soon.

The content moderation response to the Russian invasion of Ukraine illustrates the the potential for fragmentation in this policy area. Associated regulatory activity, however, goes well beyond the current conflict. The DPA documented recent content moderation regulations and user speech rights policies in most G20 economies, including "fake news" bills in Argentina and Brazil as well as broader social media laws in Canada, India, Indonesia, Turkey, and the UK. Similar to its data governance approach, the EU has proposed a comprehensive regulatory framework also in this domain, namely the Digital Services Act. In the United States, it is again the state legislatures and the courts which have taken the initiative, with two controversial online platform moderation bills from Florida and Texas currently being litigated.

From the perspective of fragmentation, the potential for governments to access data creates an important overlap between data governance and content moderation rules. In data governance, US government access to user data led to the invalidation of the EU–US Privacy Shield through a ruling of the Court of Justice of the European Union (CJEU) and still hinders the alignment of data protection regimes across the Atlantic. Regulating how online platforms have to notify domestic law enforcers about user violations could result in a similar tension. Lawsuits are currently pending against an amendment to the German Network Enforcement Act, which not only obliges large social media platforms to remove harmful content but requires platforms to proactively provide the German federal police with the personal data of users posting potentially criminal content. Were the Network Enforcement Act to result in a social media platform handing over data from users located abroad, a ruling following the "Schrems II" precedent could complicate user-generated content sharing across borders.

Challenges to the traditional competition rulebook

Changes to competition law and regulation have occurred less frequently than in content moderation and data governance. However, the lower rate of change should not be misinterpreted. Enforcement action accounts for the lion's share of the recorded state activity in area of competition law. Indeed, a small number of legal changes can result in a significant quantum of enforcement action. According to the state intervention recorded in the DPA inventory, since 2020 competition legislation and enforcement has centered on three matters: accessing app stores and in-app payment systems, combining user data across services, and self-preferencing of platform operators vis-à-vis their business users.

A few legislatures in G20 countries have begun to adjust their competition laws to reflect one or more of these three matters. The Republic of Korea was the first legislature to adopt a law prohibiting app store providers from requiring the use of their own in-app purchasing systems. In the United States, federal lawmakers have introduced a range of bills directly targeting competition in the digital economy. For instance, the recent American Innovation and Choice Online Act addresses the potential self-preferencing of online intermediary platforms.

The EU's recently updated Digital Markets Act proposal, if adopted, would create new powers to address all three competition matters (mentioned above) along with further obligations concerning interoperability between large platforms and their business users.Given their current strategic economic priorities, Chinese officials utilise competition policy tools to steer capital away from allegedly less productive digital economy activities, such as the gaming industry or consumer services, towards the development of key technologies such as artificial intelligence or semiconductors.

In addition to the three competition matters enumerated above, a few governments are revising the powers of

their enforcement agencies. Notable among the G20, the German Federal Cartel Office received the power to self-initiate investigations of companies with paramount significance. This amendment introduced two novelties compared with existing practice. First, the German watchdog may now open an investigation before a dominant position has been established. Second, the concept of "paramount significance" allows it to broaden existing market definitions to address the combination of data across services in otherwise distinct markets. In a similar break from established practice in enforcement, the UK Competition and Markets Authority recently announced the *ex-post* disapproval of the Facebook/Giphy merger.

In competition law, the fragmentation risk for the digital economy currently stems from enforcement decisions. Competition law enforcement actions in digital markets have occurred frequently since January 2020, with more than 90 cases in the works across the G20. Though still trailing data protection authorities in their rate of activity, a few competition cases have already resulted in substantial penalties, such as the Italian competition authority's record fine of USD 1.3 billion against Amazon's fulfilment service in December 2021. As more of these cases result in fines or behavioural remedies, large digital corporations may be forced to adjust their business practices locally in ways that, almost by definition, will reduce their profitability. Even though withdrawal from a market is an unlikely outcome, competition enforcement could entail from time to time result in highly consequential fragmentation.

International coordination on taxing the digital economy

The taxation of the digital economy, through both direct and indirect taxes, has gained considerable salience. The tension regulators face in this policy area lies between the ease with which digital goods and services can be traded across jurisdictions and the need for permanent establishment as the nexus to the local tax system.

The less controversial policy instruments in this area are indirect taxes linked directly to digital sales by foreign companies to resident customers. Indirect taxation of the digital economy usually occurs by expanding the scope of existing indirect taxes to digital business models, including value-added or sales taxes. Initiatives such as the EU's "One Stop Shop" are , in principle, welcome mitigation against the fragmentary risk implied by registration and accounting requirements. As one of the few countries that treat online sales of foreign and domestic firms differently, India introduced an "equalisation levy" of two per cent on the online sale of goods or the online provision of services. Besides India, Indonesia also adopted a similar levy on foreign digital service providers in 2020 though its implementation is still pending.

The imposition of these discriminatory taxes is noteworthy given the OECD-led effort to reach a global consensus on the taxation of the digital economy. That effort, now known as the OECD/G20 Inclusive Framework, refers to unilateral tax measures targeting the digital economy. The progress made in defining Pillars 1 and 2 of the Inclusive Framework diffused mounting trade tensions over so-called Digital Service Taxes (DSTs) between the United States and several European countries and other G20 members. As such, the effort could serve as a role model for international collaboration on a contentious issue. However, if the ratification and implementation of this accord were to be delayed or abandoned, then standstill agreements on DSTs would become void and tensions between governments would likely revive in short order.

The need for a sustained, independent monitoring effort

The evidence presented in this chapter is a first cut of the DPA inventory, whose size will grow over time. Halfway into its second year of operations the DPA team is striving to make its data collection even more representative. To improve the comprehensiveness of the dataset, in addition to documenting recent developments in law and regulation, the DPA team backfills gaps in coverage and frequently benchmarks its findings against those of other monitors. The coverage of the DPA held up well in a recent comparison with the independently verifiable policy changes found in the US Trade Representatives' National Trade Estimate Report on Foreign Trade Barriers 2022. The DPA statistics on the quantum of state intervention, however, will be revised upward as new information about policy changes since January 2020 arises.

As the many trends described in this chapter illustrate, sustained and independent monitoring of policy and regulatory changes using official sources makes a contribution by facilitating structured comparisons of regulatory choices. Access to granular and verifiable data can help mitigate the rise of fragmentation risk for the digital economy due to regulatory heterogeneity and to discrimination. The next two chapters will describe the state of regulatory heterogeneity for two important policy areas in more detail, namely data governance and content moderation.

CHAPTER 7
FRAGMENTATION RISK FROM DATA GOVERNANCE REGULATION

In this chapter the risk of fragmentation arising from data governance regulations is examined. It showcases the potential of the DPA classification system by applying it to recent comprehensive data protection law proposals and amendments made by G20 governments. To provide context for the main elements of this classification, the desirable features of regulation affecting the digital economy are discussed first.

Desirable features of regulation for the digital economy

The risk of international market fragmentation due to domestic regulation is higher in the digital economy than in the analogue economy. For one, the digital economy was born globally integrated. Being able to supply consumers worldwide is the default state for most digital goods and services. Low search frictions, no or low transportation costs, and the potential to advertise to a global audience allow digital entrepreneurs to break out of their local markets from day one.

As in the analogue economy, however, national regulators must balance the consumption preferences of their citizens with legitimate policy objectives, such as upholding individual privacy or public safety. The compliance cost and liability risks associated with such regulation are particularly important in the digital economy because often the cost of regulation cannot be passed along in the form of higher prices. Since many digital goods and services enter markets at zero or very low cost to the consumer, companies have fewer levers to adjust to compliance costs and liability risk other than costly product design changes or outright market exit. Especially in small, lower income markets, stepping too far from international current practice may thus result in being cut off from foreign supplies of popular consumer products or cutting-edge technologies.

To avoid fragmenting the digital economy, national regulators should carefully screen their proposals along three dimensions. The following characteristics of domestic regulation determine the degree of fragmentation risk: (i) its heterogeneity, understood as the distance from international practice, (ii) its compliance cost, and (iii) the presence and form of discrimination against foreign suppliers. On this logic, regulation most likely to cause fragmentation is highly distinctive, imposes high compliance costs, and treats foreign suppliers markedly differently than domestic suppliers. In contrast, regulation that keeps the digital economy globally integrated aligns with international practice, has low compliance cost, and is even-handed.

Mapping regulatory heterogeneity in the DPA database

The DPA database provides unique insights into the extent of regulatory heterogeneity, compliance cost, and discrimination against foreign suppliers. In this regard, two of the fields in the DPA inventory that are particularly valuable are the *regulatory tool* and the *regulated activity*.

The regulatory tool describes what is expected of a firm in order to remain compliant. It is our narrowest description of the rights or requirements altered by new regulation. For example, in the *policy area* of data governance, a distinction is made between different *policy instruments,* including data protection regulation and cybersecurity regulation. Within those instruments, several *regulatory tools* were identified, such as user right to access or system security requirements. Thus, regulatory tools are the third level of precision in our classification of a regulatory change and are designed to track the compliance implications.

The regulated *activity* describes the business practice subject to the regulation in greater detail. Typically, traditional regulation refers to a particular regulated object, say an orange, and a particular regulated operation, say its sale. For the traditional economy, there exist fine-grained classifications that allow us to differentiate orange farming from orange sales in retail stores. Regulation of the digital economy often cuts through these established classifications. For example, the collection of personal data happens in nearly every online transaction, no matter whether it is the purchase of an orange or the hosting a user-generated video. Existing industry classifications are, thus, are insufficiently precise to identify which parties are

affected by novel regulation to support useful statements about cross-country heterogeneity or compliance cost.

Instead of settling for an existing industry classification, the DPA inventory contains regulated activities that are composites of defined regulated objects and regulated operations. For example, regulation affecting the collection of personal data is stored using "collection" as the regulated operation and "personal data" as the regulated object. Storing the targets of regulation in such detail facilitates precise comparisons of regulations across jurisdictions and makes for better assumptions about the compliance costs.

With this classification schema, the entries of the DPA database can be used to analyse regulatory heterogeneity, compliance cost, and discrimination in a distinctive way. A year into the operation of the Digital Policy Alert, the fruits of this approach to data collection are becoming apparent. The following analysis of recent G20 comprehensive data protection laws seeks to illustrate this potential.

Evidence from a dozen comprehensive data protection laws

Comprehensive data protection laws such as the European GDPR or the Chinese PIPL frequently come into the public focus for the tensions they create between trading partners. Rather than targeting a narrow niche inside data governance, these wide-ranging laws largely embody differences in legitimate policy preferences and legal systems. Given their heft, it is particularly important that comprehensive data protection laws are designed to minimise fragmentary risk.

Our analysis of regulatory heterogeneity focuses on comprehensive data protection laws regulating the collection and processing of personal data, such as the California Consumer Privacy Act (CCPA) and the GDPR. A total of 12 G20 nations have adopted or revised such comprehensive laws since 2018.[27] For Europe, our sample includes the EU GDPR and the proposed ePrivacy Regulation. For China, we include the recently enacted Cybersecurity Law, the Data Security Law, and the Personal Information Protection Law. For Japan, we have classified the revised Act on the Protection of Personal Information. The Indian Personal Data Protection Law is still in the legislative process, and we thus include the latest available version. We further include Canadian Bill C11, which is also still under deliberation. In the absence of a federal US data protection law, five comprehensive data protection laws that have been adopted at the state level (California, Colorado, Connecticut, Utah, and Virginia) were included in the assessment that follows.[28] Our sample is completed by the inclusion of Brazil's implemented General Personal Data Protection Law and Saudi Arabia's Personal Data Protection Law of 2021.

Homogeneity in user rights, heterogeneity in business obligations

Having identified 28 regulatory tools applied on collectors of personal data, a comparison was undertaken of the selected data protection laws. The tools relate to data governance requirements, disclosure requirements, dispute resolution requirements, and organisational compliance requirements. As Figure 23 illustrates, the data protection laws in our sample vary considerably in the number and choice of tools they employ.

As can be seen in the bottom row of the chart, data collectors have to comply with 23 out of the 28 regulatory tools included in the data set in order to comply with the EU's GDPR. This number of tools exceeds those found in the Brazilian, Chinese and Californian data protection laws. Seen this way, these four laws appear rather similar as they share 3 out of 4 regulatory tools within our sample. Data collectors complying with the EU's data protection rules should thus face fewer additional compliance costs when entering foreign markets than the other way around. This asymmetry becomes more pronounced when one compares the European approach to laws in other G20 members. The overlap between the GDPR and the comprehensive data protection laws in India is in only three of the five regulatory tools. The overlap is even less for a service provider in full compliance with Connecticut's recent data protection law. The commercial benefits of the European Union's large Single Market likely outweigh the burden of additional compliance costs for third party digital service providers. In contrast, officials in smaller economies may want to carefully analyse which regulatory tools are close to current international practices.

Analysing the data for such shared international current practices, the leftmost column in Figure 23 highlights the prevalence of each regulatory tool in our sample. The DPA evidence suggests threre is greater similarity in various forms of user rights and notification requirements, as well as different security safeguards. Virtually all laws in our sample grant users the right to access and request

27 Our historical coverage is currently insufficient to make granular statements about the comprehensive data protection laws adopted earlier, since much may have changed in the interim. Within the G20 countries, besides those studied above, comprehensive data protection laws exist also in Argentina (2000), Indonesia (2008), Mexico (2010), the Republic of Korea (2011), Russia (2006), and Turkey (2016).

28 For California, we include both the Consumer Privacy Act (2018) and the Privacy Rights Act (2020). For Colorado, we include the "Act concerning additional protection of data relating to personal privacy" (HB 21-190, 2021). For Connecticut, we include the Privacy Bill (SB 6, 2022). For Utah, we include the Consumer Privacy Act (SB 227, 2022). For Virginia, we include the Consumer Data Protection Act (2021) and its recent amendment (HB 381, 2022).

deletion of data. Equally uncontested is the requirement for user consent by opt-in, though laws differ on where such consent needs to be sought.The common denominator in the data protection laws considered here is in sensitive data related to health or genetic information demands user consent by opt-in. Likewise, in most cases, for data related to religious beliefs, political opinions, nationality, sexual orientation, or ethnicity. Likewise, a common feature of comprehensive data protection bills is the obligation on data collectors to secure user data and notify users in cases of data breaches.

In contrast, the least frequently recorded policy tools illustrate the distinction between regulatory heterogeneity and regulatory discrimination. From the perspective of fragmentation risk, policies that discriminate between foreign and commercial interests are unequivocally undesirable. It is, then, good news that data localisation requirements are rare among the dozen comprehensive data protection laws studied here. While it is welcome that few new such requirements are being legislated, the goal of beating back fragmentation requires removal of the existing stock of localisation requirements.

With respect to a regulatory tool that is not part of current international practice, the inclusion of the privacy by design principle in the GDPR stands out as the only implementation of such a rule in our sample. The principle demands that engineers consider privacy in the design and development of applications that involve personal data.

From a fragmentation risk perspective, the regulatory tools in the middle of the Figure 23 are of most interest. Data minimisation obligations, the private right of action, and the prohibition of discrimination against users who exercise their rights are contentious. Limiting data collection and processing to the minimum viable amount may forego unanticipated connections to other elements that permit innovation in digital services. The private right of action implies litigation risk in a novel area of policymaking where ambiguity in terms and intent are still prevalent, and obliging digital providers to service users who refrain from sharing their data may require adjustments to their business models. Finally, the mid-tier also includes cross-border transfer limitations, which remain on the negotiation agenda for trade officials.

Normative differences and regulatory heterogeneity

When identifying the causes of regulatory heterogeneity, divergent normative approaches to data governance are an obvious candidate. Data protection regulations balance a range of legitimate policy objectives, whose relative importance differs across countries. In essence, policymakers and regulators must navigate the interests of user, corporate, and national security interests.

Policy focusing on user interests provides data subjects with individual rights and indirect protection through data processing obligations. The EU GDPR was designed to be a flagship of the user-centred approach, inspiring similar laws in Brazil and California.

Businesses have to accommodate to these user rights and compliance obligations, including through behavioural adjustments, as well as the ensuing litigation. From the corporate perspective, balancing user privacy rules with commercial interests requires, as far as possible, limiting compliance obligations, reducing litigation risks, and permitting data processing to the greatest extent possible.

Within the United States, the recent Utah privacy law may be viewed as an attempt to strike this balance between corporate and user interests. While it includes the widely accepted user rights, it refrains from adding a processing limitation, a data minimisation requirement, or a private right to action. The private right of action is a focal point of the user–business-interest trade-off, since it empowers users to enforce their data subject rights but in turn can result in a flood of litigation for businesses.

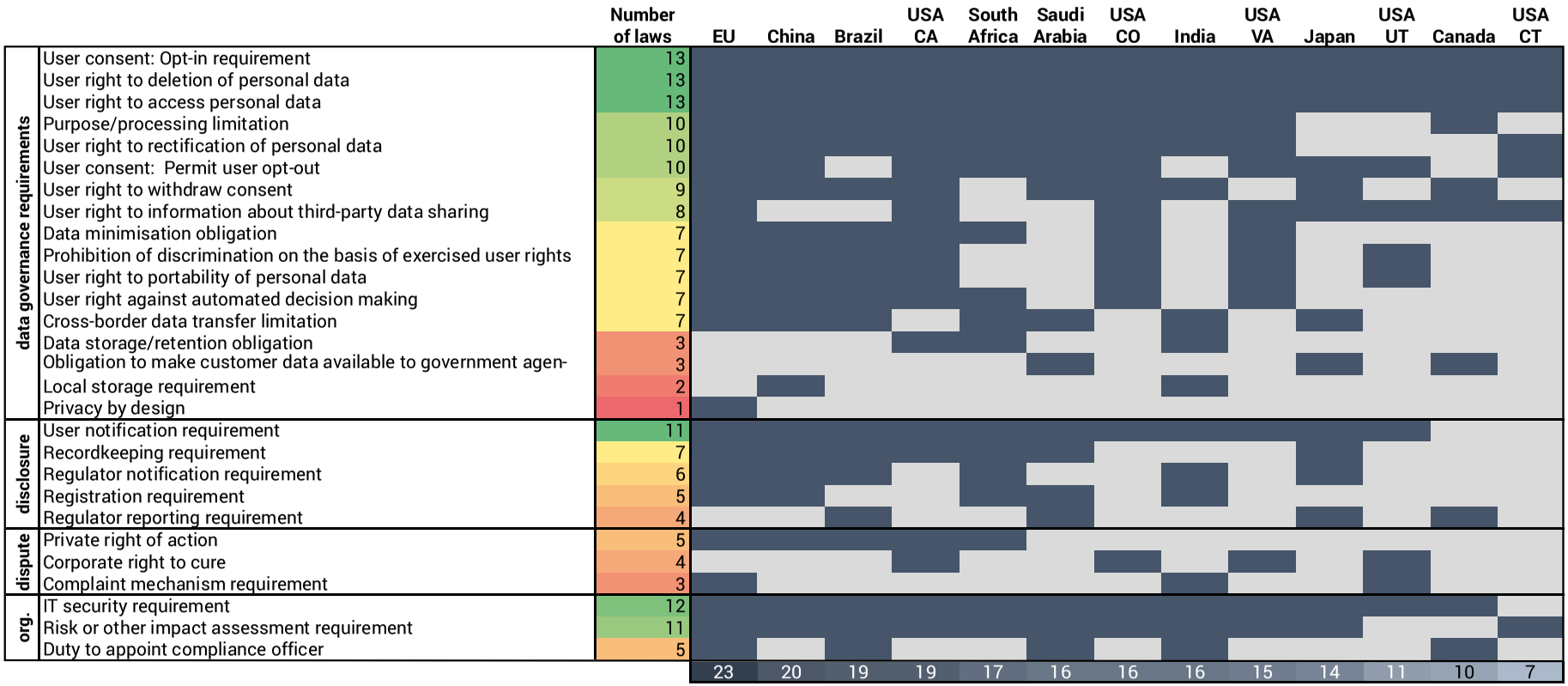
Policy in pursuit of national security interests is often associated with discriminatory tools in our sample. With the stated objective to protect their citizens, regulators and legislators may impose cross-border data transfer restrictions, localisation requirements, and law enforcement backdoors. National security interests were pursued by data localisation measures in measures proposed by India and implemented by China. A recent European proposal for a cybersecurity certification scheme includes local data storage and operation obligations. While our sample of comprehensive data protection bills included few obligations to share user data with government agencies, this is in part due to the existence of such obligations in the established code or implementing acts of regulatory agencies. For instance, the European proposal for a cybersecurity certificate also includes rules on how companies can respond to investigation requests from government agencies. The fragmentary risk residing in such requirements is that foreign companies may not have sufficient rights under the enacting country's legal system to support the mandated procedures.

Meaningful regulatory heterogeneity can hide in the details

Cybersecurity policy demonstrates that normative divergence is not the only source of regulatory fragmentation. The need for regulatory action in cybersecurity is widely recognised. Alongside this international acceptance of cybersecurity as legitimate

FIGURE 23

Similarity and differences in recent G20 data protection laws



Note: Type and number of regulatory tools created or updated. Columns are ordered descending by the number of tools found in the given law. Rows are sorted by tool category and ordered by number of laws including each tool. Tool categories are data governance requirements, disclosure and notification requirements, dispute resolution, and organisational compliance requirements.

policy objective, regulatory approaches appear homogenous since they largely rely on system security requirements. Besides systems security, executive agencies are adding a growing stock of manuals and best practices to protect user data and critical systems.

In the apparently more homogenous area of cybersecurity regulation, fragmentary forces still exist. For one, executive orders and procurement rules have invoked national security concerns to limit access for designated corporations or trading partners. Recent examples include Western limits on Chinese suppliers of telecom infrastructure as well as service access blocking for Russian data processers. In addition to executive action, fragmentary pressure can emanate from the details of apparently homogenous regulatory tools, as the case of responsive security requirements illustrates.

Responsive security requirements prescribe the obligations of a data handler upon detecting a cybersecurity incident. Essentially, all the comprehensive data protection laws in our sample include such obligations. The specific deadlines for data breach notifications can vary substantially and may, as a result, impose significantly different compliance costs. The EU's GDPR is one of several regulations that requires notifying a data breach within 72 hours of detection. Heightened cybersecurity concerns have led to proposals for stricter deadlines of only 24 hours, such as in the US Cyber Incident Notification Act of 2021. India and Russia have recently proposed even shorter notification deadlines, with only six hours in India and, through an amendment of its data protection law, "immediate" notification in Russia.

The examples discussed in this chapter yield three conclusions. Firstly, normative divergence is not the only source of regulatory heterogeneity, since the latter exists even if governments enact measures in pursuit of the same objectives. Secondly, international cooperation to align on best practices can prevent fragmentation and avoid unintended consequences. Thirdly, fragmentation hides in the details and, thus, requires rigorous policy monitoring and analysis.

CHAPTER 8
FRAGMENTATION RISK FROM CONTENT REGULATION

This chapter reviews the evidence on the similarities and differences in the regulatory approaches to online content moderation. For more than half a decade initiatives to moderate online content have come in for public scrutiny. Regulators have sought to adapt and extend content rules that exist for traditional broadcasters to the digital domain. At the same time, they have updated those rules to take account of the emergence of individual (as opposed to corporate) content producers serving large audiences. As the catalysts enabling widely shared free expression and opinion, user-generated content platforms receive ample attention from legislators and regulators worldwide. These platforms thus are also the focus of this chapter.

Those running user-generated content platforms face conflicting demands. On the one hand, thanks to their ability to rapidly disseminate content to an audience of millions, governments demand a greater editorial role from such providers. Rather than remaining passive as merely a publication technology, these platforms should, according to this view, monitor the content uploaded by their users and filter it for what is illegal or at odds with public morals. Regulations reflecting such demands have lead to several regulatory tools which are termed content moderation requirements below.

Yet, the very same content moderation efforts demanded of user-generated content platforms face critical scrutiny from free speech advocates. The boundary between "political spin" and misinformation can be subjective. Verifiable fact checks are frequently outpaced in a rapidly moving information environment. Content moderation tools designed to prevent the circulation of inappropriate online content could thus be used to selectively discriminate against undesirable, rather than harmful, speech or misinformation. Even without a discriminatory objective, the attendant compliance risks incentivise user-generated content platforms to err on the side of removing too much user content , thus threatening free expression and the diffusion of knowledge. In light of this tendency, some proponents of this approach demand explicit user speech rights that ensure individuals (or their representatives) access and use of online platforms.

To date, the G20's regulatory activity in online content moderation is not as high as that seen in data governance. The fragmentary risk from novel, heterogenous regulation may thus appear less pronounced. The rapid rise, however, of a series of content egulation proposals may result in a patchwork of new and varied compliance requirements.. This chapter briefly reviews the evidence on recent regulatory activity along the dimensions of content moderation and user speech rights. After laying out the assumption of liability for user-generated content as a major regulatory risk for platform providers, the chapter concludes with the evidence on localisation tools that discriminate against foreign digital content.

Regulatory heterogeneity in online content moderation

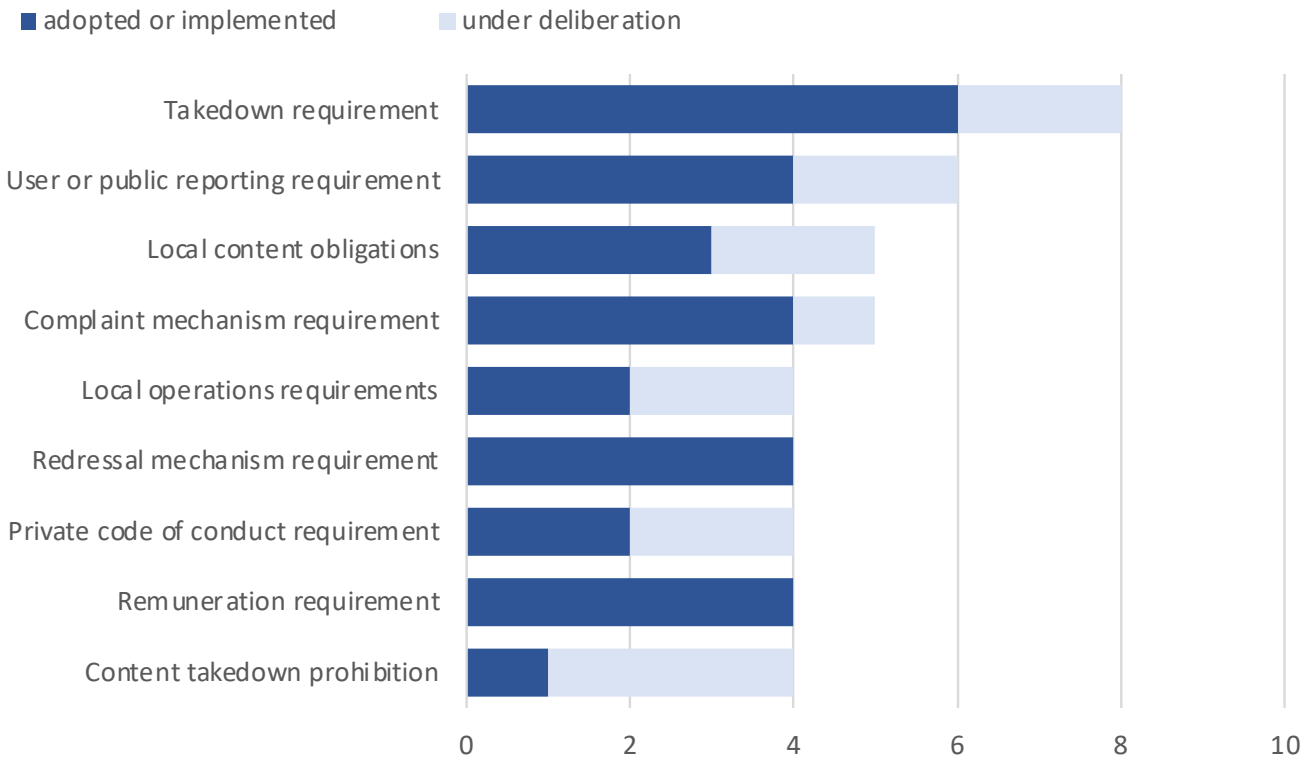
More content moderation initiatives have been recorded in the DPA inventory than steps that relate to user speech rights (see Figure 24). Over the past two years, takedown regulations are the most frequently used regulatory tool relating to online content. According to the DPA inventory, six G20 members have currently adopted at least one takedown requirement and two further G20 nations are currently deliberating such a move. Takedown obligations are frequently paired with requirements for complaint mechanisms which allow users to flag suspicious content. In the quest for transparency, regulators also require regular public reporting about a platform's moderating activity and general descriptions of its ranking algorithms.

As for user speech rights, the DPA had documented redressal mechanisms and content takedown prohibitions in a handful of G20 members. Redress mechanisms allow users whose content has been removed to seek justification or remedy. Content takedown prohibitions carve out domains for speech which cannot be removed by user-generated content platforms. To the best of our knowledge, the only recent takedown prohibition adopted by a G20 government is Russia's ban on removing "publicly important information". There are, however, a few countries currently considering the adoption of limits of different types.

FIGURE 24

Content moderation requirements outnumber user speech rights

Number of G20 members deliberating or requiring selected tool on the national level



In the United States, a recent clash between two court decisions in Florida and Texas centred on the question of whether platforms may limit political user speech after all. As a result, the US Supreme Court may have to weigh in on this fundamental issue.

In Brazil, a draft decree is currently under consideration which would require judicial approval of user speech removal by online platforms. Finally, a proposed amendment to the Mexican federal telecommunications law would limit platform providers' ability to moderate content to those circumstances specified in the law itself.

Local differences in the content covered by takedown requirements and the response times granted for content removal can translate into heightened business risk when combined with liability claims against the content platform. To date, online platforms continue to be largely exempt from responsibility for third-party content. Different versions of such intermediary liability limitations are currently under deliberation in several G20 nations. For the most part, these changes refer to liability incurred through slow response times after takedown or rectification requests and not to user-generated content in general. Several G20 members including Australia, Canada and France have introduced legislation to that end. Going further, the Russian government was the first to introduce a criminal liability for anyone who knowingly disseminates misinformation about the Russian military in the wake of the attack on Ukraine. Foreign media companies promptly withdrew from the Russian market, albeit for a host of reasons.

If national differences in audience ratings and content regulation for traditional media are anything to go by, international cooperation on harmonising online content moderation rules is highly unlikely. Nations have different preferences on the boundaries between illegal, harmful and permissible content for deep-rooted historical and cultural reasons. Here regulatory heterogeneity in content moderation seems unavoidable. Due to the opposing demands described at the beginning of this chapter, regulatory interventions in content moderation run a substantial risk of raising the costs of digital content provision while leaving many stakeholders dissatisfied.

To mitigate the fragmentary risk from these differences, regulators should seek to align on the means for filtering and presenting online content. In this context, regulators need to recognise that corporate enforcement is fundamentally different from sovereign law enforcement. Companies tend to rely on incentives within their digital product or service to induce users to adopt the desired behaviour. Regulators should thus provide the flexibility for companies to discover user-based, bottom-up approaches and alternative content moderation remedies.

When developing regulatory changes, open consultations should be used to understand the feasibility and limits of the proposed requirements.

Localisation measures for online content

DPA entries on local content obligations and local operation requirements for online content providers suggest that resort by G20 members to outright discriminatory policy instruments is infrequent. Local content obligations in digital media come in the form of minimum catalogue quotas reserved for locally produced material or obligations on media companies to invest parts of their revenue in local content creation.

As part of the implementation of a related EU-level directive, some member states expanded or raised the mandatory contributions of streaming services to obtain local film support funds in 2021. In Canada, the Online Streaming Act currently before parliament would grant the Canadian regulator the power to impose similar obligations on digital content providers. Possibly foreshadowing future action on required content shares and investment obligations for streaming services, the Australian government held a public consultation on its Streaming Services Reporting and Investment Scheme in the second quarter of 2022.

Requiring local operations from digital content providers is less widespread. Few G20 nations require local representatives to address content-related complaints or similar obligations. To date, India, Turkey and Russia require user-generated content platforms to open local offices for grievance and compliance officers. Similar requirements, however, were considered earlier this year in the legislatures of Australia and Brazil.

Finally, a less salient but controversial topic is content remuneration, comprising rules that oblige digital platforms to compensate local creators for links to or access to their content. In 2021, Australia introduced the most high profile initiative concerning content remuneration, shifting from a voluntary bargaining code for remuneration between digital platforms and local news services to a scheme with binding arbitration in cases of disagreement. The binding arbitration was eventually replaced with formulation allowing more room for commercial negotiations after strong opposition from leading international platforms. In similar regulatory environments, large content platforms have recently signed licensing deals with news publishers from Australia and several European member states.

SECTION THREE
IMPLICATIONS FOR POLICYMAKERS

CHAPTER 9
FRAGMENTATION IS NOT INEVITABLE: THE WAY FORWARD

There is a growing problem

Digital fragmentation is already happening—that much is clear from the resort to trade and investment barriers documented in this report. Strictly speaking, the thousands of subsidies lavished on firms in sectors associated with the digital economy do not fragment markets. However, the tendency of governments to substitute between subsidies and digital trade barriers implies that fiscal retrenchment after the COVID-19 pandemic adds to the risk of further digital fragmentation.

The potential for digital fragmentation is all the greater because of the extensive pipeline of regulatory policy announcements recorded by the Digital Policy Alert. Going forward, at the very minimum, careful monitoring of associated legal and regulatory developments is needed.

Significant variation exists across major trading economies—in particular between G20 members—in the form and quantum of policy intervention affecting the digital economy. Yet the three biggest trading economies—China, the European Union, and the United States—have made a number of similar choices, in particular as they relate to resort to subsidies, firm-specific favouritism, and promoting digital services as well as manufacturing sectors.

As rivalry between these behemoths intensifies, governments would benefit from developing some rules for the road. One risk is that divergent policy becomes a source of tensions between nations. Another is that the benefits arising from cross-border commercial ties are thrown to the wolves in the name of geopolitics. Those cross-border ties are part of the reality facing officials as they devise approaches to shaping and promoting the digital domain.

Progress is possible

The case that progress is possible rests on two arguments. First, for decades trade policy officials have found ways to reconcile open trading and investment relations with the enforcement of important, typically non-economic, regulations likely to affect cross-border movements of goods and capital. Second, over the past decade or so, more governments have developed a variety of mechanisms to foster international cooperation in the regulation of the digital domain and new understandings concerning the conduct of such policy. Each is described briefly in turn.

Trade officials and analysts have for decades reconciled the right to regulate in various domains with the longstanding principles of the equal treatment of the world trading system—to the benefit of both the regulatory and trade policy communities. The committee work at the WTO on health (SPS) and technical (TBT) standards is widely regarded as a success. For sure, there are important legal and substantive questions here and current practice would probably have to be adapted to regulations affecting the digital domain. Still, this is well trodden territory and international trade expertise has a lot to offer.

Over the past decade considerable progress has also been made in negotiating provisions on a variety of digital economy-related matters in regional trade agreements (RTAs). While such provisions can be found in a number of chapters of RTAs, the focus here is on the steps agreed in electronic commerce chapters. Fortunately, a systematic analysis of over 350 electronic commerce chapters of RTAs has been conducted as part of the Trade Agreements Provisions on Electronic-commerce and Data project (TAPED).

That project has resulted in a large database in which each "digital" provision in each electronic commerce chapter of a RTA was scored. A score of zero indicates that no such provision is found in a given RTA. A score of three indicates that a binding ("hard") provision is found in a given RTA. A score of one indicates that a non-binding ("soft") provision is present. A score of two implies that the provision has a mixture of hard and soft elements ("mixed"). TAPED (2022) describes the methodology used to prepare this dataset.

The TAPED project collected the digital provisions of RTAs into five "sections". To examine whether the number of binding ("hard") provisions in the electronic commerce

chapters of RTAs has increased over time, in Table 7, for each section, the distributions of scores for provisions negotiated during 2001-2011 and 2012-2022 were reported. The distributions for each section of provisions have been presented in their own sub-table and the provisions are listed in those tables in descending order of the increase in the percentage of RTAs with binding provisions in 2012-2022 as compared to 2001-2011.

For example, in section 1 of Table 7, the percentage of RTAs with binding provisions banning the imposition of customs duties on electronic transmissions rose from 27.6% for the RTAs coming into force during 2001-2011 to 74.7% for those implemented from 2012 to 2022. This represents a significant increase in the willingness of (some) governments to eschew one form of policy-induced digital fragmentation. In fact, there are nine provisions in section 1 (titled "electronic commerce") where the percentage of RTAs in which binding steps were agreed rose by 10 percentage points or more.

The results for data governance-related provisions can be found in section 2 of Table 7. A total of eight RTA provisions saw the percentage of binding measures rise by at least 10 percentage points between the decades. Binding measures banning or limiting data localisation requirements were not found in any RTA coming into force from 2001 to 2011. In contrast, in the subsequent decade 22.7% of RTAs included binding provisions. A similar 20 percentage point rise was found in binding provisions relating to the free movement of data.

Progress towards binding provisions has been mixed, however, as the results for section 3 show. This section refers to various "new data economy measures," including provisions relating to Artificial Intelligence, competition law enforcement, and government procurement. No RTA provision negotiated on these matters found in an electronic commerce chapter was of a binding nature. Moreover, increased resort to binding language in RTA provisions also applies to the exceptions to the provisions in electronic commerce chapters, as shown by the distribution of scores reported in section 4 of Table 7.

Eleven types of RTA provision relating to intellectual property provisions in electronic commerce chapters were strengthened during the past decade, when compared to the decade prior. In each of these 11 cases the percentage of binding disciplines found in RTAs coming into force during 2012 to 2022 was at least 10 points higher than those implemented during 2001 to 2011.

Taken together, these findings imply that the appetite on the part of governments to sign binding provisions on digital policy-related matters has grown over time. However, it must be conceded that such progress has not been witnessed across every type of RTA provision relevant to the digital domain. And, of course, not every government is willing to negotiate chapters on electronic commerce matters in their RTAs. Still, decent progress has been made and, more importantly, should be capitalised upon.

But pitfalls exist

In charting a way forward for international deliberation on policies affecting the digital domain, it would be wise to learn from previous, unsuccessful attempts to develop new international understandings on behind-the-border policies and regulation. Two cases come to mind.

The first example relates to an area of economic regulation that is a major plank in contemporary government attempts to "rein in" corporate power, namely, competition law and its enforcement. At the start of the Doha Round of multilateral trade negotiations, proposals were advanced by some WTO member governments for a multilateral framework on various aspects of competition law.

Those proposals were not particularly ambitious—the focus was mainly on entrenching anti-cartel law and its enforcement. Nevertheless, such was the level of distrust felt by enough competition officials in leading Western jurisdictions towards their national trade policy counterparts that the former aligned with developing country officials who opposed the negotiation of multilateral disciplines. The coalition opposing a multilateral framework was subtle and no less effective for that.

In this case, trade negotiators were doubly disadvantaged. For one, they had a domestic constituency (the competition authority) that was unwilling to advocate for multilateral trade disciplines. And, in the case of certain independent enforcement agencies, their senior officials were willing to spell out their concerns to ministers and to other elected officials. What is more, that constituency was often the principal home for expertise on competition law in government. Under these circumstances, trade policy advocates of multilateral disciplines were negotiating with (at least) one hand tied behind their backs.

The second example relates to privacy regulations which become tied up with the failed attempt to negotiate a Transatlantic Trade and Investment Partnership (TTIP) during the middle of the past decade. One item on the trade negotiating agenda related to the cross-border transfer of data and associated privacy rights.

In the European Union responsibility for data protection and privacy is a competency shared between the European Union and its member states. During and after the doomed TTIP negotiation, members of the European Union's so-called Article 29 committee were particularly vocal (see Aggarwal and Evenett 2017). That committee included representatives from the governments of the EU member

states, from the EU's various national data protection supervisors, and from the European Commission.

In a number of statements the members of the Article 29 committee declared that they were not convinced of the assurances received from the European Commission that had in February 2016 agreed "in principle" to a Privacy Shield with the United States. The data privacy regulators on the Article 29 committee made clear they reserved the right to enforce their national laws, prosecuting firms where they felt that was appropriate. The result was to undermine any improvements in legal certainty that might have arisen from the newly negotiated Privacy Shield. Once again, independent regulators acting to protect a salient societal imperative were able to disrupt a major trade negotiation (Aggarwal and Evenett 2017).

The upshot of both examples is that international deliberation on law and regulation affecting the digital domain must be designed in a way that retains the confidence and participation of relevant national regulators. Where those regulators are independent—or have considerable autonomy—they have alternatives that they can pursue, including dialogue with peer agencies abroad. While there is nothing wrong with such dialogue, inter-agency dialogue in one legal domain is likely to suffer from silo thinking. The required holistic approach to devising effective public policy intervention in the digital domain is unlikely to come about under these circumstances.

Prudent risk management alone calls for dialogue and setting ground rules

The past decade or so has not been kind to those advocating enhanced dialogue and cooperation on economic matters between sovereign governments. Nevertheless, the case must be made for developing new international understandings between states and their regulators concerning the design and execution of public policy towards the digital domain.

Currently, policymakers are flying blind as they shape and nurture the digital domain. The last inventory of government intervention affecting this critical vehicle for opportunity and growth was published four years ago. Much has happened since. No official institution has been given a global mandate to track policy intervention in the digital domain. By contrast, the International Monetary Fund collects extensive data on monetary and fiscal policy stance, which is a vital input to macroeconomic policymaking.

Nothing good comes of this evidence gap. Officials learn less from the prior choices of peers. Patchy information reinforces the tendency of officials to retreat into silos, resulting in state initiatives that don't take into account the complexities of an evolving, multi-faceted digital domain which exists in a world with extensive cross-border ties. Accountability is diminished too.

This is a recipe for poor public decision-making. Policy incoherence at home coexists with international regulatory divergence. Mistakes matter in the digital domain. Heavy handed regulations stifle commercial initiative, hamper deployment of digital technologies, and limit the contributions to national employment and economic growth. A fragmented internet and global digital economy denies users choice, diminishes the incentives for innovation, exacerbates trade tensions between governments, and increases the risk of numerous crises.

The right to regulate the digital domain is not being questioned—rather, the concern is that, without some degree of alignment on how to design regulations and enforcement, emergent digital fragmentation will become entrenched and a heavy price will be paid. The perils of unilateral governance action are becoming clearer.

Officials around the globe must intensify efforts to develop shared understandings on sound principles to regulate and nurture their economies' digital sectors. Worthwhile efforts to negotiate a plurilateral accord on e-commerce need to be wrapped up and a more ambitious work programme launched at the WTO. Bilateral and regional initiatives to align policy and regulation (such as the Indo-Pacific Economic Framework), as well as the negotiation of more digital trade chapters in regional trade agreements, are useful stepping stones to counter emergent digital fragmentation.

TABLE 7

The spread of provisions on digital policies in regional trade agreements

Section 1: E-commerce								
	2001-2011 Percent distribution for RTAs that came into force with this provision				2012-2022 Percent distribution for RTAs that came into force with this provision			
Provision	No (score 0)	Soft (score 1)	Mixed (score 2)	Hard (score 3)	No (score 0)	Soft (score 1)	Mixed (score 2)	Hard (score 3)
Provision on the non-imposition of custom duties	72.4%	0.0%	0.0%	27.6%	25.3%	0.0%	0.0%	74.7%
Provision on access to encrypted and/or unencrypted communications	---	---	---	---	71.4%	0.0%	0.0%	28.6%
Provision on the applicability of WTO rules to e-commerce	78.7%	5.5%	0.0%	15.7%	60.0%	4.0%	0.0%	36.0%
Provision on Unsolicited Commercial Electronic Messages	94.5%	4.7%	0.8%	0.0%	34.7%	33.3%	13.3%	18.7%
Provision on prohibitions to require the transfer of, or access to, source code of software owned by a person, as a condition for their commercialization	100.0%	0.0%	0.0%	0.0%	80.0%	1.3%	0.0%	18.7%
Provision on electronic authentication, electronic signatures or digital certificates	79.5%	11.8%	8.7%	0.0%	24.0%	34.7%	24.0%	17.3%
Provision on the consistency with the UNCTRAL Model Law on Electronic Commerce 1996	96.1%	0.8%	0.8%	2.4%	78.7%	4.0%	4.0%	13.3%
Provision on the consistency with the UN Convection on the Use of Electronic Communications in International Contracts	100.0%	0.0%	0.0%	0.0%	86.7%	2.7%	0.0%	10.7%
Provision determining specific institutional arrangements for e-commerce	93.7%	1.6%	0.0%	4.7%	76.0%	9.3%	0.0%	14.7%
Provision on cooperation on issues regarding e-commerce	68.5%	31.5%	0.0%	0.0%	18.7%	74.7%	0.0%	6.7%
Provision on cryptography	100.0%	0.0%	0.0%	0.0%	93.3%	0.0%	0.0%	6.7%
Provision on customs procedures automatisation	77.2%	15.7%	1.6%	5.5%	33.8%	43.2%	10.8%	12.2%
Provision on most-favoured-nation (MFN) treatment in ecommerce	85.0%	0.0%	6.3%	8.7%	78.7%	2.7%	4.0%	14.7%
Provision on Access to and Use of the Internet for e-commerce	98.4%	1.6%	0.0%	0.0%	81.1%	13.5%	0.0%	5.4%
Provision on the participation of the Parties in international fora to promote e-commerce	85.8%	14.2%	0.0%	0.0%	54.7%	38.7%	1.3%	5.3%
Provision on interactive computer services	100.0%	0.0%	0.0%	0.0%	97.3%	0.0%	0.0%	2.7%
Provision addressing unnecessary barriers to e-commerce, or to minimise the regulatory burden on e-commerce	70.1%	28.3%	1.6%	0.0%	48.0%	40.0%	9.3%	2.7%
Provision about cooperation on ICT	88.1%	10.3%	0.0%	1.6%	70.3%	24.3%	1.4%	4.1%

Provision	2001-2011 Percent distribution for RTAs that came into force with this provision				2012-2022 Percent distribution for RTAs that came into force with this provision			
	No (score 0)	Soft (score 1)	Mixed (score 2)	Hard (score 3)	No (score 0)	Soft (score 1)	Mixed (score 2)	Hard (score 3)
Provision for national treatment (NT) in e-commerce	82.7%	0.0%	6.3%	11.0%	78.7%	2.7%	5.3%	13.3%
Provision on paperless trading	79.5%	15.0%	2.4%	3.1%	49.3%	38.7%	6.7%	5.3%
Provision on consumer protection	74.8%	22.0%	0.8%	2.4%	21.3%	44.0%	30.7%	4.0%
Provision on facilitation of input by other interested persons in the development of e-commerce	96.1%	3.9%	0.0%	0.0%	74.7%	24.0%	0.0%	1.3%
Provision ensuring that measures regulating e-commerce support industry-led development of e-commerce	94.5%	4.7%	0.0%	0.8%	77.3%	21.3%	0.0%	1.3%
Provision on net neutrality	100.0%	0.0%	0.0%	0.0%	96.0%	1.3%	2.7%	0.0%
Provision on electronic transferrable records	---	---	---	---	75.0%	25.0%	0.0%	0.0%
Provision on services (and investment) market access (MA) and NT commitments in e-commerce	---	---	---	---	100.0%	0.0%	0.0%	0.0%
Provision on e-invoicing	---	---	---	---	69.2%	30.8%	0.0%	0.0%
Provision on the facilitation of epayments	---	---	---	---	76.9%	15.4%	7.7%	0.0%
Provision on Internet Interconnection Charge Sharing	100.0%	0.0%	0.0%	0.0%	92.0%	6.7%	1.3%	0.0%
Provision on cybersecurity	88.2%	11.8%	0.0%	0.0%	54.7%	42.7%	2.7%	0.0%
Provision on the principle of technological neutrality	92.9%	4.7%	0.8%	1.6%	76.0%	18.7%	4.0%	1.3%
Provision on transparency pertaining ecommerce	81.9%	6.3%	0.0%	11.8%	48.0%	34.7%	6.7%	10.7%
Provision on custom value of carrier mediums	86.5%	0.0%	0.0%	13.5%	95.9%	0.0%	0.0%	4.1%

Note: Entries classified NA (not applicable) or NC (not coded) were excluded from the calculations.
Source: TAPED, 2021.

Section 2: Data-dedicated provisions								
	2001-2011 Percent distribution for RTAs that came into force with this provision				2012-2022 Percent distribution for RTAs that came into force with this provision			
Provision	No (score 0)	Soft (score 1)	Mixed (score 2)	Hard (score 3)	No (score 0)	Soft (score 1)	Mixed (score 2)	Hard (score 3)
Provision on data protection as a least restrictive measure	85.7%	1.6%	1.6%	11.1%	49.3%	0.0%	0.0%	50.7%
Provision on the free movement of data outside the dedicated e-commerce/ digital trade chapter	76.4%	0.0%	0.0%	23.6%	38.7%	5.3%	0.0%	56.0%
Provision on data protection according to domestic law	87.3%	0.8%	3.2%	8.7%	46.7%	5.3%	10.7%	37.3%
Provision banning or limiting data localisation requirements	100.0%	0.0%	0.0%	0.0%	74.7%	2.7%	0.0%	22.7%
Provision on the free movement of data	93.7%	4.7%	1.6%	0.0%	65.3%	6.7%	8.0%	20.0%
Provision on data protection recognising certain international standards	92.1%	0.8%	0.8%	6.3%	50.7%	6.7%	17.3%	25.3%
Provision banning or limiting data localisation requirements outside the dedicated ecommerce/digital trade chapter	100.0%	0.0%	0.0%	0.0%	88.0%	0.0%	0.0%	12.0%
Provision stipulating mechanisms to address barriers to data flows	100.0%	0.0%	0.0%	0.0%	86.7%	4.0%	1.3%	8.0%
Provision on a future discussion/agreement on the free flow of data	---	---	---	---	84.6%	7.7%	0.0%	7.7%
Provision on data protection	66.1%	10.2%	18.9%	4.7%	17.3%	9.3%	65.3%	8.0%
Provision stipulating a mechanism to address barriers to data flows outside the dedicated e-commerce/digital trade chapter	100.0%	0.0%	0.0%	0.0%	95.9%	1.4%	0.0%	2.7%
Provision on data protection recognising certain key principles	96.9%	0.8%	0.8%	1.6%	81.1%	2.7%	13.5%	2.7%
Provision on open government data/open data	100.0%	0.0%	0.0%	0.0%	90.7%	8.0%	1.3%	0.0%
Provision on e-government	90.4%	9.6%	0.0%	0.0%	74.7%	25.3%	0.0%	0.0%
Provision on a future discussion/agreement on the free flow of data outside the dedicated ecommerce/digital trade chapter	---	---	---	---	100.0%	0.0%	0.0%	0.0%
Provision on data protection with no qualifications	78.0%	15.7%	3.1%	3.1%	46.7%	40.0%	12.0%	1.3%

Note: Entries classified NA (not applicable) or NC (not coded) were excluded from the calculations.
Source: TAPED, 2021.

Section 3: New data economy issues								
	2001-2011 Percent distribution for RTAs that came into force with this provision				2012-2022 Percent distribution for RTAs that came into force with this provision			
Provision	No (score 0)	Soft (score 1)	Mixed (score 2)	Hard (score 3)	No (score 0)	Soft (score 1)	Mixed (score 2)	Hard (score 3)
Provision on Artificial Intelligence (AI)	---	---	---	---	---	92.9%	7.1%	0.0%
Provision allowing government procurement including by use of electronic means	---	---	---	---	---	85.7%	14.3%	0.0%
Provision on standardization and mutual recognition regarding digital means	---	---	---	---	---	85.7%	14.3%	0.0%
Provision on digital identities	---	---	---	---	---	85.7%	14.3%	0.0%
Provision on competition policy related to the digital economy	---	---	---	---	---	78.6%	21.4%	0.0%

Note: Entries classified NA (not applicable) or NC (not coded) were excluded from the calculations.
Source: TAPED, 2021.

Section 4: Cross-cutting issues to e-commerce, data-dedicated and new data economy provisions								
	2001-2011 Percent distribution for RTAs that came into force with this provision				2012-2022 Percent distribution for RTAs that came into force with this provision			
Provision	No (score 0)	Soft (score 1)	Mixed (score 2)	Hard (score 3)	No (score 0)	Soft (score 1)	Mixed (score 2)	Hard (score 3)
Exceptions explicitly applicable to e-commerce and data	74.8%	0.0%	0.0%	25.2%	22.7%	0.0%	0.0%	77.3%
Exceptions on national security (or similar)	70.9%	0.0%	0.0%	29.1%	20.0%	0.0%	0.0%	80.0%
Exceptions with reference to data flows or e-commerce, outside the e-commerce/digital trade chapter	73.0%	0.0%	0.0%	27.0%	25.7%	0.0%	0.0%	74.3%
Exceptions on ecommerce	89.0%	0.0%	0.0%	11.0%	61.3%	0.0%	0.0%	38.7%
Exception on data protection regarding information held or processed by or on behalf of a Party	100.0%	0.0%	0.0%	0.0%	81.3%	0.0%	0.0%	18.7%
Exceptions for internal taxes	81.0%	0.8%	0.0%	18.3%	66.7%	0.0%	0.0%	33.3%
Non-conforming measures (NCMs) on ecommerce	83.5%	0.8%	0.0%	15.7%	78.7%	0.0%	0.0%	21.3%
Exceptions on digital representation of financial instruments as digital products	84.3%	0.0%	0.0%	15.7%	85.3%	0.0%	0.0%	14.7%
Reservations on e-commerce	92.9%	0.8%	0.0%	6.3%	97.3%	0.0%	0.0%	2.7%

Note: Entries classified NA (not applicable) or NC (not coded) were excluded from the calculations.
Source: TAPED, 2021.

Section 5: Intellectual property								
	2001-2011 Percent distribution for RTAs that came into force with this provision				2012-2022 Percent distribution for RTAs that came into force with this provision			
Provision	No (score 0)	Soft (score 1)	Mixed (score 2)	Hard (score 3)	No (score 0)	Soft (score 1)	Mixed (score 2)	Hard (score 3)
Provision on technological protection measures (TPMs)	85.0%	2.4%	0.0%	12.6%	58.7%	0.0%	0.0%	41.3%
Provision on the duration of the terms of protection of copyright and related rights	86.6%	0.0%	0.0%	13.4%	57.3%	0.0%	1.3%	41.3%
Provision to protect Information Rights Management (IRM)	85.7%	1.6%	0.0%	12.7%	59.5%	0.0%	0.0%	40.5%
Provision on the right of reproduction in electronic form in copyright and related rights	95.2%	0.0%	0.0%	4.8%	73.3%	0.0%	0.0%	26.7%
Limitations and exceptions to copyright and related rights	82.7%	4.7%	0.8%	11.8%	42.7%	13.3%	10.7%	33.3%
Provision on the liability of Internet Service Providers (ISP)	86.6%	0.8%	0.0%	12.6%	60.0%	6.7%	1.3%	32.0%
Adherence to the WIPO Internet Treaties	59.8%	3.1%	1.6%	35.4%	41.3%	2.7%	1.3%	54.7%
Provision on authors' right to publish by wireless means at any time individually chosen	88.1%	0.0%	0.0%	11.9%	72.0%	0.0%	0.0%	28.0%
Inclusion of a list of IP-related multilateral agreements	49.6%	2.4%	15.7%	32.3%	36.0%	2.7%	13.3%	48.0%
Provision on safe harbors for Internet Services Providers (ISP)	87.4%	0.0%	0.0%	12.6%	73.3%	0.0%	1.3%	25.3%
Provision on trade secrets/protection of undisclosed information/protection of data	63.0%	2.4%	0.8%	33.9%	54.7%	1.3%	0.0%	44.0%
Provision protecting encrypted satellite and cable signals	89.0%	0.0%	0.8%	10.2%	81.3%	0.0%	1.3%	17.3%
Adherence to the WTO Agreement on TRIPs	26.0%	5.5%	7.9%	60.6%	24.0%	0.0%	9.3%	66.7%
Provision on the availability of documents on the internet	96.9%	0.8%	0.0%	2.4%	86.7%	4.0%	1.3%	8.0%
Provision balancing the copyright and related rights system	85.8%	10.2%	0.8%	3.1%	66.7%	24.0%	2.7%	6.7%
Provision on patents for computer implemented inventions (patents for software)	100.0%	0.0%	0.0%	0.0%	97.3%	0.0%	0.0%	2.7%
Provision on storage of works of copyright and related rights in electronic form	89.7%	0.0%	0.0%	10.3%	88.0%	0.0%	0.0%	12.0%
Provision on digital economy/globalisation of technological innovation and trade	93.7%	6.3%	0.0%	0.0%	94.7%	5.3%	0.0%	0.0%
Provision on data flows in the IP chapter	98.4%	0.8%	0.0%	0.8%	97.3%	2.7%	0.0%	0.0%
Provision on Internet Domain names	88.2%	1.6%	0.0%	10.2%	89.3%	2.7%	0.0%	8.0%
Provision on the governmental use of (non-infringing) software	89.8%	0.0%	0.0%	10.2%	93.3%	0.0%	1.3%	5.3%

Note: Entries classified NA (not applicable) or NC (not coded) were excluded from the calculations.
Source: TAPED, 2021.

CHAPTER 10
ABOUT THE DATABASES USED IN PREPARING THIS REPORT

What is the Digital Policy Alert?

The Digital Policy Alert (DPA) strives to close the evidence gap (mentioned in chapter 1 of this report) concerning law, policy, regulation, and associated enforcement affecting the digital economy. Launched in April 2021, the DPA documents policy and regulatory changes covering a range of policy domains in an accessible, transparent, and timely manner.

The digital economy connects the lives of billions of people and has the potential to include remote locations and disadvantaged groups into international supply chains. Many governments are now actively regulating the digital economy, but in an uncoordinated manner and without reference to many international benchmarks. Developing rules unilaterally risks fragmenting the digital economy along national and regional lines. Sustained monitoring of state intervention in the digital domain is necessary to keep track of new regulations, to help stakeholders compare different options, and to explore means to achieve desired policy outcomes with the least fragmentation risk to the global digital economy.

The distinctive features of the DPA inventory are:

- Wide geographical reach currently including the G20 nations, the EU member states and the European Commission, and Switzerland.
- Broad policy scope covering data governance, content moderation, competition, taxation of the digital economy and more.
- Focus on recent developments going back to 1 January 2020.
- Inclusion of all branches of government as they relate to rulemaking for the digital economy including legislation, executive orders, and court decisions with general implications.
- Coverage of the full policy lifecycle from the original proposal through to deliberative steps, adoption or enactment and, eventually, to potential revocation.
- Easy customisable presentation thanks to a rich tagging system, including identification of the government(s) responsible, the chosen policy instrument(s), the targeted regulated economic activity or activties, and more.
- Independent verification using official sources with each entry in the DPA inventory undergoing a two step review process before publication.

On the DPA website, users can subscribe to free notification services for new developments and can analyse this publicly available inventory through interactive visualisations.

The Digital Policy Alert is the latest policy transparency initiative of the St.Gallen Endowment for Prosperity through Trade. It builds on more than a decade of policy monitoring experience gathered by its sibling initiative, the Global Trade Alert. Since its public launch in April 2021, the DPA team has documented more than 1,700 regulatory or policy changes. Its unique tagging system and presentation are continually refined to meet user needs thanks to their advice and recommendations.

What is the Global Trade Alert?

The Global Trade Alert (GTA) is an independent monitor of commercial policy choice by governments that was launched in June 2009. Such monitoring enhances the transparency of the world trading system, which is a global public good. The necessity of independent monitoring has grown over time as some governments have put undue pressure on the official monitors of trade and investment policy choice. Some governments have refused to supply accurate information to official monitors in a timely manner.

Although the Global Trade Alert was established in June 2009, its monitoring of government commercial policy choice goes back to November 2008. At that time, G20 Leaders declared that they would eschew protectionism and that they had learned the lessons from misguided international economic policy responses to the Great

Depression in the 1930s. For several years that followed, this "no protectionism pledge" was renewed and restated. One purpose, then, of the GTA was to provide an independent assessment of whether governments stuck to their promise.

Another (medium- to longer-term) purpose of the GTA was to fill a significant gap in the data on non-tariff measures undertaken by governments. This lacuna has frustrated widespread assessment of the impact of non-tariff measures, comparisons across alternative policy instruments, the development of evidence-based proposals for new trade rules on non-tariff measures, and deliberation on these typically less transparent policy instruments. It is heartening that, as of June 2022, approximately 2,860 entries in Google Scholar make reference to the Global Trade Alert and its findings.

The Global Trade Alert team also undertakes analysis of the data that it collects. This is the 29th report of the Global Trade Alert and prior reports have focused on pretty much every major topic debated within the world trading system over the past decade. The team has also prepared studies other than reports. All of this analysis and thought leadership is available at the following URL: https://www.globaltradealert.org/reports.

The Global Trade Alert was originally located in the Swiss Institute for International Economics and Applied Economic Research at the University of St. Gallen, Switzerland. The GTA was also a project of the Centre for Economic Policy Research (CEPR), the leading network of economics researchers in Europe. In January 2021, the GTA was moved institutionally into the St. Gallen Endowment for Prosperity Through Trade. That foundation is formally outside of the University of St. Gallen's legal structure but it remains within the university's "ecosystem."

What's new in the Global Trade Alert database?

In preparing this, our 29th, report there were no fundamental changes in the objectives, standards, and methodology employed by the Global Trade Alert (GTA) team. That methodology is explained in Evenett and Fritz (2020) (the so-called GTA Handbook). Readers and users of GTA data are referred to that document for a full account of our approach to collecting, enriching, evaluating, and processing information on public policy changes that may have implications for cross-border commercial flows.

Although the focus of this report was on policy interventions covering the digital economy, our regular monitoring of commerce-related policy intervention continued. In total, since 1 October 2021, information on 2,031 distinct policy interventions that affect the relative treatment of domestic commercial interests vis-à-vis their commercial rivals was submitted for consideration for publication in the GTA database. Of that total, 1,716 of the submitted entries involved favouritism towards local firms or discrimination against foreign commercial interests.

A total of 950 new subsidies to local firms were documented since 1 October 2021. Export-related policy interventions, including export bans, taxes, and quotas witnessed since the invasion of Ukraine, were the second most documented type of policy intervention: 354 in total. A total of 234 tariff changes were written up since 1 October 2021, the third most common type of recorded commercial policy intervention since our last report was prepared.

The policy interventions recorded in the GTA database since 1 October 2021 were announced or implemented by 87 customs territories. Fifty-six of those territories introduced 10 or more new policy initiatives. Eight jurisdictions introduced 100 or more new policy interventions likely to affect international commerce: Brazil, France, Germany, India, Italy, Poland, Spain, and the United States.

With respect to the policy intervention recorded since our last report was prepared, 71 customs territories saw their commercial interests affected over 100 times. For five jurisdictions, the total number of changes exceeded 500 (in descending order of counts: China, Germany, the United Kingdom, Italy, and the United States). Of course, some of the recently recorded policy interventions liberalised commerce, so these totals should not be interpreted as representing the total number of "hits" to these nations' trading interests.

These totals highlight the considerable resort to unilateral commercial policy intervention, which is exactly what the GTA initiative was designed to track. So long as weaknesses remain in the design and compliance with notification requirements by member governments of the World Trade Organization, there will be a need for independent monitoring of unilateral commercial policy choice.

What is the St. Gallen Endowment for Prosperity Through Trade?

The University of St. Gallen, the Max Schmidheiny Foundation of the University of St. Gallen, and Simon J. Evenett founded the St. Gallen Endowment in November 2021. One goal in creating the foundation was to put the Global Trade Alert on a solid financial footing over the medium to longer term. Another was to allow the core competencies of the Global Trade Alert—specifically, the synergies that arise from combining trade policy talent with coding and other technological expertise—to be applied to other monitoring initiatives related to cross-border commerce.

The statutes of the St. Gallen Endowment (which are available upon request) require the Foundation's staff and its Board members to take steps to preserve the organisation's independence. The management of the St. Gallen Endowment have adopted the following Statement of Purpose, which sheds further light on purpose and theory of change advanced by the Foundation:

"What gets measured gets managed" is Peter Drucker's famous dictum for making progress. Because we want globalisation to be better managed for the benefit of all, we will reconceive how government policy is measured, democratise access to that information so that more effective policies can be identified, and advance policy initiatives so that international commerce is a stronger engine of human progress in the decades to come.

By combining policy expertise with ever more novel ways to acquire, enrich, and analyse information, we have become the trusted, impartial source for many who need to know what governments are really doing to global commerce. As well as nurturing a pioneering team capable of adapting quickly to our unsettled world, we engage with individuals and organisations that respect our independence and share our core objectives and values, including ensuring that the millennium-old human imperative to trade remains a force for good as societies tackle the pressing challenges of the 21st century."

ACKNOWLEDGEMENTS

The St. Gallen Endowment for Prosperity Through Trade was delighted to join forces for the third time with the Hinrich Foundation to commission and jointly disseminate this report. Special thanks go to Merle Hinrich, Kathryn Dioth, and Dini Djalal. This report was written by Simon J. Evenett and Johannes Fritz, who take final responsibility for its contents.

The successful preparation of this report required contributions from the Digital Policy Alert and Global Trade Alert teams. Johannes Fritz and Tommaso Giardini are responsible for the former team, which includes Maria Buza, Nils Deeg, Hortense Dumont de Chassard, Simon Habich, Jamila Issa, Fabio Lavarini, Jens Neese, Matteo Nebbiai, and Jennifer Pullen.

The Global Trade Alert's Monitoring team is led by Ana Elena Sancho and comprises the following trade policy analysts: Fandi Achmad, Anttoni Asikainen, Fiama Angeles Bonelli, Callum Campbell, Andrey Eydlin, Halit Harput, Pia Höring, Chintan Jadwani, Lucas Miaihles, Abdisalam Osman, Anvar Rahmetov, Maria del Carmen Vergaray, and Carlee Wright. The Research team of the Global Trade Alert is marshalled by Fernando Martin Espejo and comprises André Brotto Reigado, Apolline Duclaux, Silvan Hofer, and Noé Romeo Kuhn.

Both teams were supported by the Foundation's Technology Team, which is overseen by Patrick Buess and included contributions from Andrey Bernatsky, Liubomyr Gavryliv, Saad Mahmood, and Abid Mahmood. Patrick's team, working with the Digital Policy Alert team, also designed and launched the new website where the tracking of government policy intervention affecting the digital economy can be found.

Jason Weall copy-edited the draft chapters of this report and provided useful advice. Anil Shamdasani seamlessly integrated the elements of this report into the professional document that is before you. Josse Jakobsen and Lawrence Reddy developed and executed the dissemination campaign associated with this report. We are grateful for Jon Mark Walls' support in producing materials for the dissemination of this report on social media.

In addition to his responsibilities as Chief Executive Officer of the St. Gallen Endowment and in taking forward the Digital Policy Alert initiative, Dr. Johannes Fritz provided colleagues with strategic guidance throughout the preparation of this report. Johannes is also a co-author of this report, our first extensive analysis of the quantum and potential cross-border impact of public policy intervention affecting the digital domain.

Simon J. Evenett

Founder, St. Gallen Endowment for Prosperity Through Trade

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HOLDING THEIR FEET TO THE FIRE: THE TRACK RECORD OF EACH G20 MEMBER

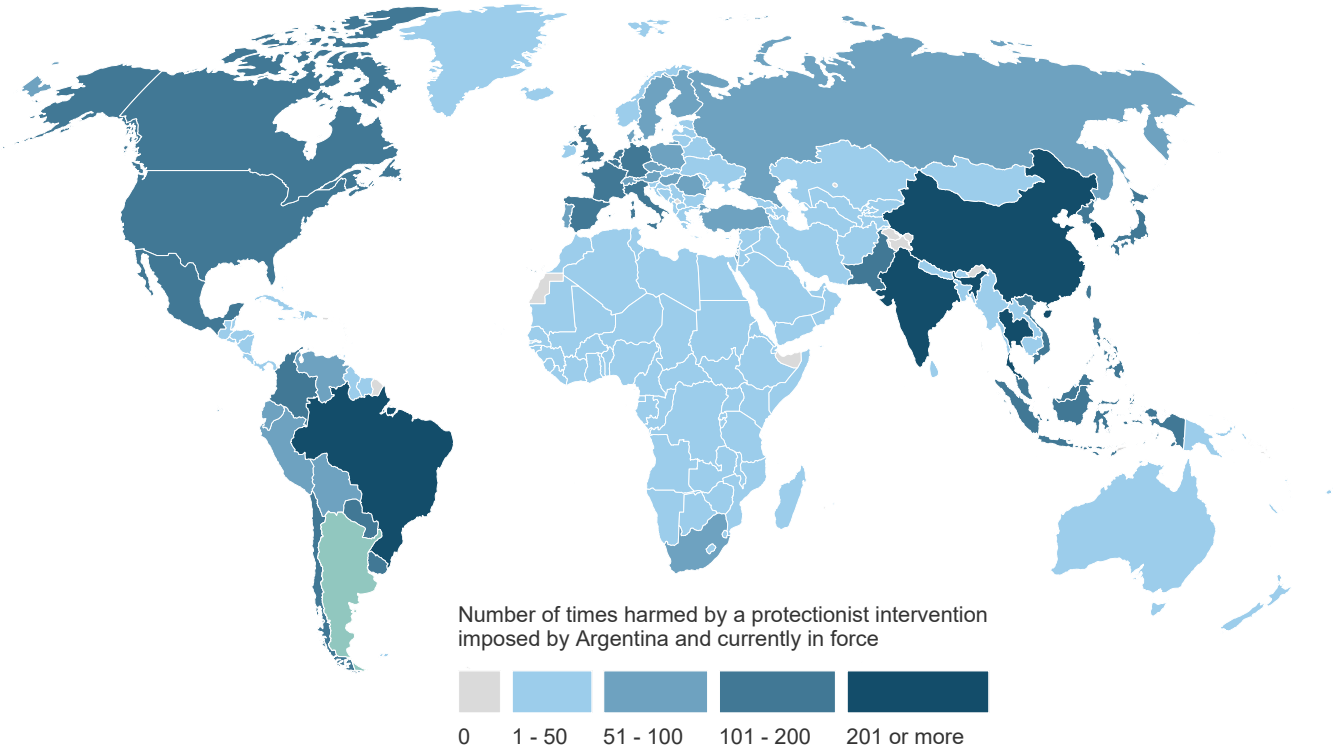
ARGENTINA

What is at stake for Argentina's goods exporters?

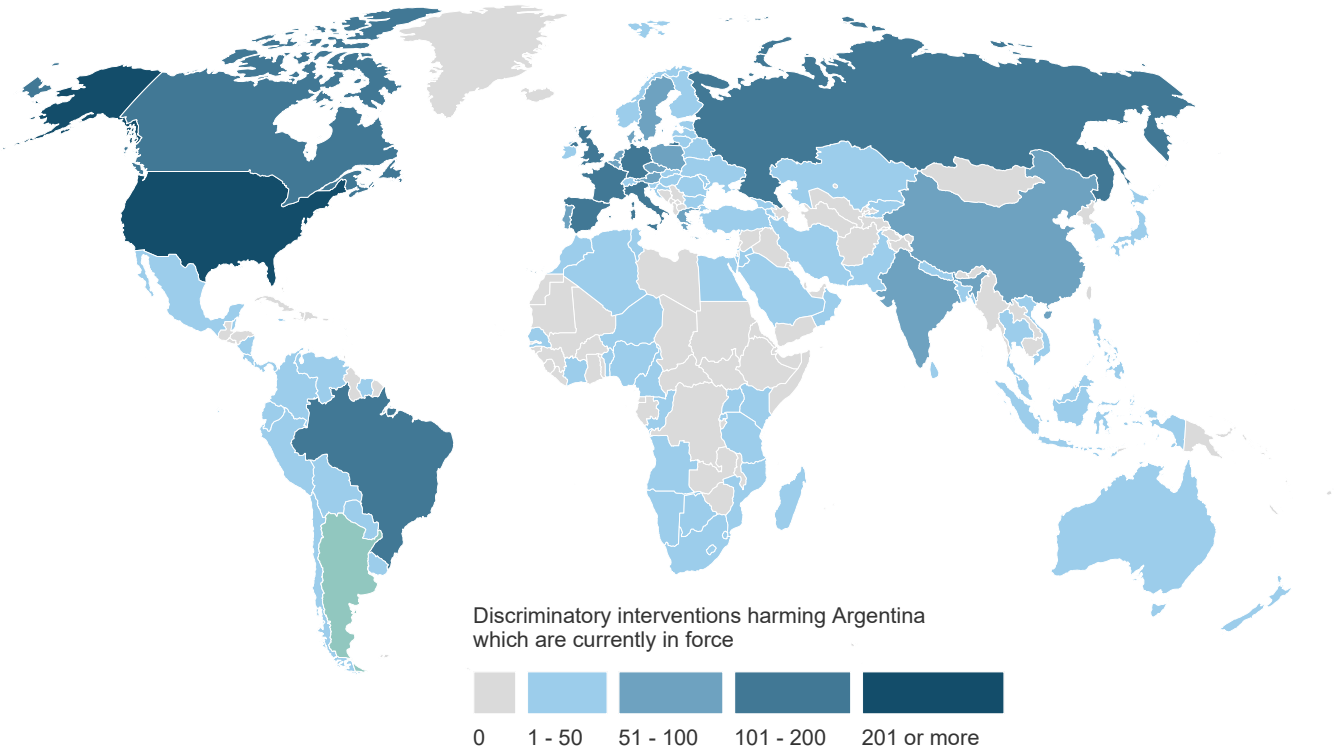
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	22.08	43.28	53.45	64.19	70.24	75.50	75.92	78.64	79.84	78.16	78.91	79.06	76.35	76.86
D	Contingent trade-protective measures	0.30	0.35	0.36	0.07	0.30	0.44	0.44	0.57	0.61	0.84	0.85	0.88	0.87	1.77
E	Non-automatic licensing, quotas etc.	1.08	1.52	5.41	11.44	11.27	11.86	12.27	14.63	15.28	15.61	15.52	15.59	15.59	15.58
F	Price-control measures, including additional taxes and charges	0.17	0.17	1.21	3.57	0.41	3.46	4.62	5.19	5.19	6.60	6.73	6.73	6.73	6.73
G	Finance measures	0.32	1.38	1.72	1.72	1.72	1.72	1.73	1.74	1.74	1.74	1.74	1.74	1.74	1.74
I	Trade-related investment measures	0.26	0.54	1.01	3.11	2.42	4.43	6.80	5.94	4.98	2.54	2.45	2.42	2.49	2.54
L	Subsidies (excl. export subsidies)	9.36	13.42	13.83	14.17	21.90	31.67	39.08	34.71	41.52	41.71	42.42	42.39	39.60	39.52
M	Government procurement restrictions	0.27	0.30	0.27	0.78	1.85	2.58	2.82	1.39	1.50	1.64	1.89	1.75	1.75	1.75
P	Export-related measures (incl. subsidies)	9.20	28.99	40.66	48.00	53.31	59.12	59.49	63.15	64.55	62.76	66.66	66.78	65.67	66.24
	Tariff measures	3.61	5.14	6.25	17.92	19.75	20.03	20.49	21.00	22.53	21.73	22.75	24.23	25.07	25.14
	Instrument unclear	0.05	0.10	0.10	0.39	0.39	0.57	1.23	1.41	1.47	1.51	1.54	1.54	1.54	1.54

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY ARGENTINA'S DISCRIMINATORY INTERVENTIONS

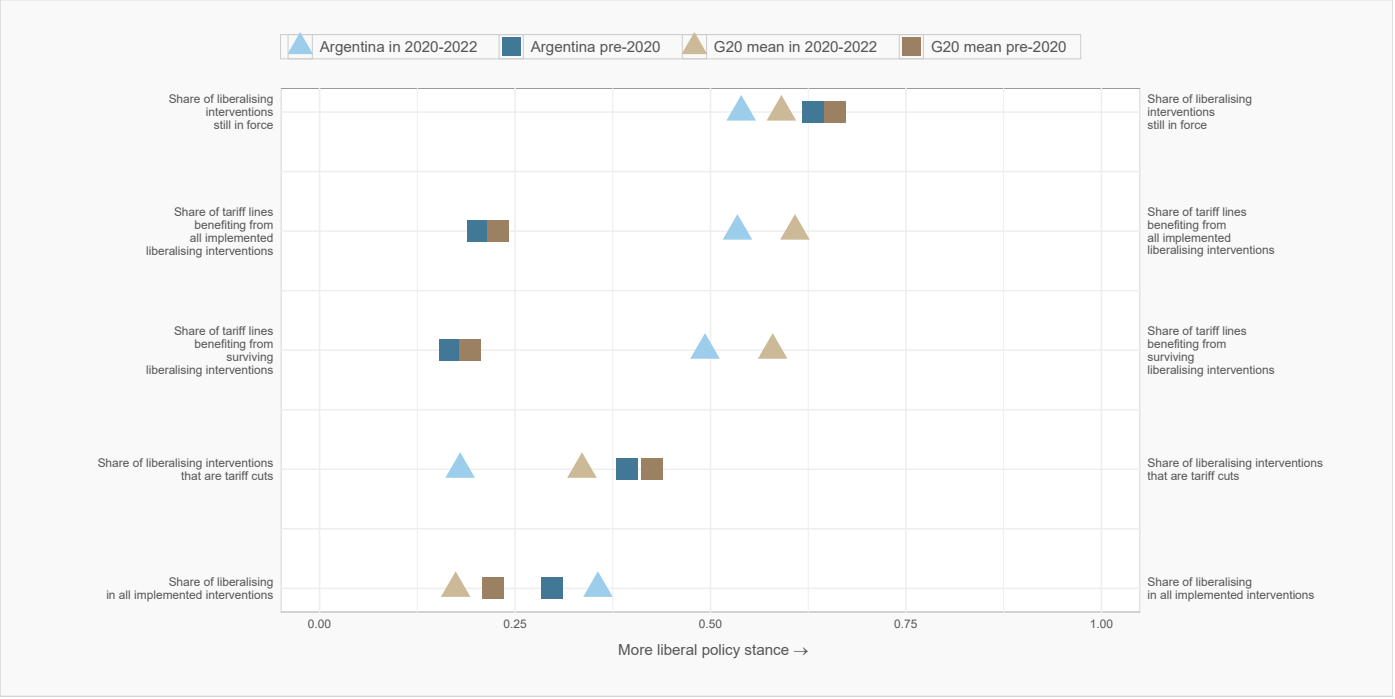


DISCRIMINATORY INTERVENTIONS HARMING ARGENTINA'S INTERESTS



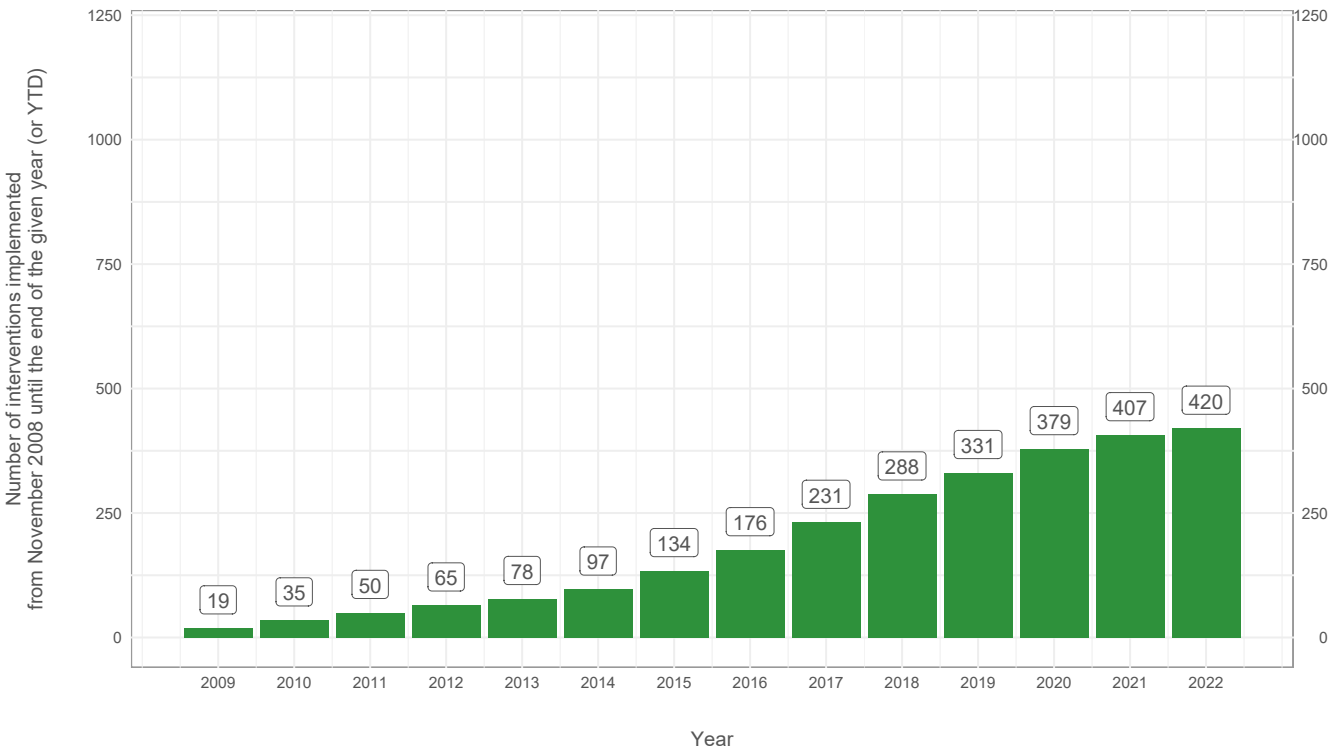
ARGENTINA

Track record of liberalisation



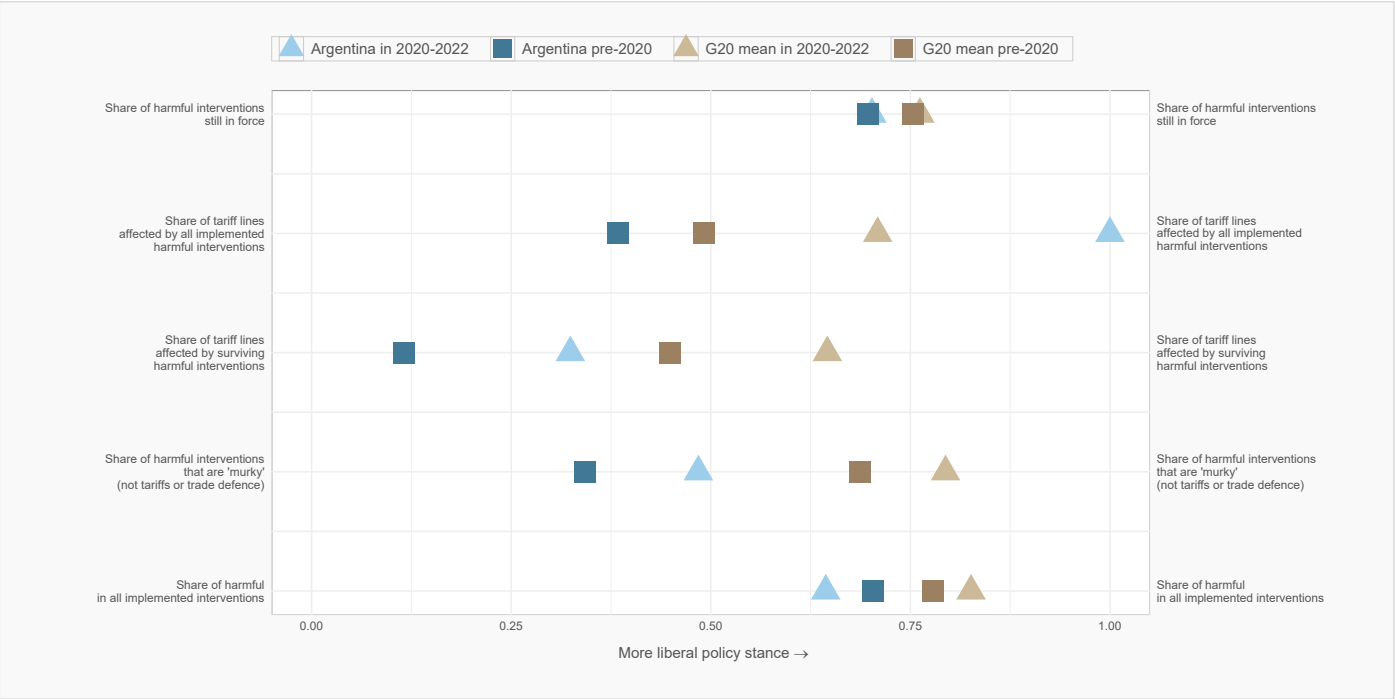
ARGENTINA

Number of liberalising interventions imposed since November 2008



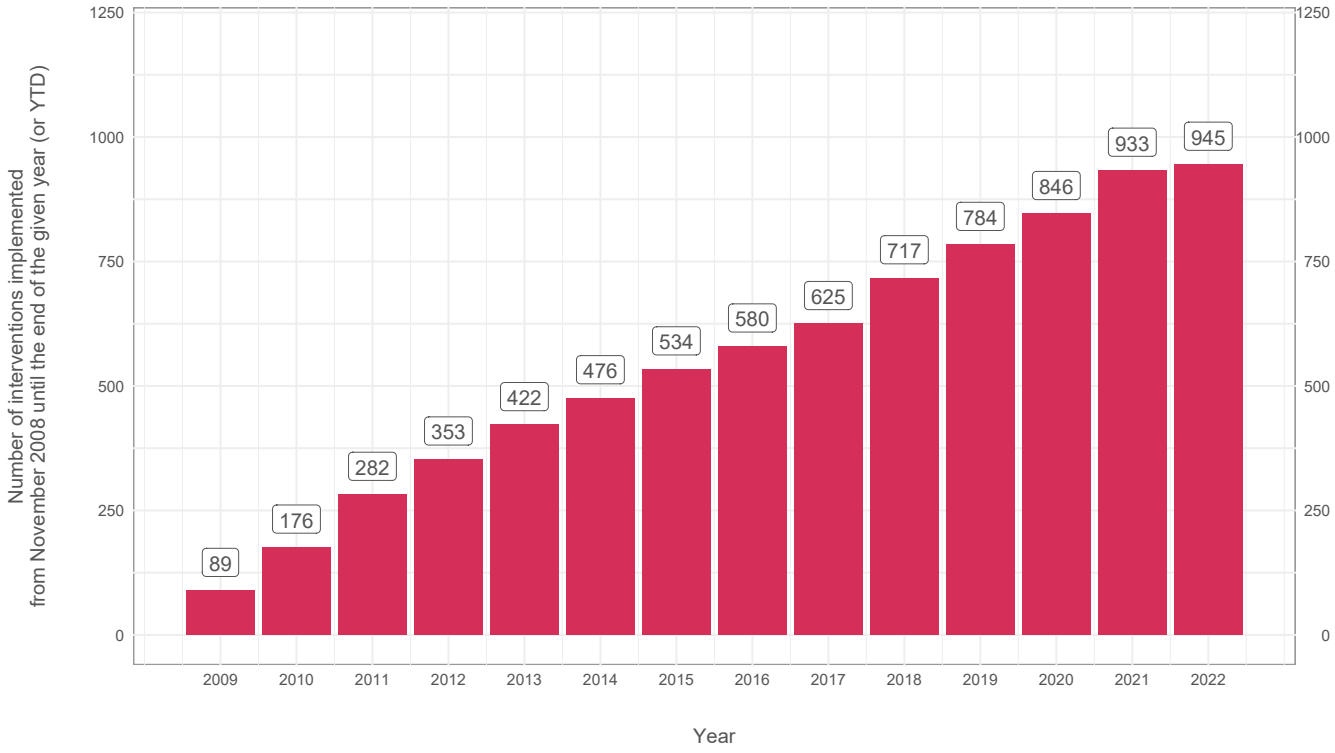
ARGENTINA

Track record of protectionism



ARGENTINA

Number of discriminatory interventions imposed since November 2008



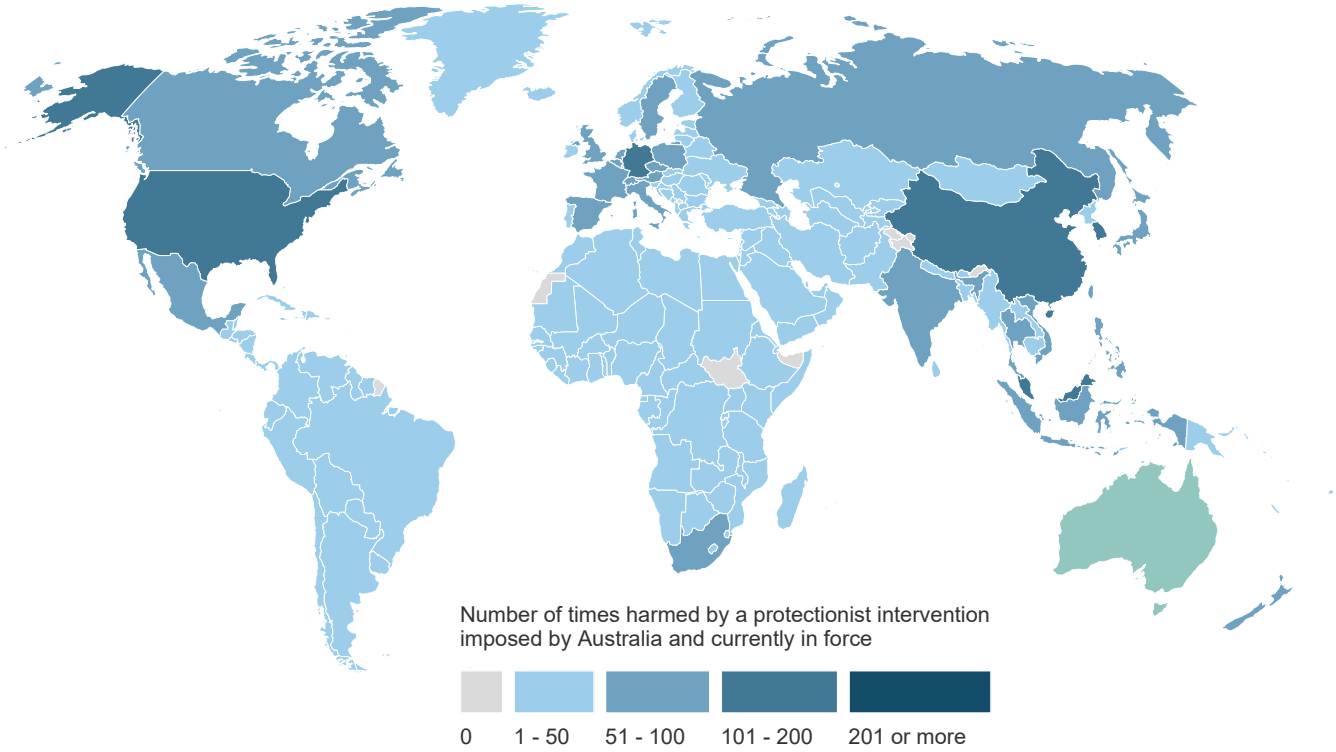
AUSTRALIA

What is at stake for Australia's goods exporters?

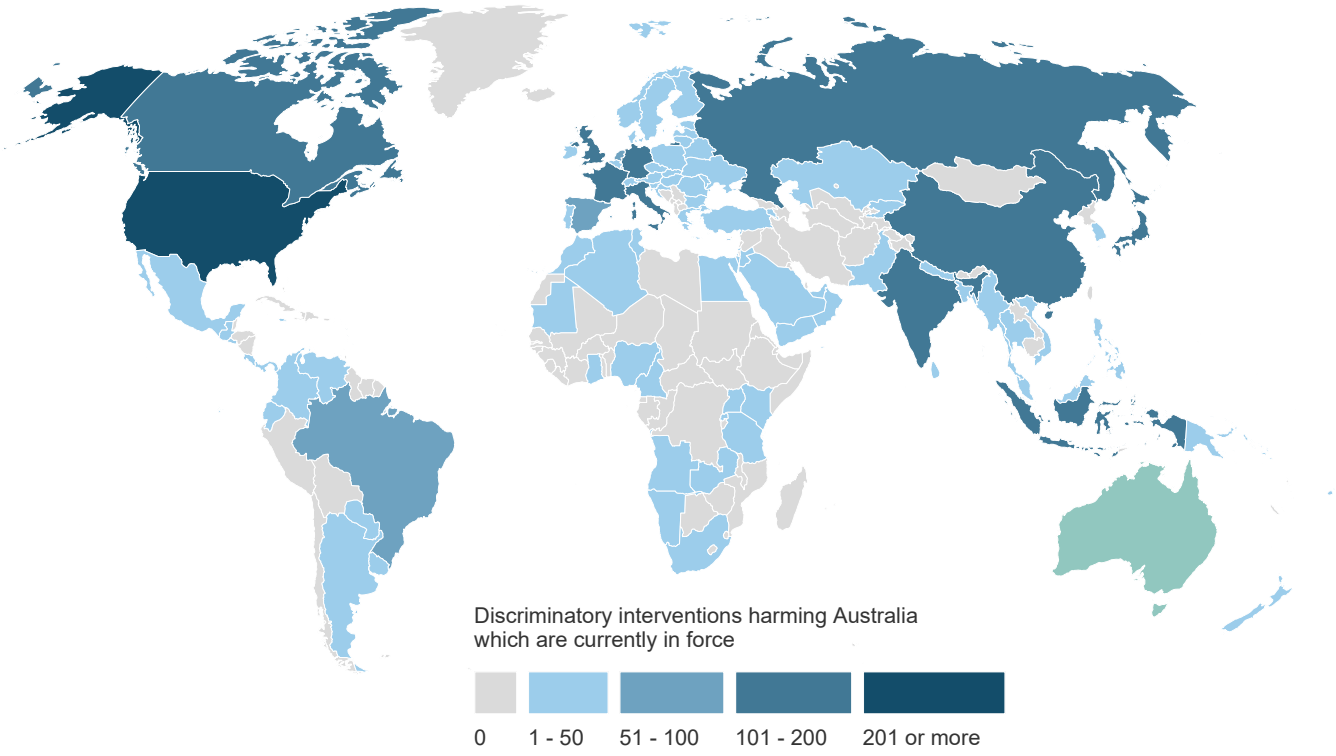
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	26.34	33.06	38.27	43.93	50.85	59.10	59.71	61.10	62.74	64.78	68.69	69.09	69.89	71.89
D	Contingent trade-protective measures	0.04	0.02	0.02	0.03	0.05	0.08	0.12	0.32	0.42	0.46	0.48	0.54	0.60	0.60
E	Non-automatic licensing, quotas etc.	2.16	8.01	12.37	13.49	14.55	14.64	15.06	15.30	15.51	15.96	16.13	17.08	17.11	17.09
F	Price-control measures, including additional taxes and charges	9.06	9.06	9.10	9.13	9.12	10.09	11.05	11.05	11.06	14.60	14.97	15.08	14.16	13.97
G	Finance measures	0.06	0.30	0.69	0.69	0.69	0.69	1.07	1.19	1.19	1.20	1.20	1.20	1.20	1.20
I	Trade-related investment measures	0.00	0.01	0.02	0.03	0.03	0.21	0.26	0.27	0.28	0.28	0.17	0.08	0.13	0.15
L	Subsidies (excl. export subsidies)	3.61	5.08	14.40	15.42	22.42	25.30	25.61	26.08	26.59	26.44	27.04	27.28	18.58	18.84
M	Government procurement restrictions	0.58	0.90	0.70	0.82	0.92	1.04	1.11	1.12	1.26	1.83	2.76	2.39	2.47	2.60
P	Export-related measures (incl. subsidies)	12.74	22.48	26.86	30.71	32.74	35.79	36.49	39.12	41.23	43.18	47.90	48.26	50.18	54.21
	Tariff measures	3.42	4.62	5.02	10.72	12.18	13.57	14.25	14.44	15.88	16.58	16.61	17.32	17.76	17.77
	Instrument unclear	0.20	0.39	0.40	0.96	2.42	3.16	1.26	1.21	1.59	2.46	2.60	2.62	2.85	3.06

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY AUSTRALIA'S DISCRIMINATORY INTERVENTIONS

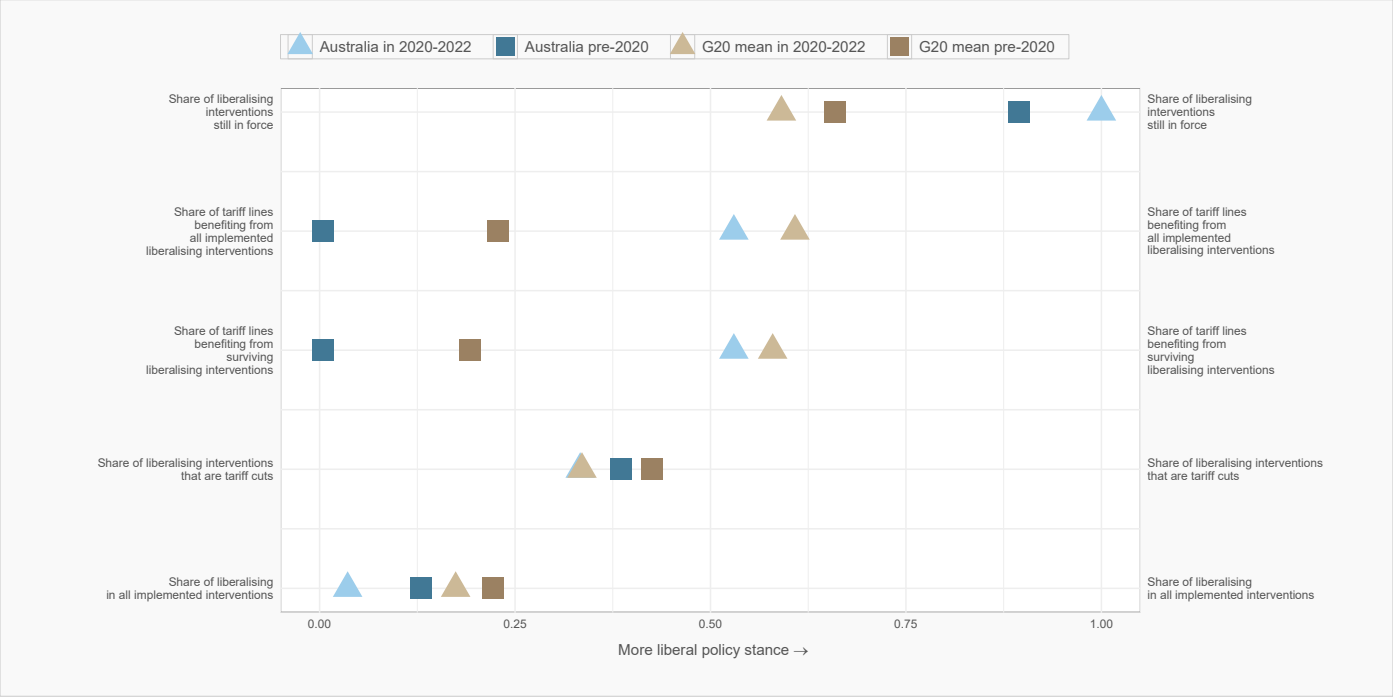


DISCRIMINATORY INTERVENTIONS HARMING AUSTRALIA'S INTERESTS



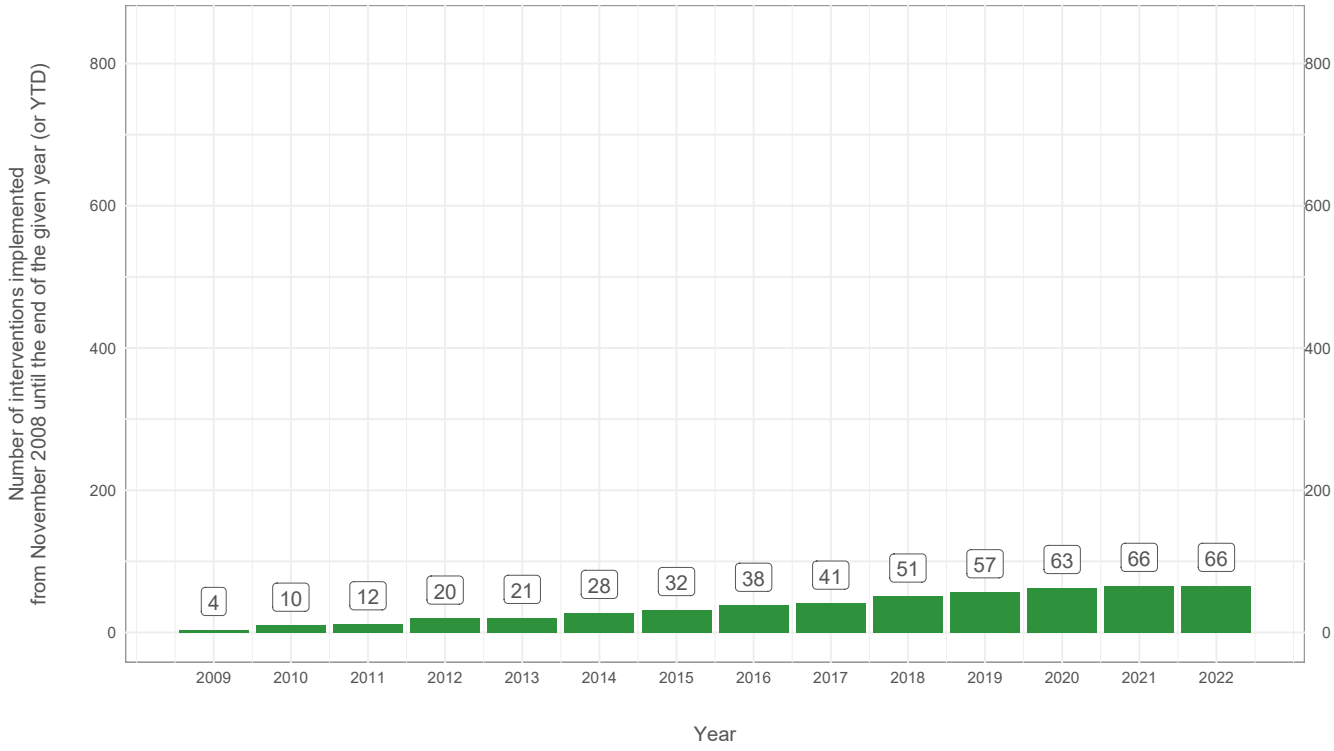
AUSTRALIA

Track record of liberalisation



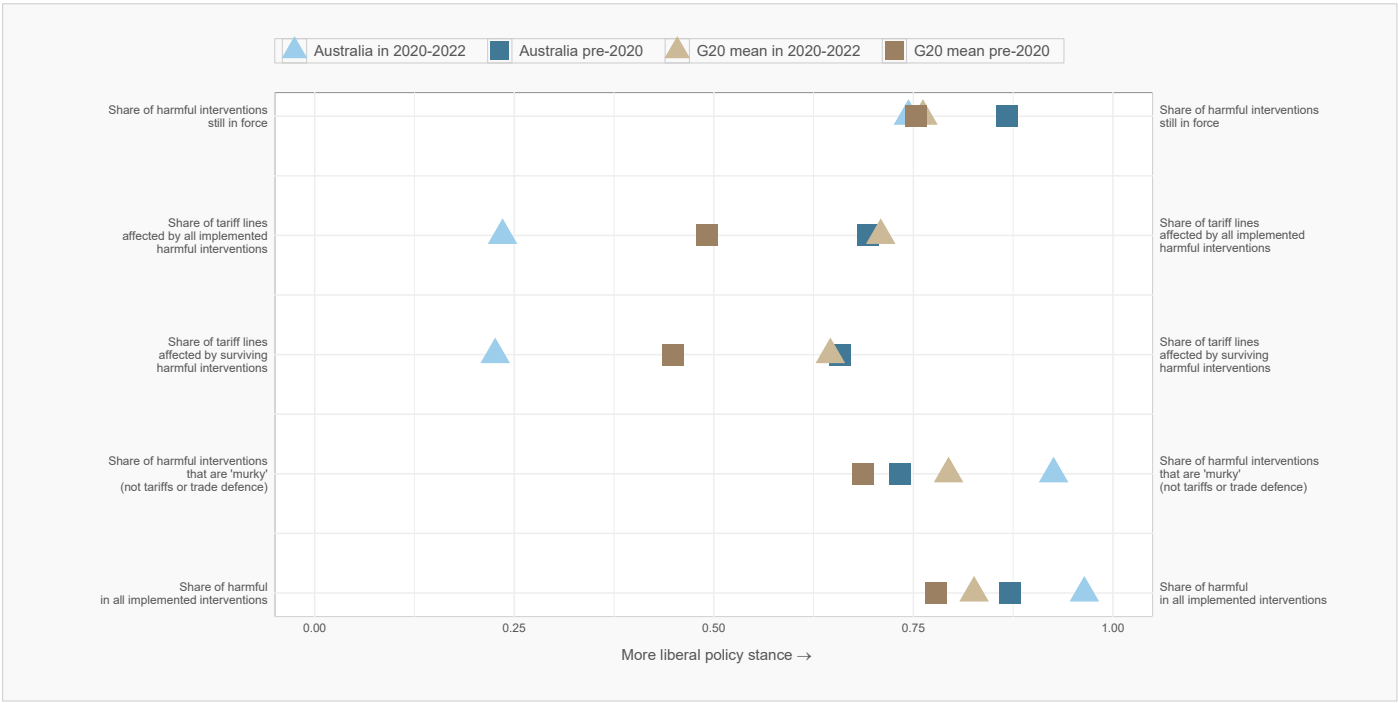
AUSTRALIA

Number of liberalising interventions imposed since November 2008



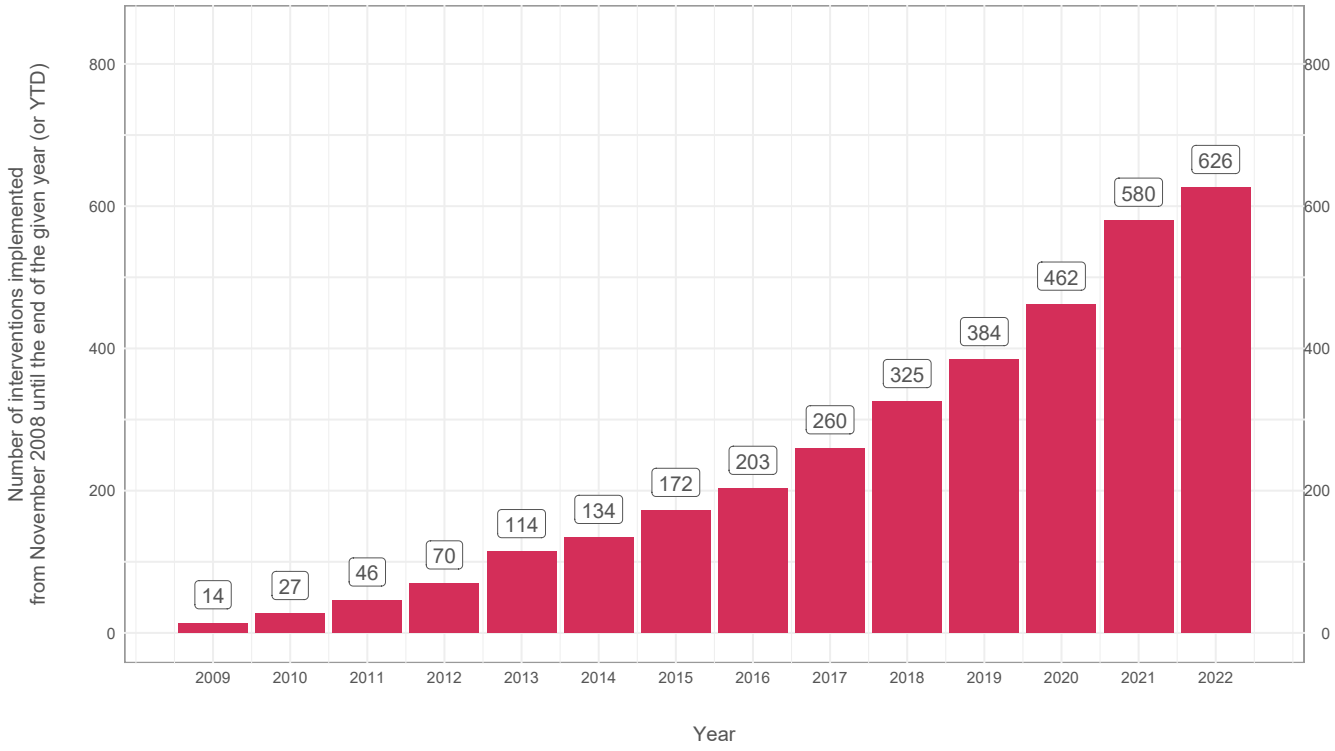
AUSTRALIA

Track record of protectionism



AUSTRALIA

Number of discriminatory interventions imposed since November 2008



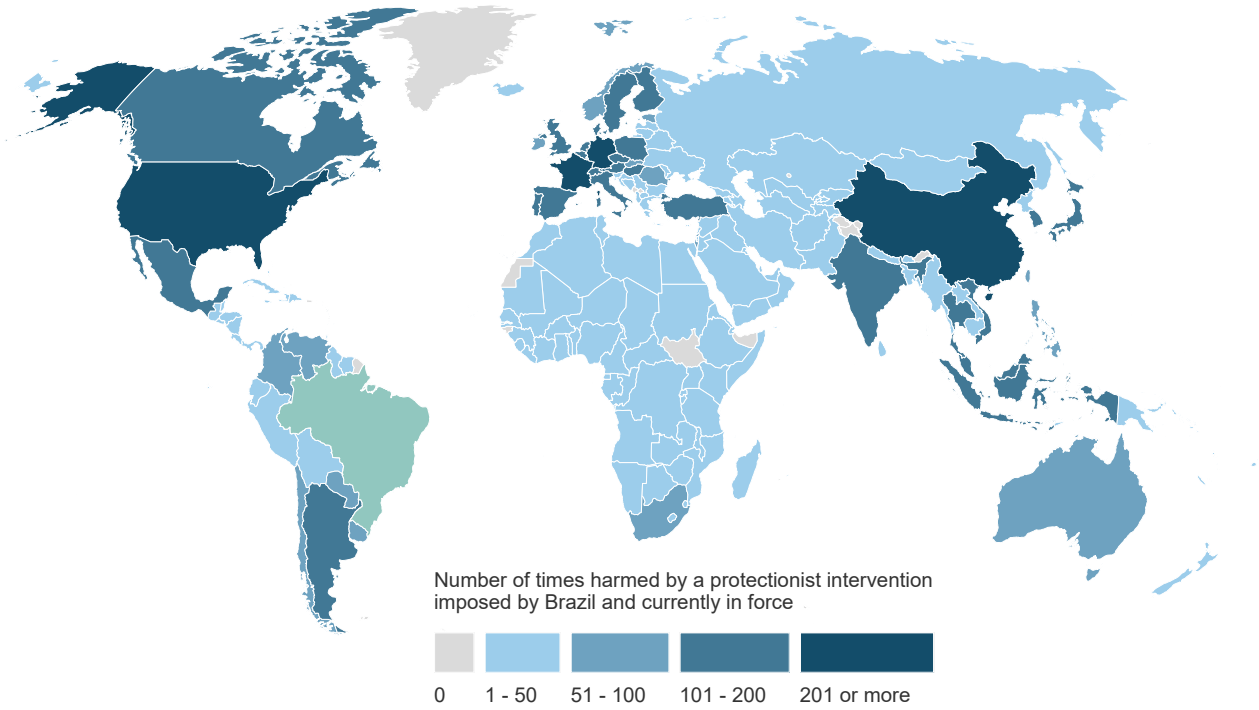
BRAZIL

What is at stake for Brazil's goods exporters?

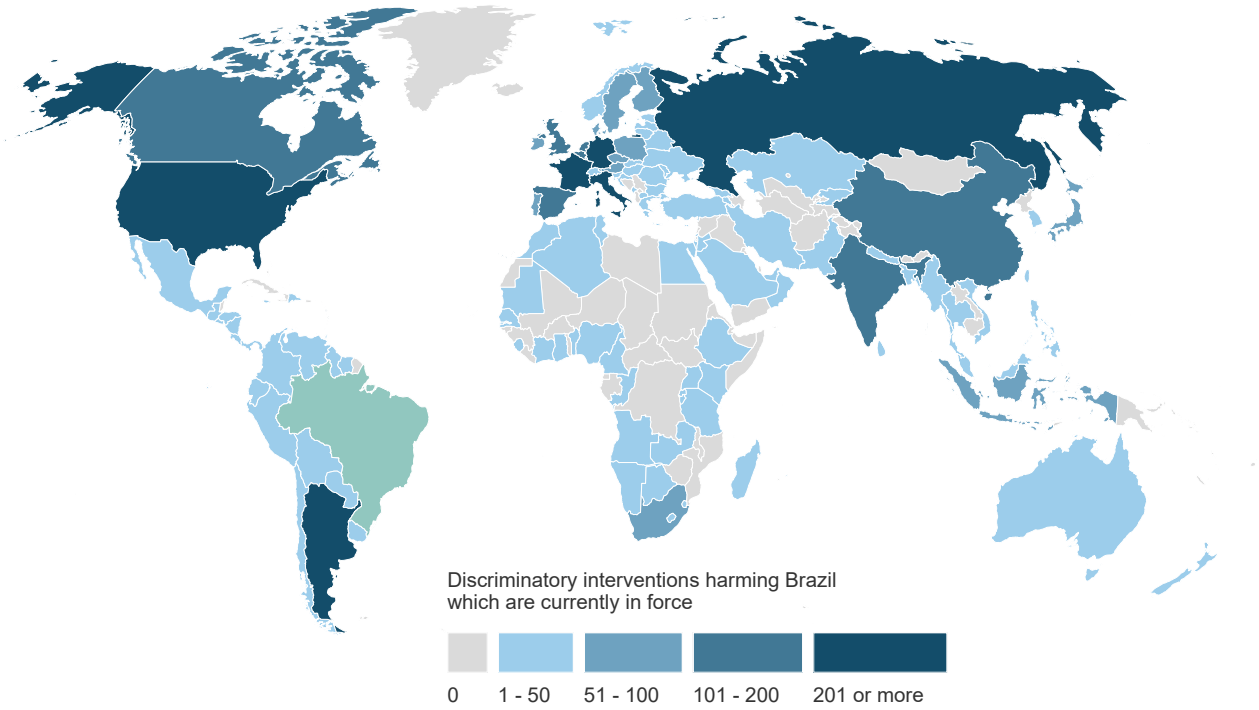
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	38.32	51.91	53.39	61.99	72.21	75.36	75.56	75.67	76.68	78.03	80.54	82.10	79.64	79.18
D	Contingent trade-protective measures	0.04	0.09	0.17	0.26	0.25	0.25	0.23	0.71	0.90	1.78	2.18	1.80	1.66	1.99
E	Non-automatic licensing, quotas etc.	2.43	6.83	12.59	18.22	19.74	19.92	19.20	16.36	17.42	17.51	17.56	19.63	19.78	19.84
F	Price-control measures, including additional taxes and charges	4.70	4.72	4.74	4.75	4.75	4.76	4.76	4.76	4.76	5.16	5.20	12.17	12.17	5.21
G	Finance measures	0.39	1.48	1.57	1.57	1.57	1.57	1.61	1.63	1.63	1.63	1.63	1.63	1.63	1.63
I	Trade-related investment measures	0.52	1.09	2.02	2.49	2.50	2.57	3.50	4.18	4.19	4.29	4.16	4.31	5.17	5.64
L	Subsidies (excl. export subsidies)	6.93	17.59	21.64	22.81	36.93	44.53	47.08	45.83	48.75	49.06	49.68	50.43	43.59	43.88
M	Government procurement restrictions	2.71	2.73	2.27	3.53	4.95	5.99	6.71	7.04	7.49	7.56	7.89	7.93	7.94	8.07
P	Export-related measures (incl. subsidies)	26.08	36.45	38.35	42.37	48.62	48.50	51.33	56.60	57.86	59.45	66.16	66.65	61.55	63.98
	Tariff measures	2.77	3.58	4.63	10.90	11.70	12.61	13.67	14.43	16.69	17.66	18.76	19.61	19.61	19.68
	Instrument unclear	0.02	1.30	1.44	1.48	3.81	4.48	6.08	6.25	5.99	5.56	5.63	5.63	5.64	5.64

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY BRAZIL'S DISCRIMINATORY INTERVENTIONS

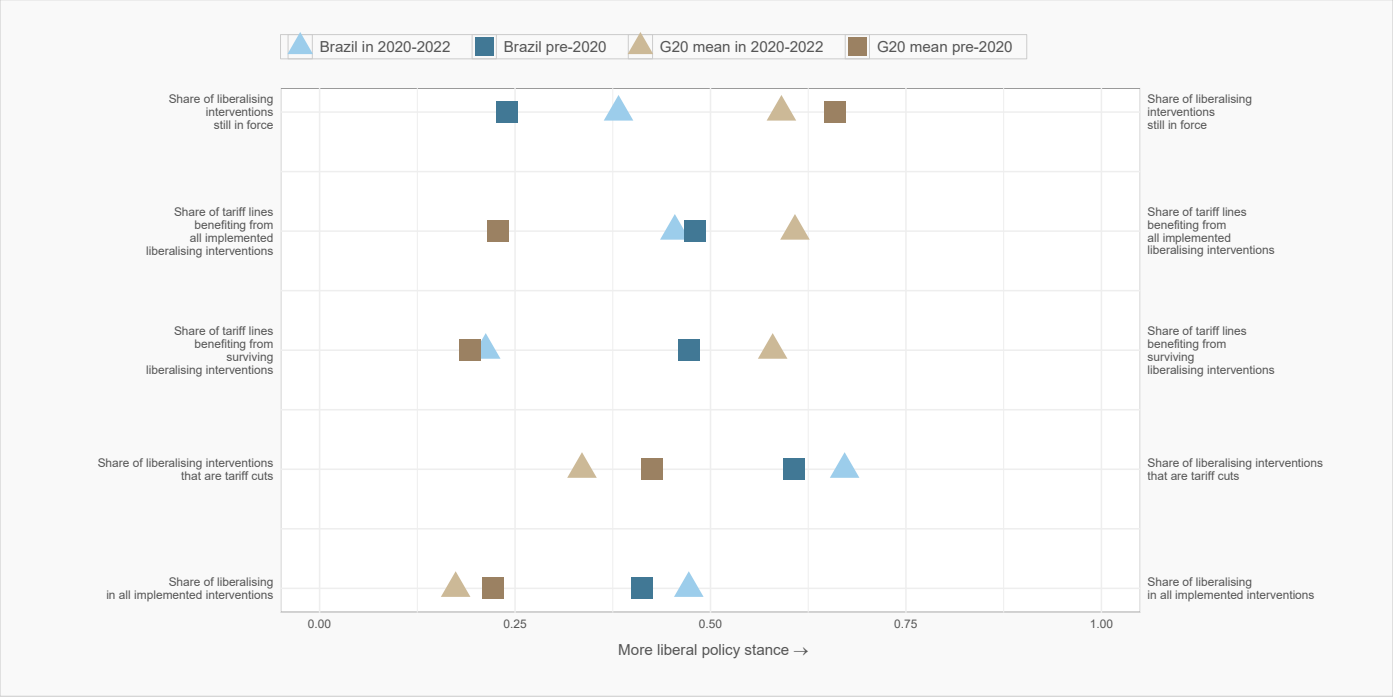


DISCRIMINATORY INTERVENTIONS HARMING BRAZIL'S INTERESTS



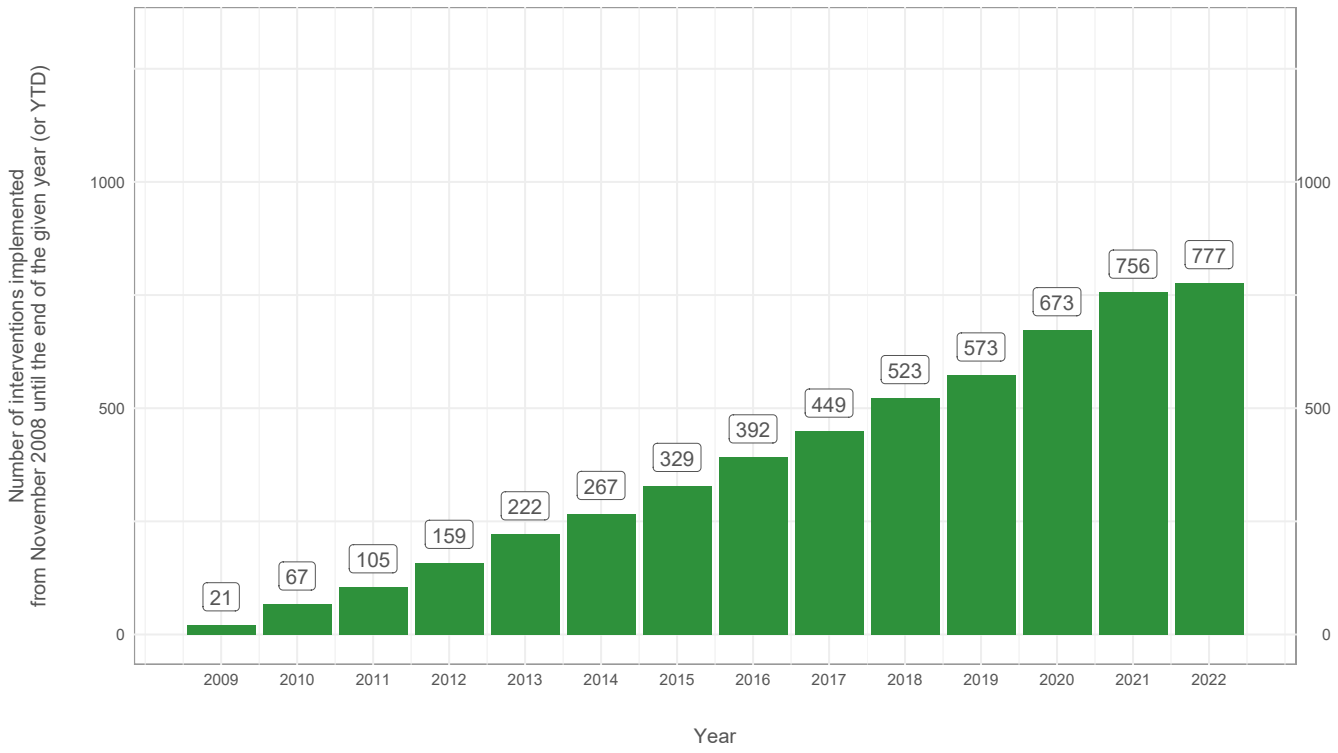
BRAZIL

Track record of liberalisation



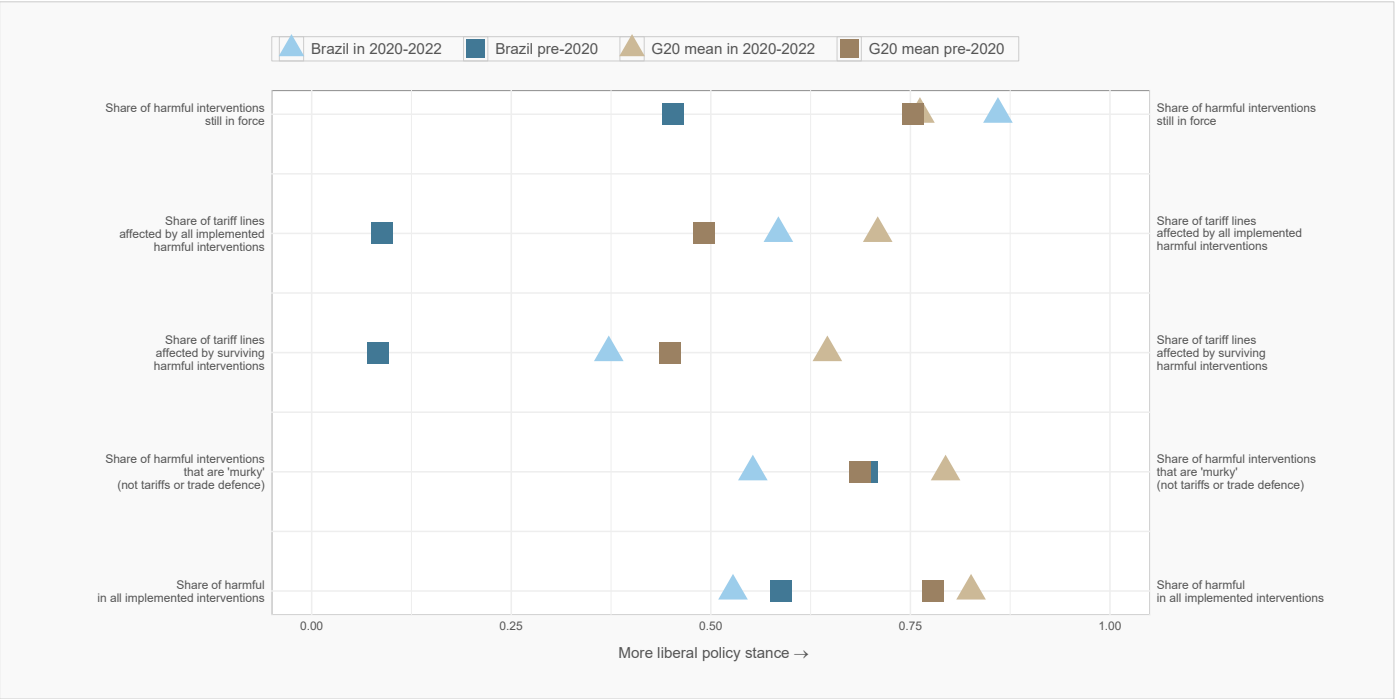
BRAZIL

Number of liberalising interventions imposed since November 2008



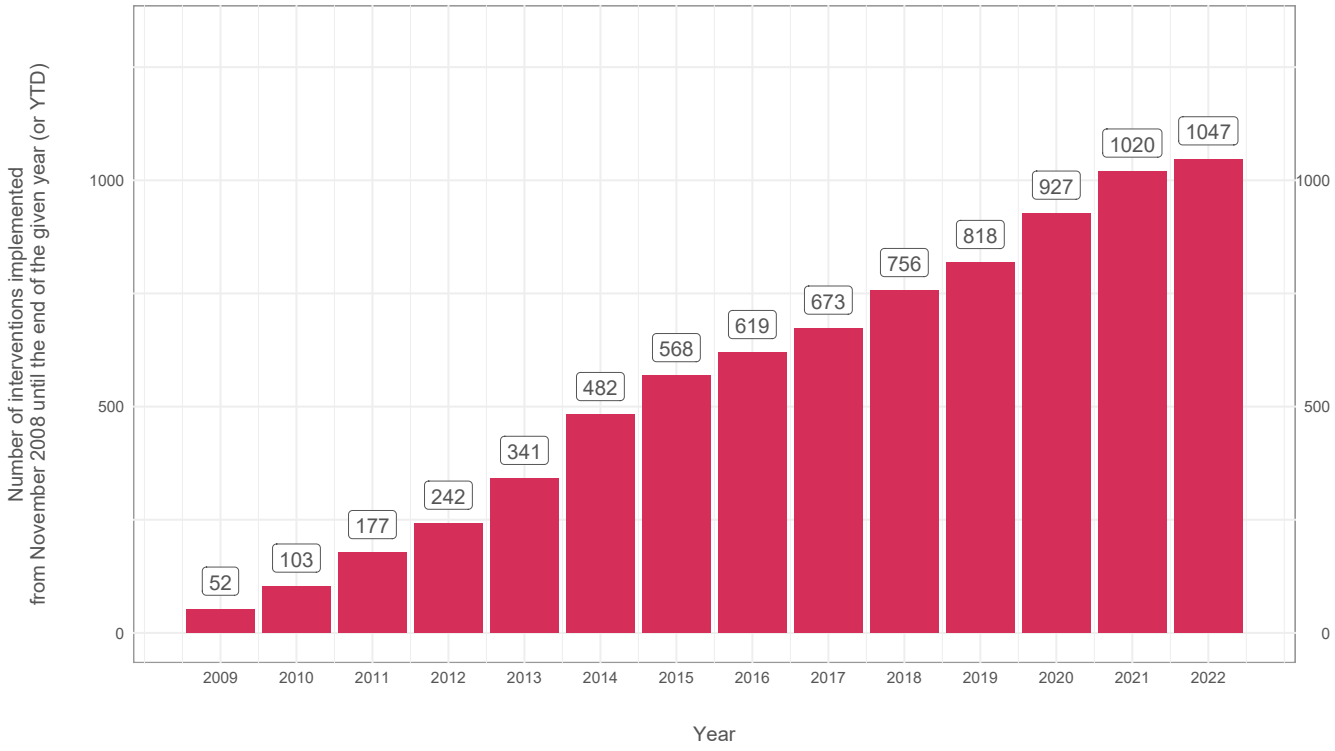
BRAZIL

Track record of protectionism



BRAZIL

Number of discriminatory interventions imposed since November 2008



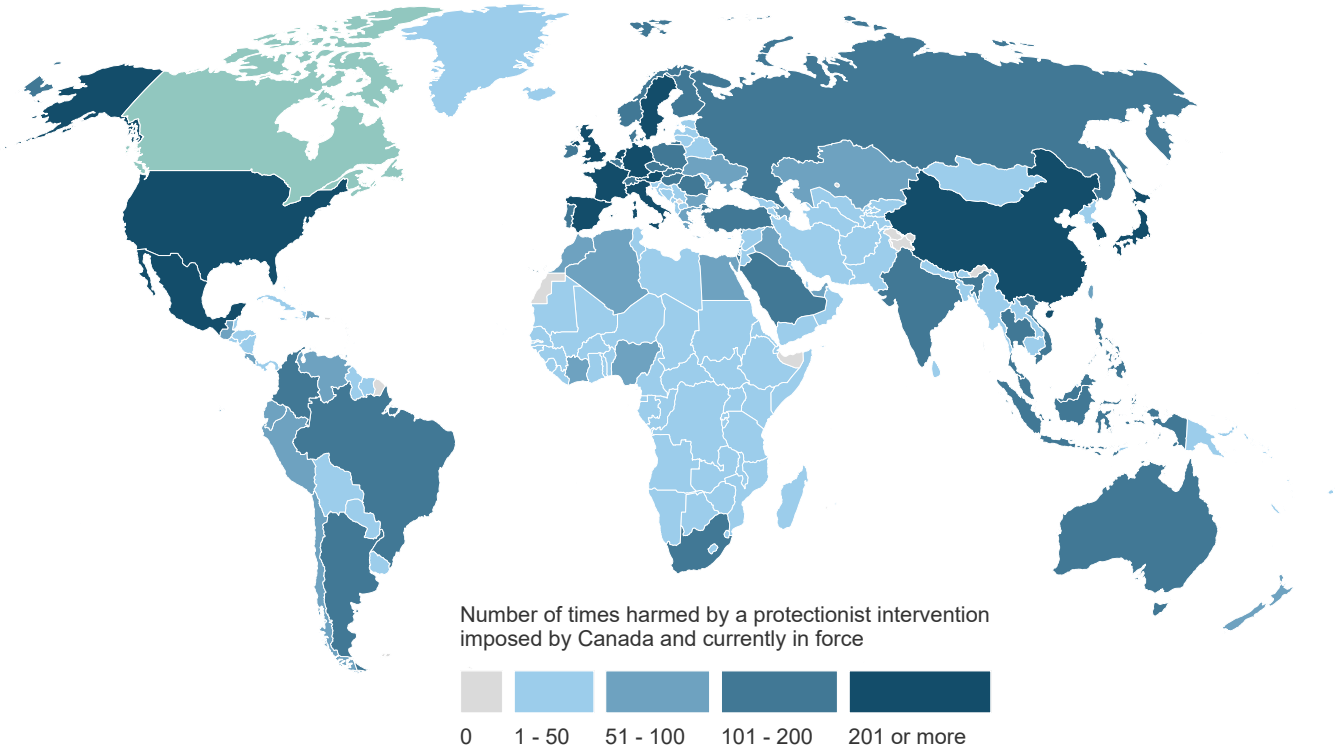
CANADA

What is at stake for Canada's goods exporters?

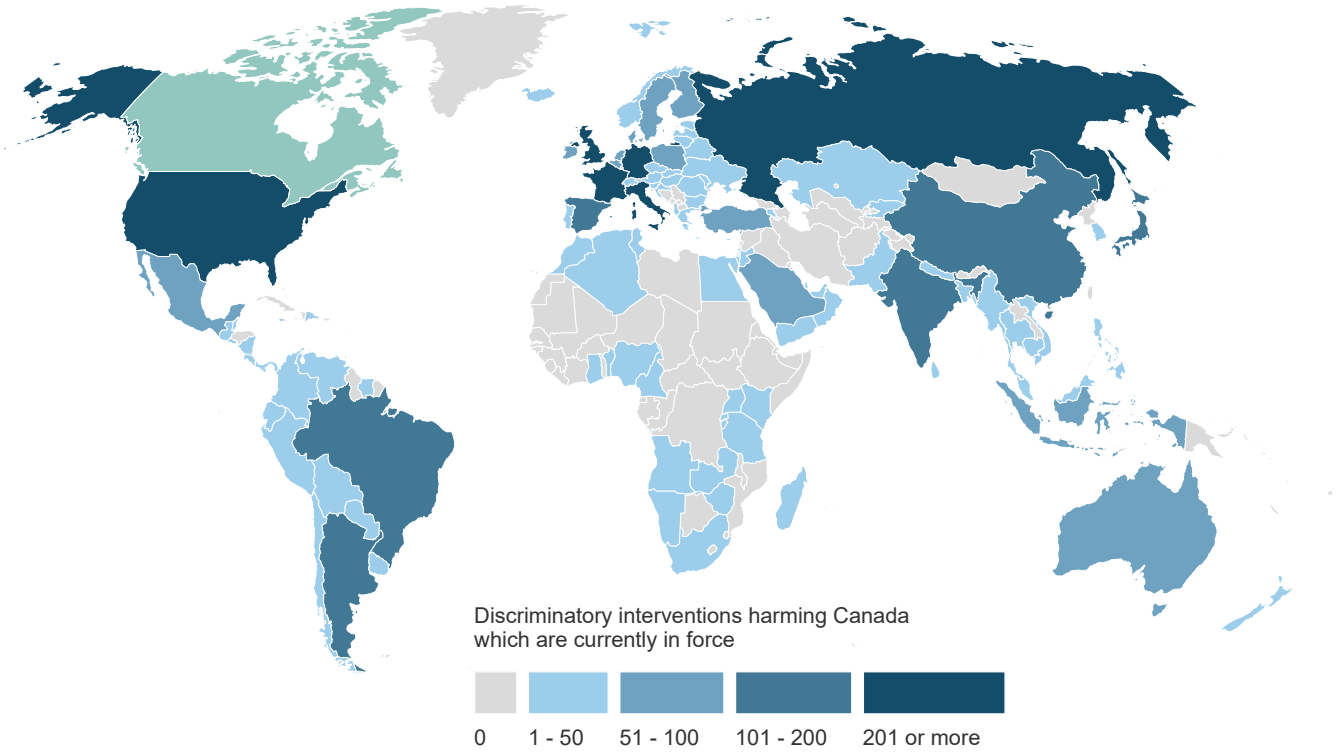
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	37.66	49.74	54.97	66.05	72.39	74.49	82.59	84.74	86.48	87.34	87.52	87.69	87.86	88.64
D	Contingent trade-protective measures	0.11	0.12	0.13	0.13	0.13	0.14	0.44	2.07	3.48	4.42	4.52	4.47	4.68	4.71
E	Non-automatic licensing, quotas etc.	0.18	0.33	0.66	0.72	0.95	0.98	1.09	1.19	2.42	3.17	3.28	3.33	4.31	4.91
F	Price-control measures, including additional taxes and charges	0.31	0.31	0.33	0.34	0.34	0.42	0.56	0.65	0.66	0.88	0.91	0.94	0.94	0.92
G	Finance measures	0.03	0.09	0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I	Trade-related investment measures	0.14	0.30	0.10	0.10	0.11	0.11	0.36	0.78	1.32	1.33	1.33	1.79	3.97	4.98
L	Subsidies (excl. export subsidies)	12.98	18.00	22.86	32.16	40.24	44.53	45.07	47.29	48.85	52.09	52.77	57.89	59.98	61.68
M	Government procurement restrictions	2.19	2.62	2.90	3.18	3.23	3.64	4.25	4.25	4.76	5.37	6.56	7.12	7.20	8.49
P	Export-related measures (incl. subsidies)	23.95	32.37	42.93	55.51	57.11	46.93	53.81	54.46	57.55	58.26	57.75	57.28	56.24	57.64
	Tariff measures	0.43	0.73	0.85	1.80	2.09	1.96	2.19	2.60	4.35	7.20	8.85	10.69	11.71	11.76
	Instrument unclear	0.01	0.14	0.03	0.13	1.10	1.67	1.93	2.34	2.62	2.99	2.99	3.03	3.02	3.04

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY CANADA'S DISCRIMINATORY INTERVENTIONS

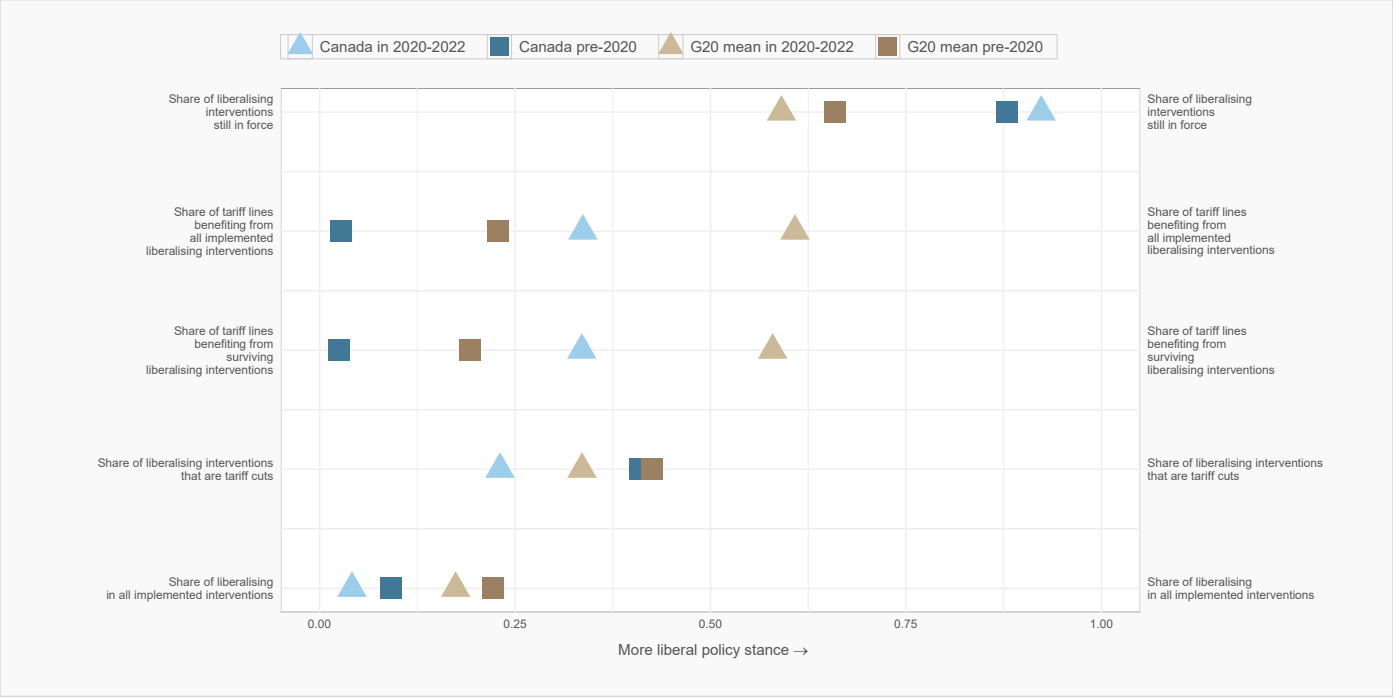


DISCRIMINATORY INTERVENTIONS HARMING CANADA'S INTERESTS



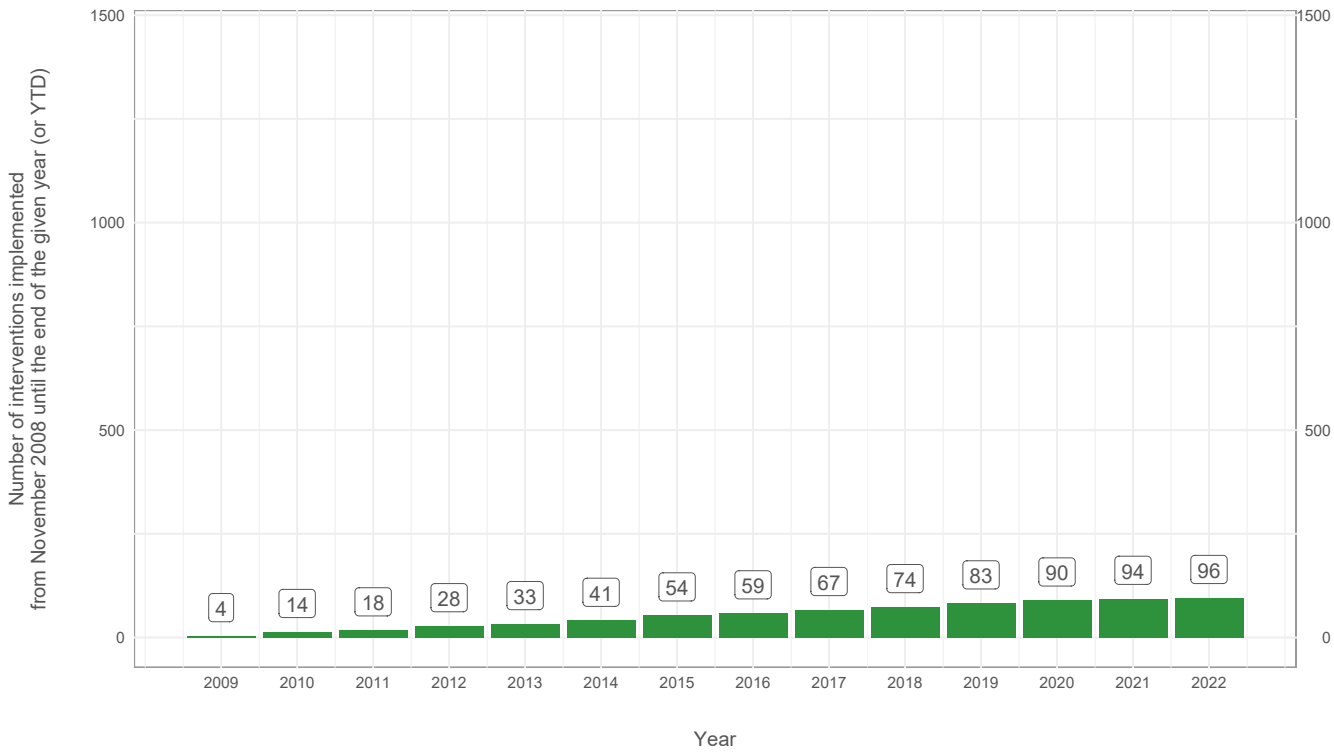
CANADA

Track record of liberalisation



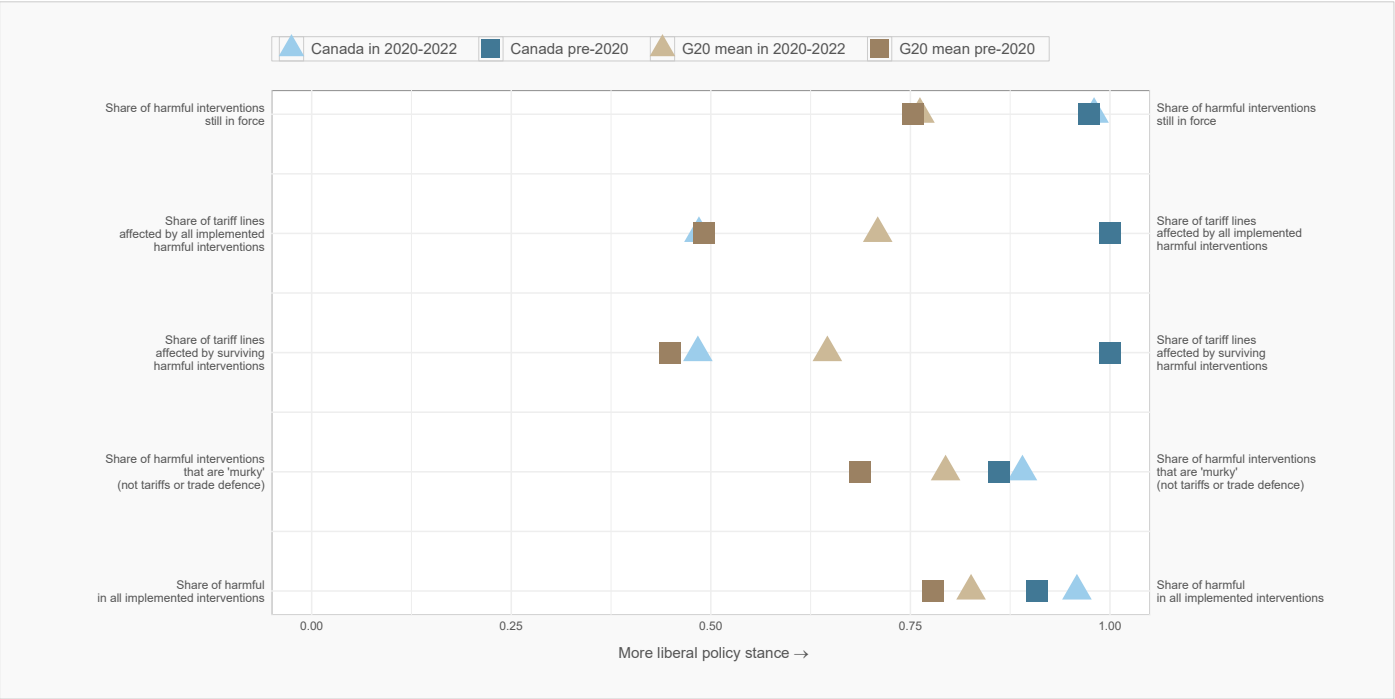
CANADA

Number of liberalising interventions imposed since November 2008



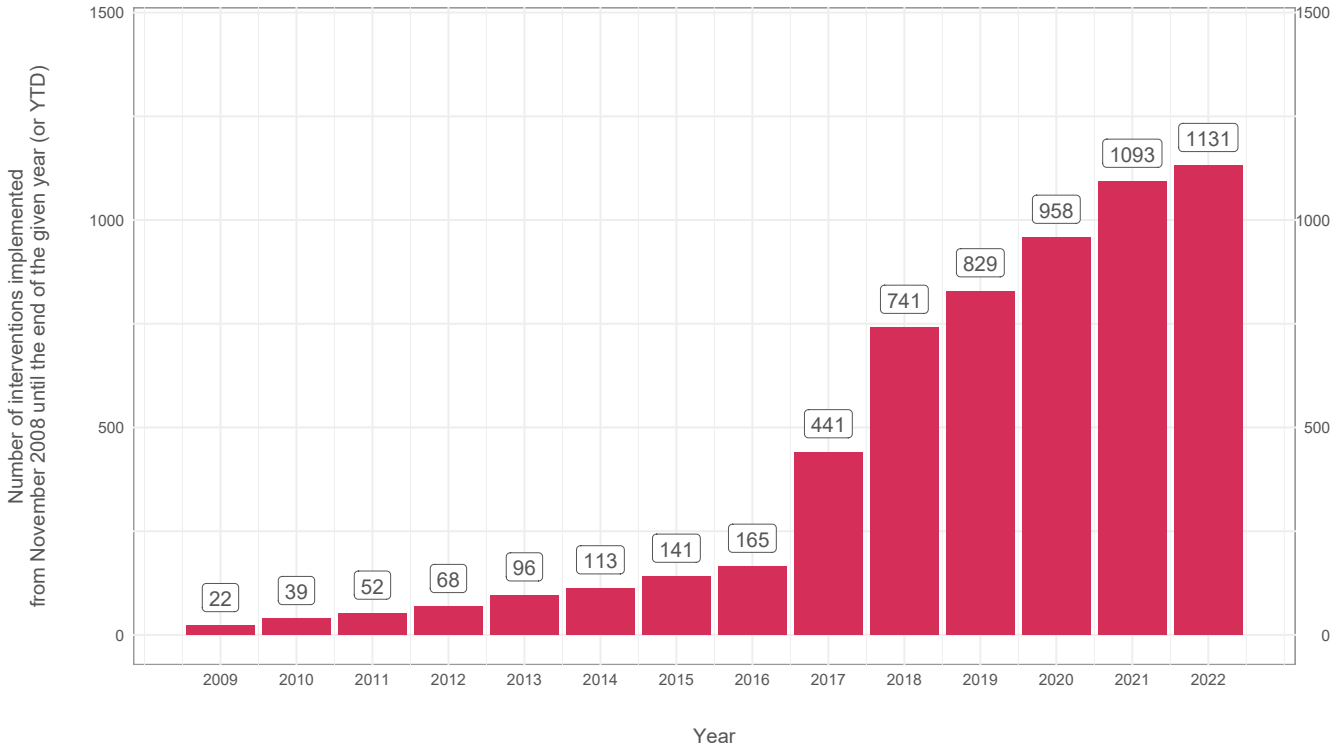
CANADA

Track record of protectionism



CANADA

Number of discriminatory interventions imposed since November 2008



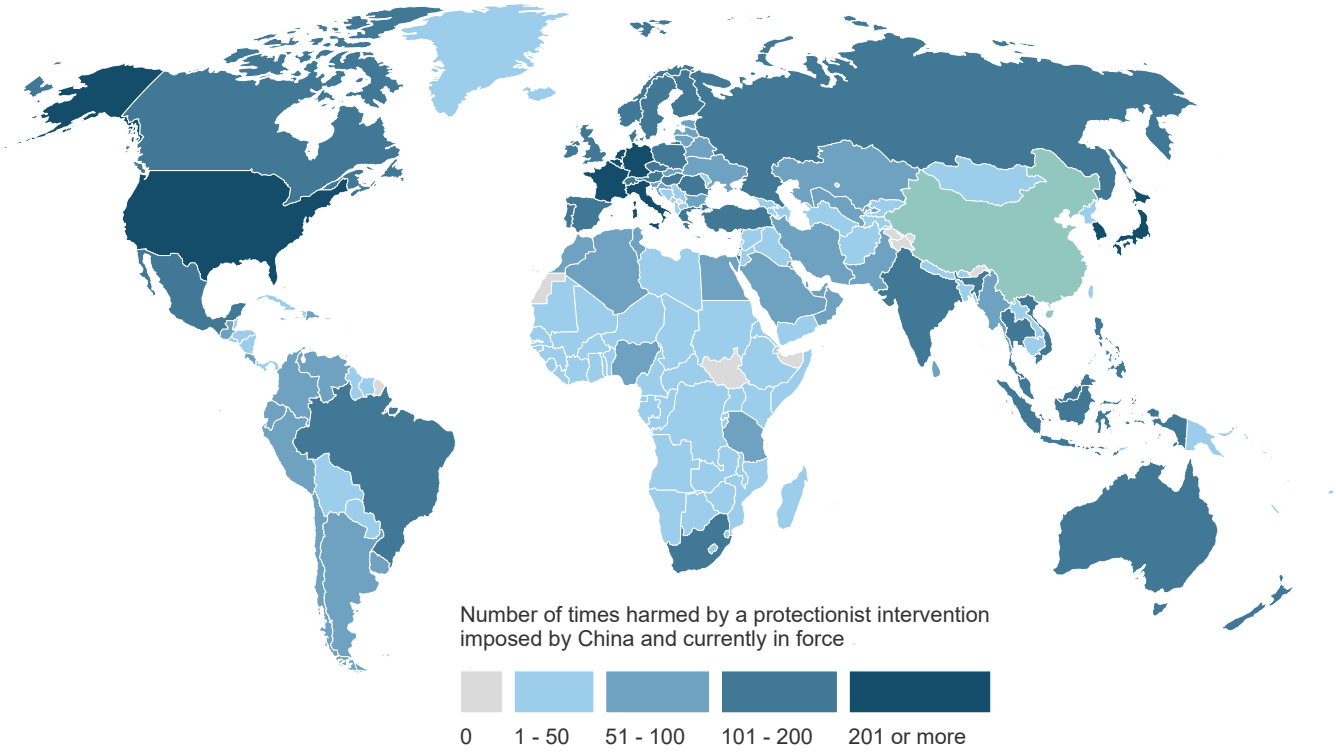
CHINA

What is at stake for China's goods exporters?

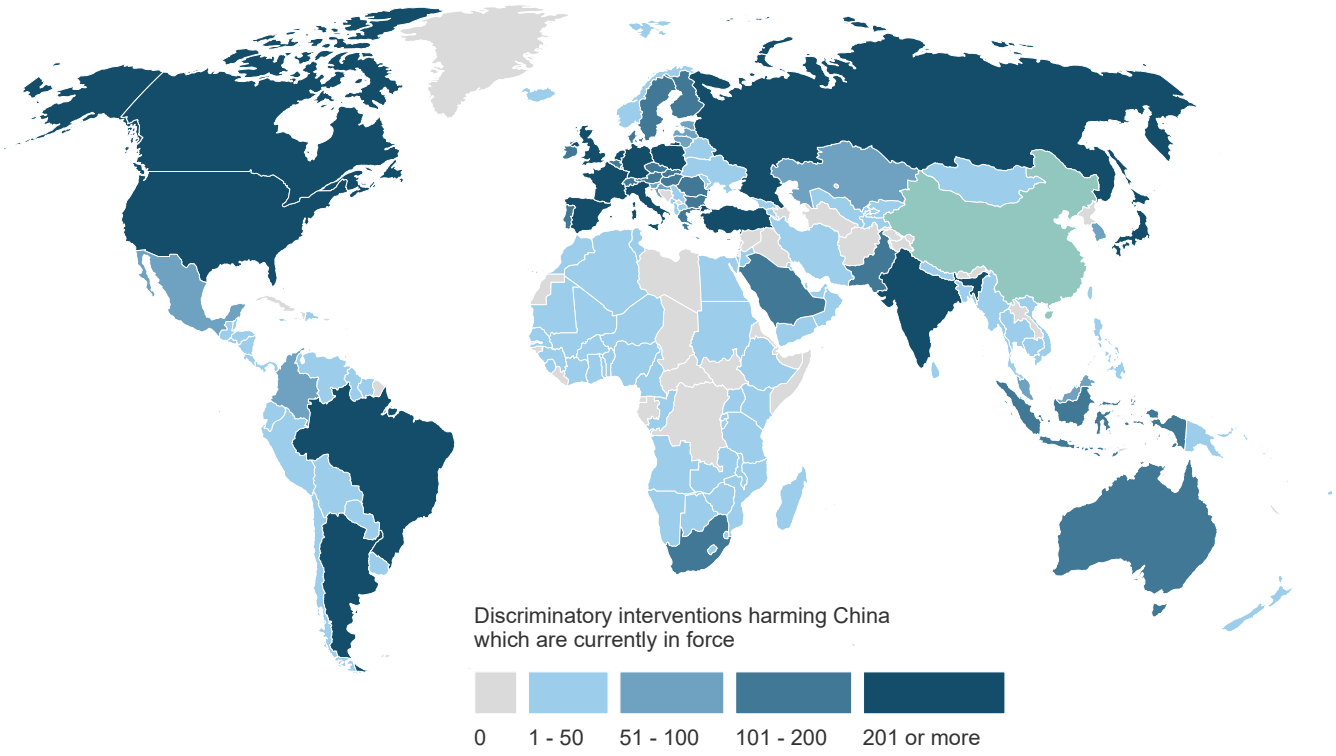
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...													
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	16.98	32.37	48.13	56.07	71.79	73.72	71.53	74.14	75.55	76.89	78.22	79.26	77.10	78.74
D	Contingent trade-protective measures	0.57	1.67	2.59	2.79	3.06	3.43	3.63	3.97	4.33	4.73	5.14	5.45	5.58	5.66
E	Non-automatic licensing, quotas etc.	0.28	0.25	0.42	0.52	0.71	0.69	0.92	1.20	1.55	1.59	1.87	2.24	2.47	2.28
F	Price-control measures, including additional taxes and charges	0.04	0.07	0.13	0.16	0.17	0.29	0.40	0.43	0.44	1.01	1.11	1.69	1.71	1.50
G	Finance measures	0.28	0.61	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.03	1.05	1.04	1.03	1.06
I	Trade-related investment measures	0.04	0.18	0.21	0.24	0.26	0.29	0.48	0.67	0.79	0.81	0.80	1.55	2.95	3.23
L	Subsidies (excl. export subsidies)	2.91	8.95	15.18	17.49	38.01	39.21	41.63	42.87	43.13	43.91	45.18	46.73	37.72	38.11
M	Government procurement restrictions	0.83	0.87	1.20	1.57	3.67	4.83	5.25	5.20	5.40	5.46	5.57	5.66	5.91	6.33
P	Export-related measures (incl. subsidies)	11.37	22.45	36.34	46.34	53.82	54.72	46.22	54.52	57.24	58.97	59.30	59.52	51.32	54.06
	Tariff measures	1.61	2.12	3.03	4.32	5.11	25.34	24.02	25.43	28.57	32.97	39.39	47.16	47.39	47.82
	Instrument unclear	0.15	0.34	0.39	0.41	0.55	0.94	1.02	1.09	1.08	1.16	1.27	1.27	1.27	1.27

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY CHINA'S DISCRIMINATORY INTERVENTIONS

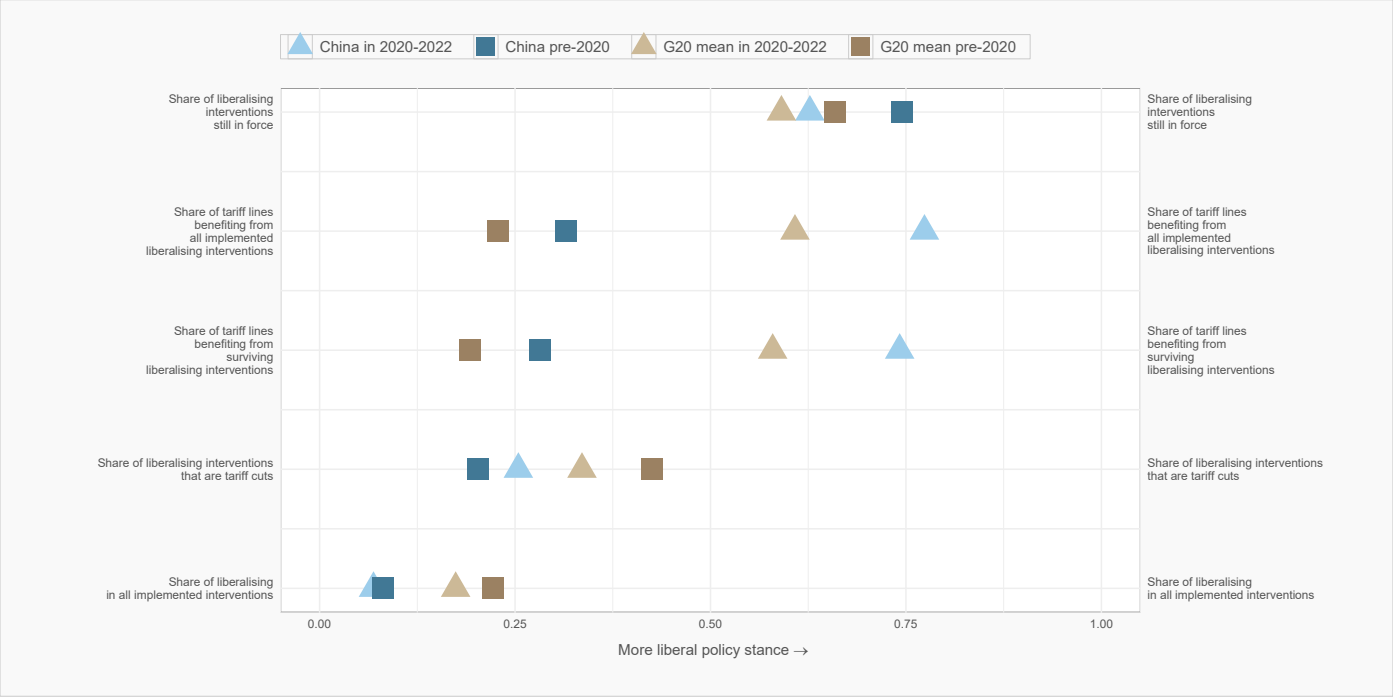


DISCRIMINATORY INTERVENTIONS HARMING CHINA'S INTERESTS



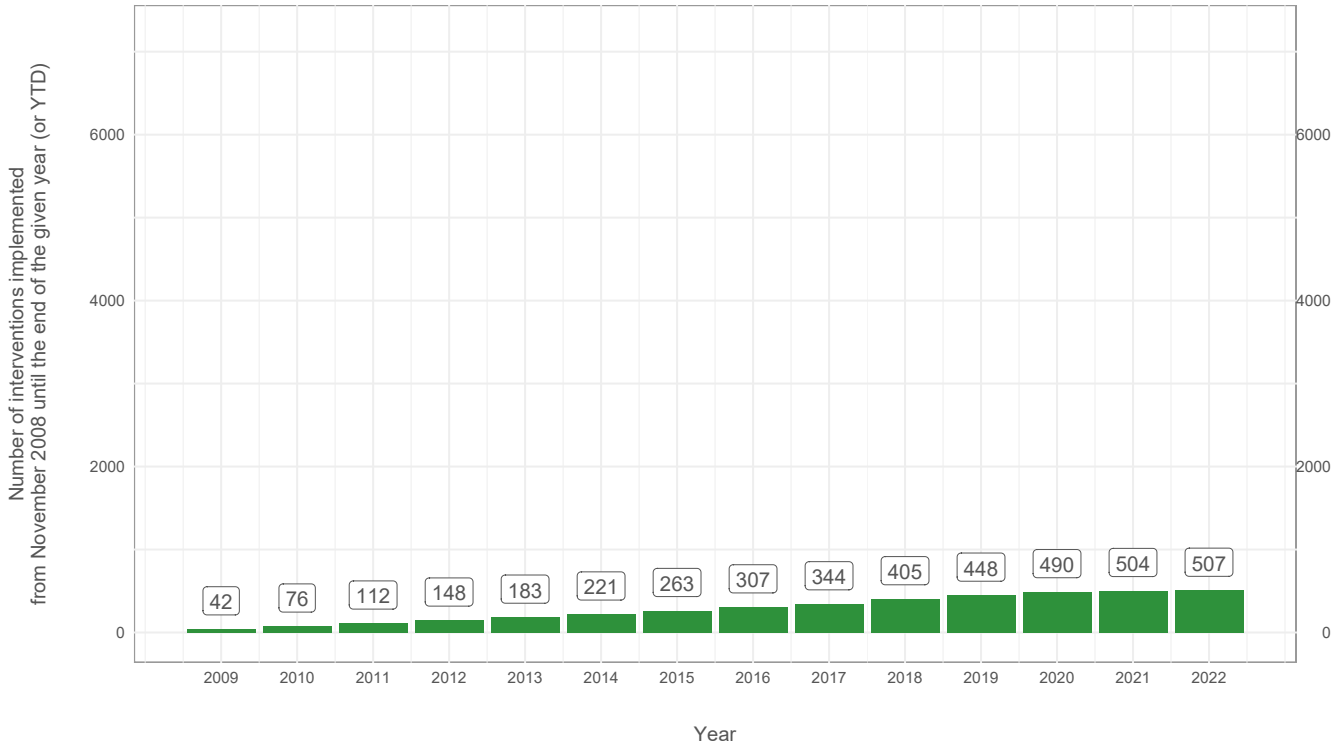
CHINA

Track record of liberalisation



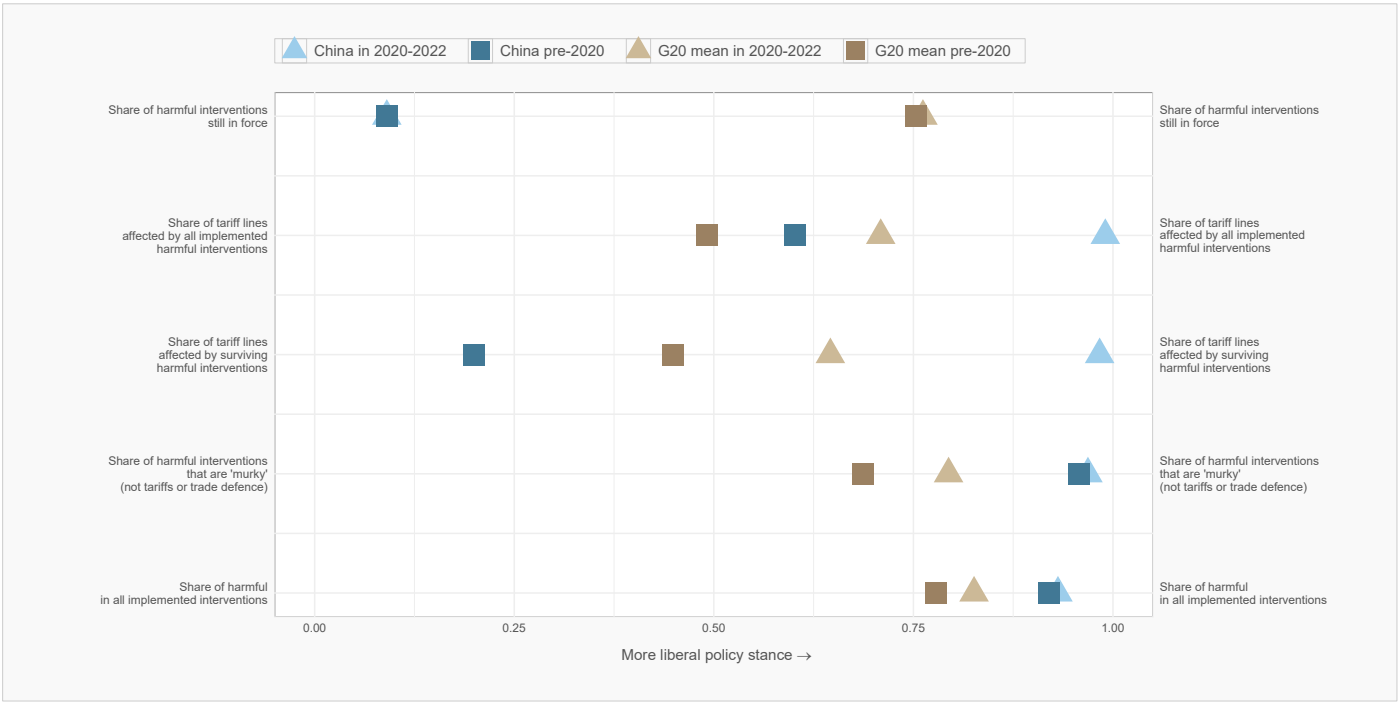
CHINA

Number of liberalising interventions imposed since November 2008



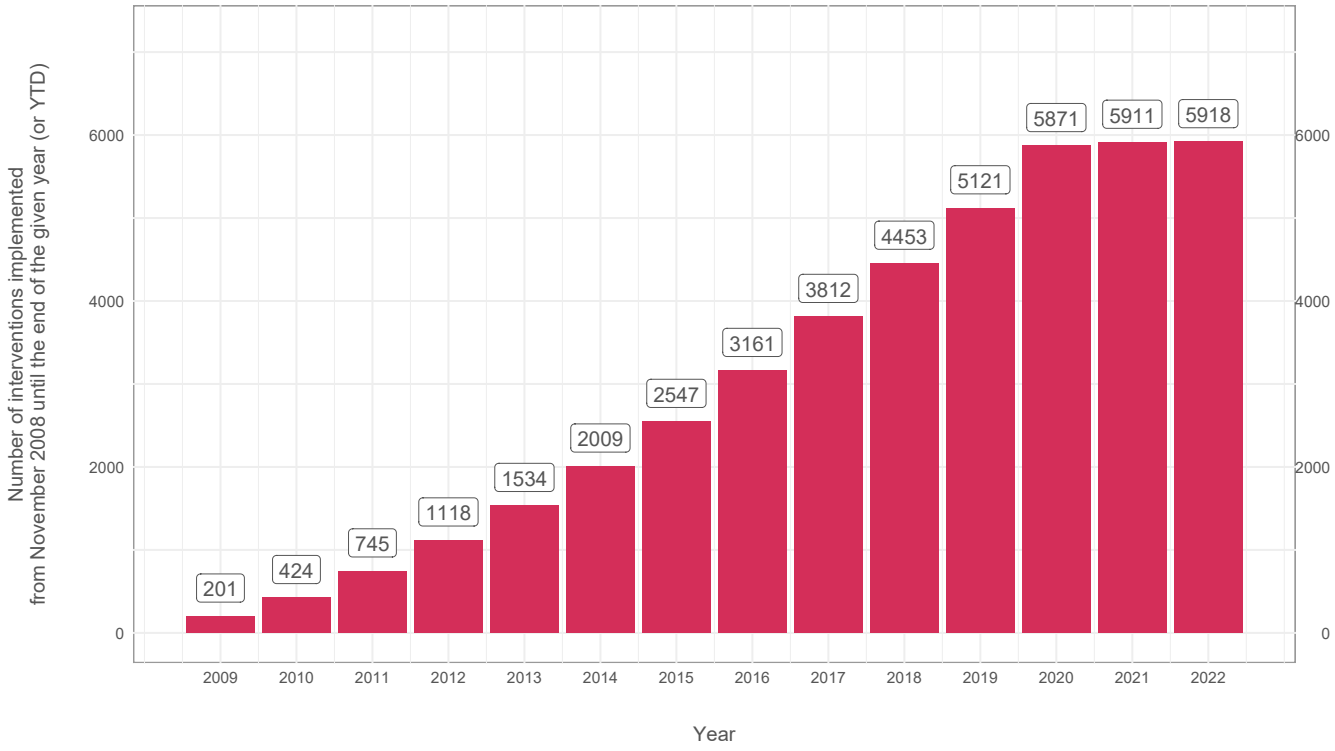
CHINA

Track record of protectionism



CHINA

Number of discriminatory interventions imposed since November 2008



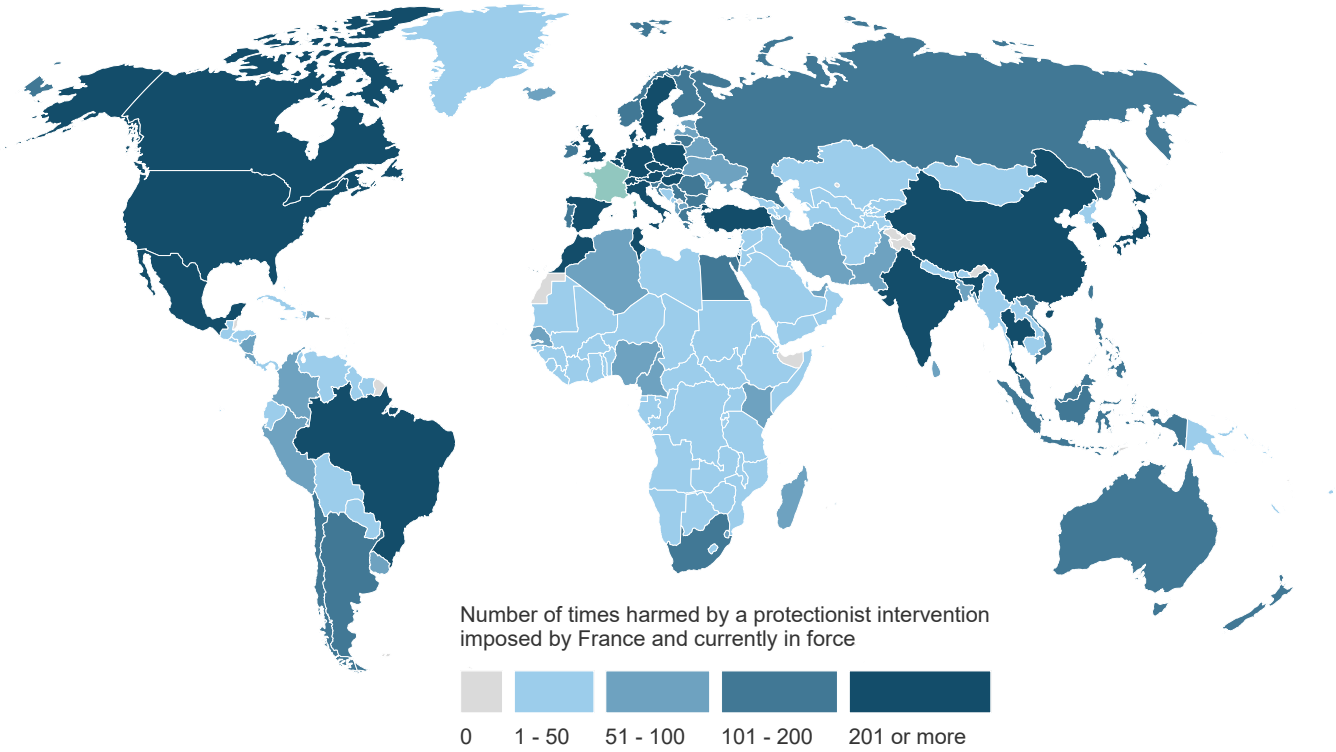
FRANCE

What is at stake for France's goods exporters?

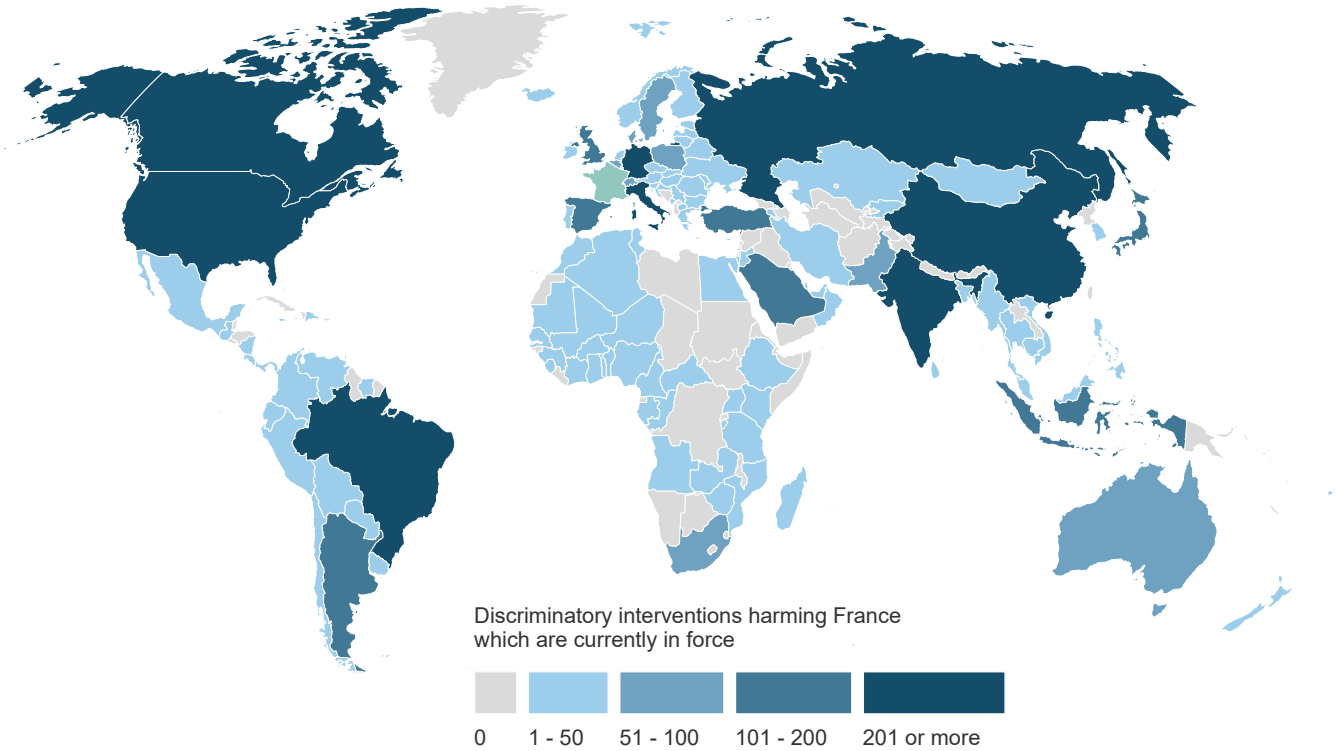
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	39.07	57.84	62.12	65.99	68.54	71.00	74.97	76.81	77.87	78.49	80.48	81.02	80.21	80.41
D	Contingent trade-protective measures	0.01	0.03	0.03	0.04	0.07	0.17	0.16	0.26	0.28	0.32	0.39	0.41	0.47	0.51
E	Non-automatic licensing, quotas etc.	0.10	0.17	1.12	1.24	1.35	1.52	1.60	1.58	2.05	2.67	2.69	2.68	2.91	2.88
F	Price-control measures, including additional taxes and charges	0.01	0.02	0.06	0.08	0.29	0.82	0.97	1.05	1.09	1.25	1.27	1.40	1.41	1.32
G	Finance measures	0.17	0.24	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
I	Trade-related investment measures	0.11	0.17	0.20	0.22	0.25	0.34	0.48	0.77	1.32	1.26	1.27	1.26	1.49	1.60
L	Subsidies (excl. export subsidies)	10.19	22.04	21.96	23.60	24.79	28.33	35.67	38.17	39.03	39.65	40.54	42.57	42.35	41.93
M	Government procurement restrictions	0.34	0.43	0.31	0.49	0.63	0.83	1.10	1.23	1.29	1.39	1.62	2.11	2.04	2.42
P	Export-related measures (incl. subsidies)	30.32	46.38	53.24	58.83	61.64	61.47	60.28	61.97	63.66	64.63	68.18	68.94	67.71	68.81
	Tariff measures	1.27	1.61	1.94	2.41	2.97	2.82	3.05	3.59	4.32	4.80	5.57	6.62	6.97	7.15
	Instrument unclear	0.15	0.28	0.31	0.33	0.95	1.25	1.36	1.43	1.52	1.64	1.60	1.58	1.58	1.59

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY FRANCE'S DISCRIMINATORY INTERVENTIONS

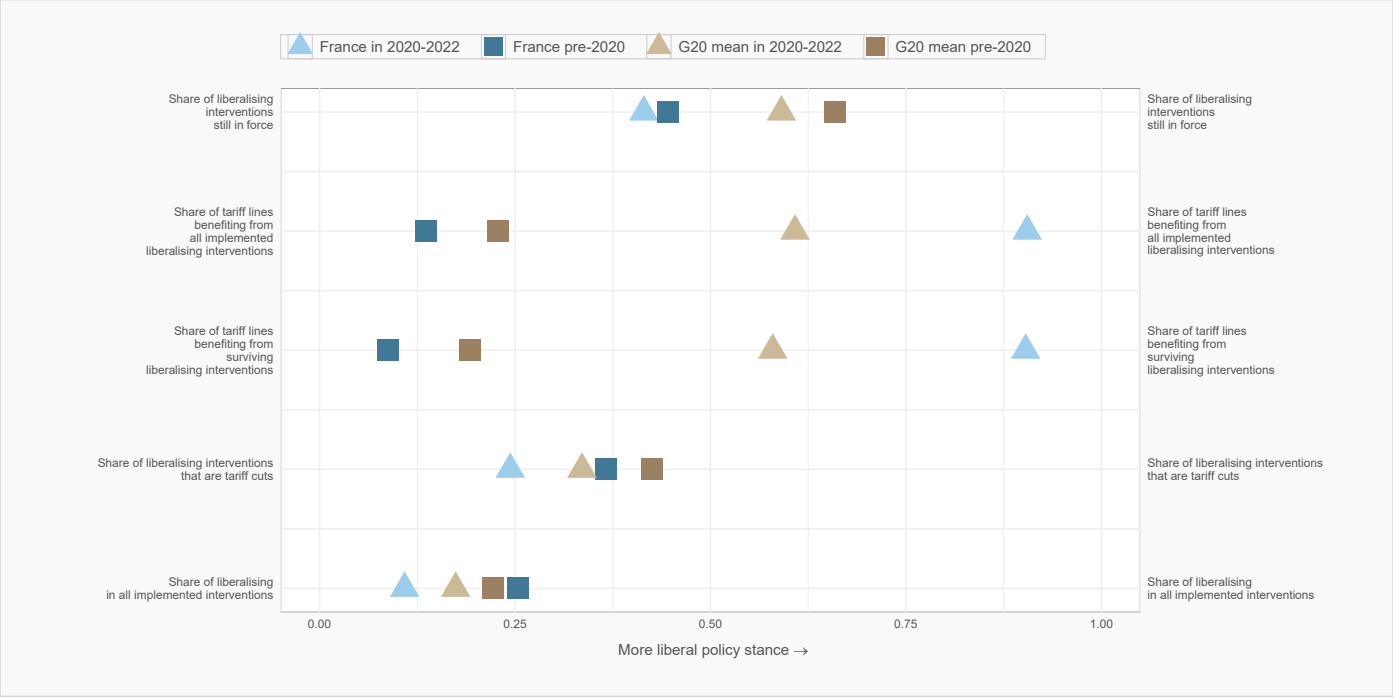


DISCRIMINATORY INTERVENTIONS HARMING FRANCE'S INTERESTS



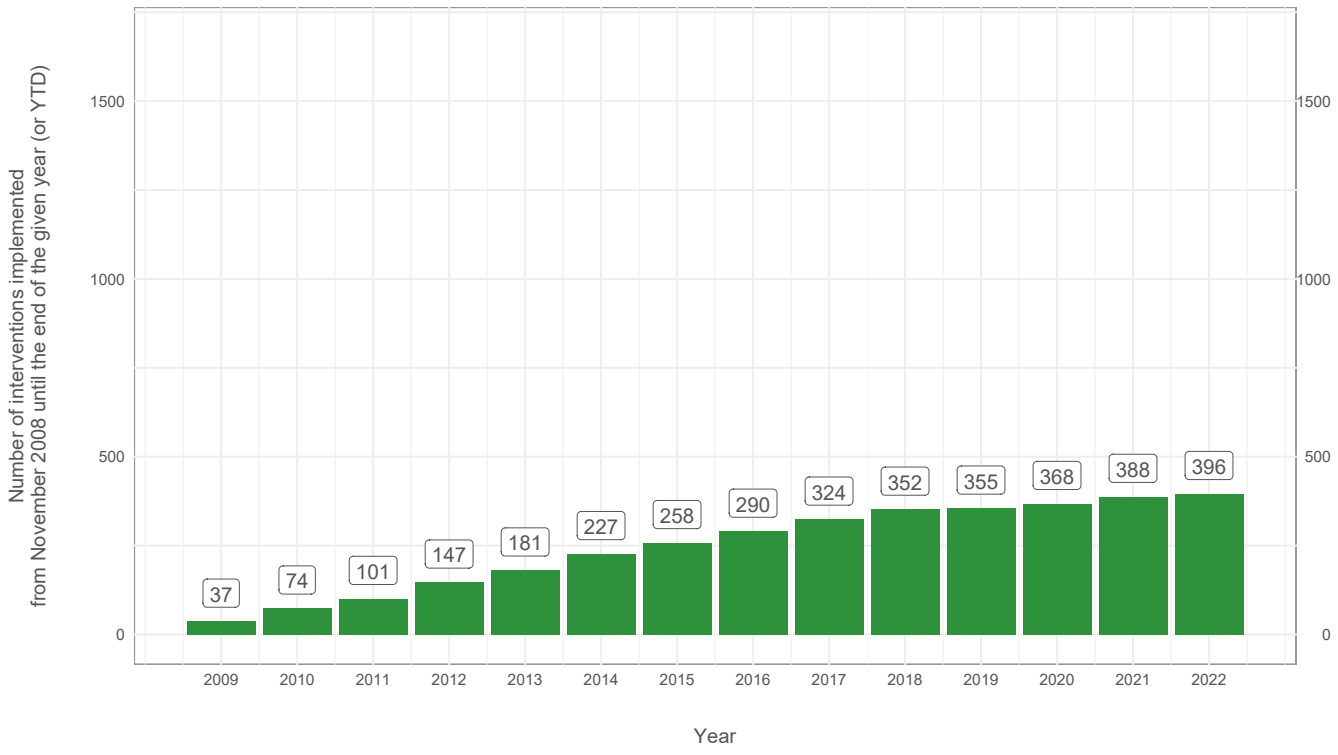
FRANCE

Track record of liberalisation



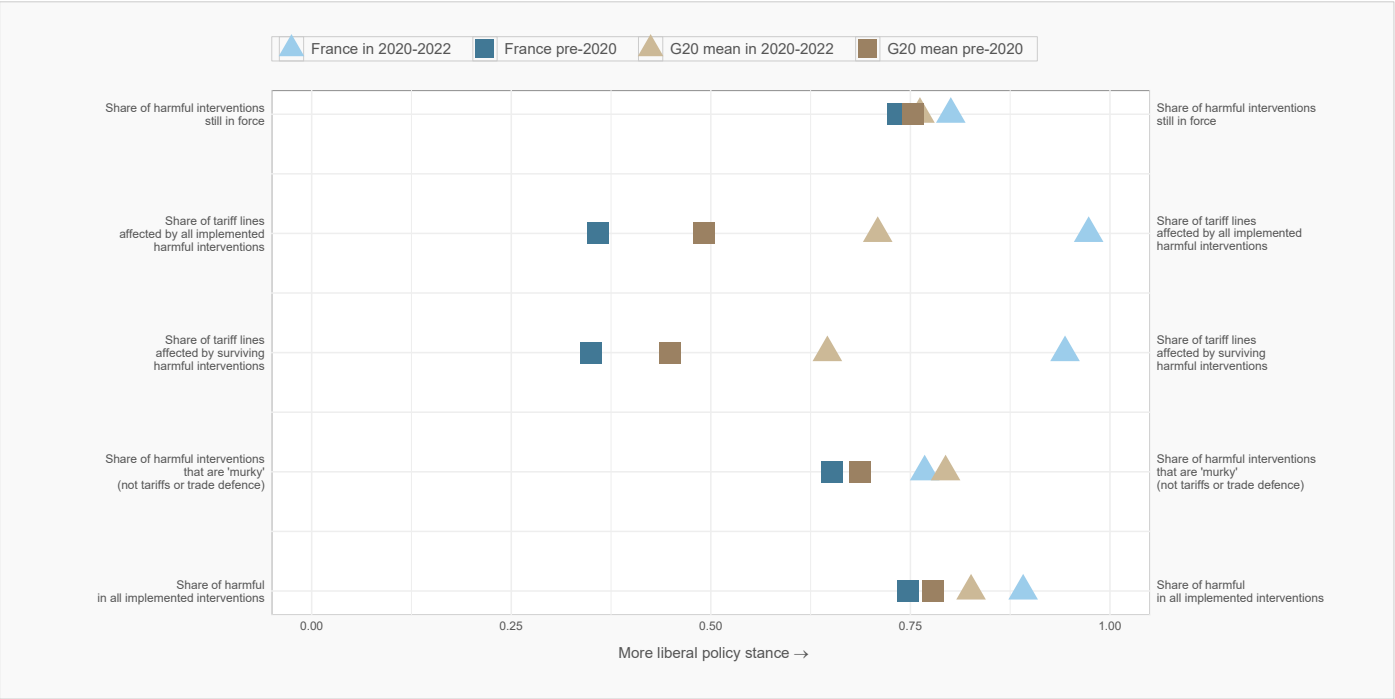
FRANCE

Number of liberalising interventions imposed since November 2008



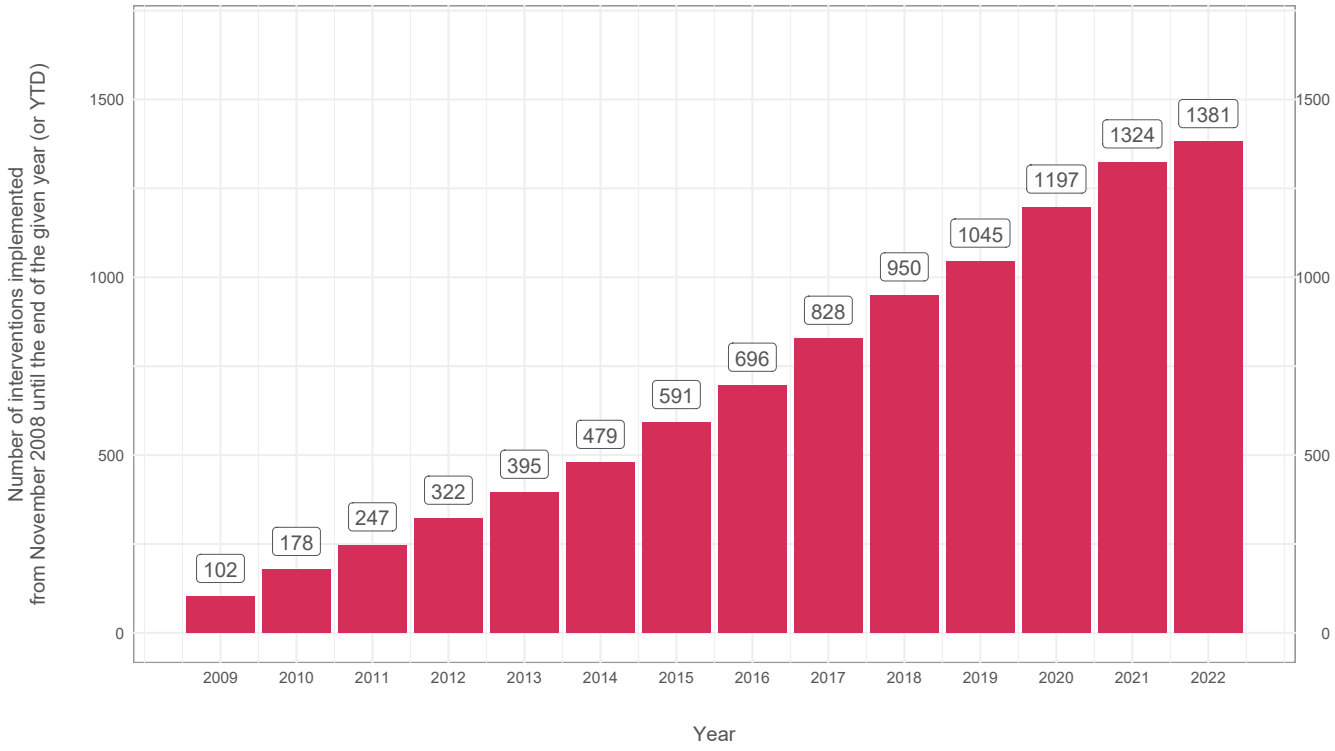
FRANCE

Track record of protectionism



FRANCE

Number of discriminatory interventions imposed since November 2008



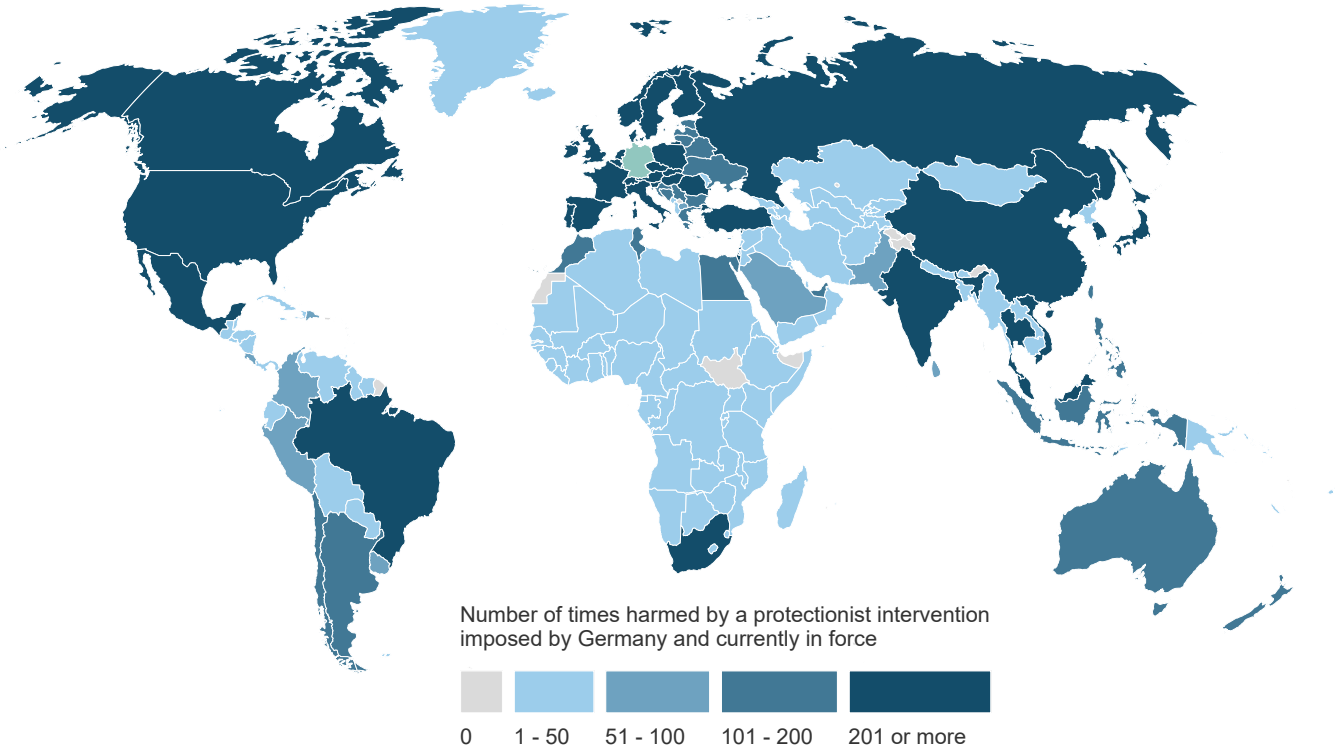
GERMANY

What is at stake for Germany's goods exporters?

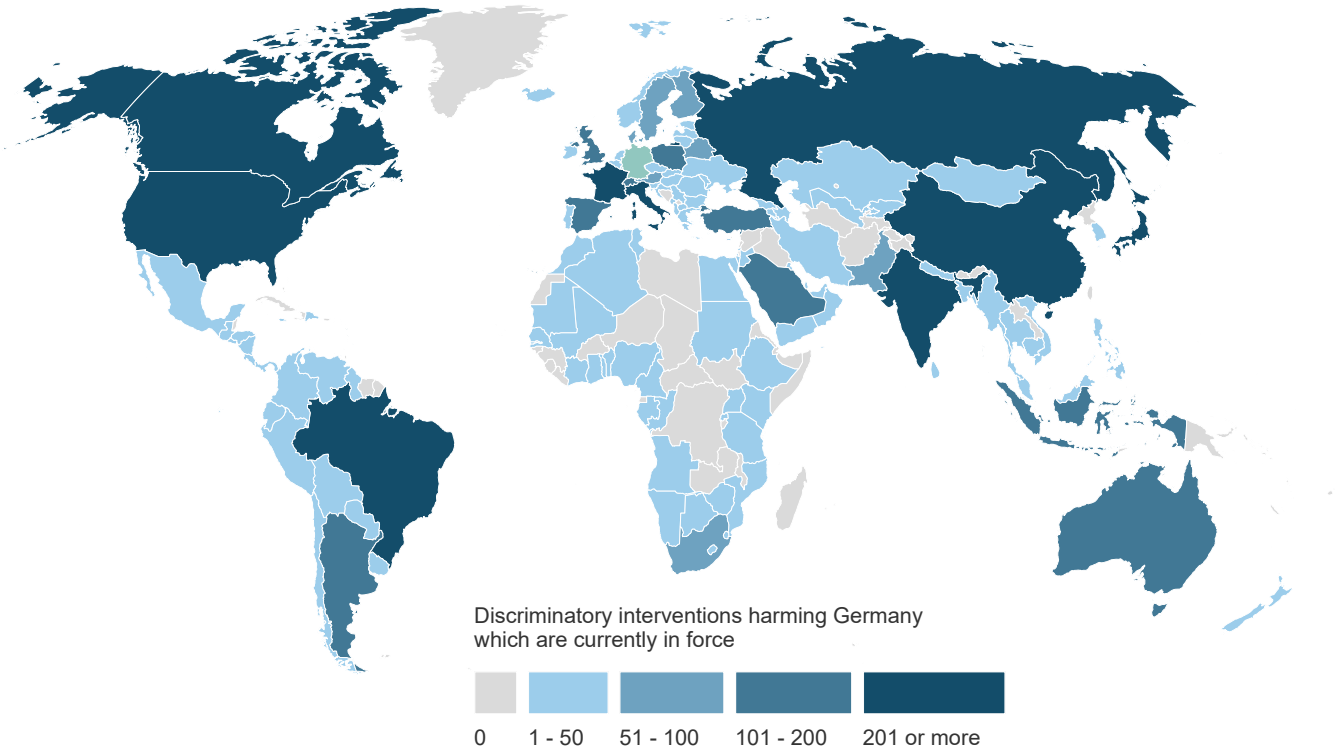
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	45.64	57.26	59.43	62.66	65.16	67.32	69.28	71.10	72.89	74.17	76.86	77.40	76.15	76.13
D	Contingent trade-protective measures	0.04	0.08	0.09	0.13	0.21	0.22	0.24	0.32	0.33	0.41	0.47	0.54	0.61	0.66
E	Non-automatic licensing, quotas etc.	0.23	0.37	1.57	1.66	2.06	1.76	1.83	1.83	2.13	2.53	2.58	2.64	2.73	2.72
F	Price-control measures, including additional taxes and charges	0.01	0.05	0.07	0.11	0.14	0.28	0.43	0.54	0.83	1.21	1.25	1.43	1.44	1.34
G	Finance measures	0.20	0.26	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.30	0.30	0.29	0.30
I	Trade-related investment measures	0.25	1.61	1.81	1.84	1.88	1.93	2.16	2.34	2.42	2.36	2.39	2.48	2.86	3.07
L	Subsidies (excl. export subsidies)	14.63	22.86	22.35	23.53	25.01	27.97	31.98	34.42	35.81	36.89	38.35	40.47	38.38	37.98
M	Government procurement restrictions	0.33	0.54	0.54	0.81	0.90	1.33	1.76	1.85	1.92	1.97	2.06	2.47	2.84	3.19
P	Export-related measures (incl. subsidies)	33.19	44.34	48.59	54.06	56.58	55.72	55.57	57.98	59.84	61.10	64.33	64.98	62.18	63.19
	Tariff measures	1.03	1.43	1.55	2.61	3.35	2.92	3.12	3.64	4.60	4.96	5.63	6.35	7.12	7.35
	Instrument unclear	0.05	0.24	0.32	0.34	0.48	0.57	0.78	0.80	0.94	1.03	1.00	0.98	1.02	1.00

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY GERMANY'S DISCRIMINATORY INTERVENTIONS

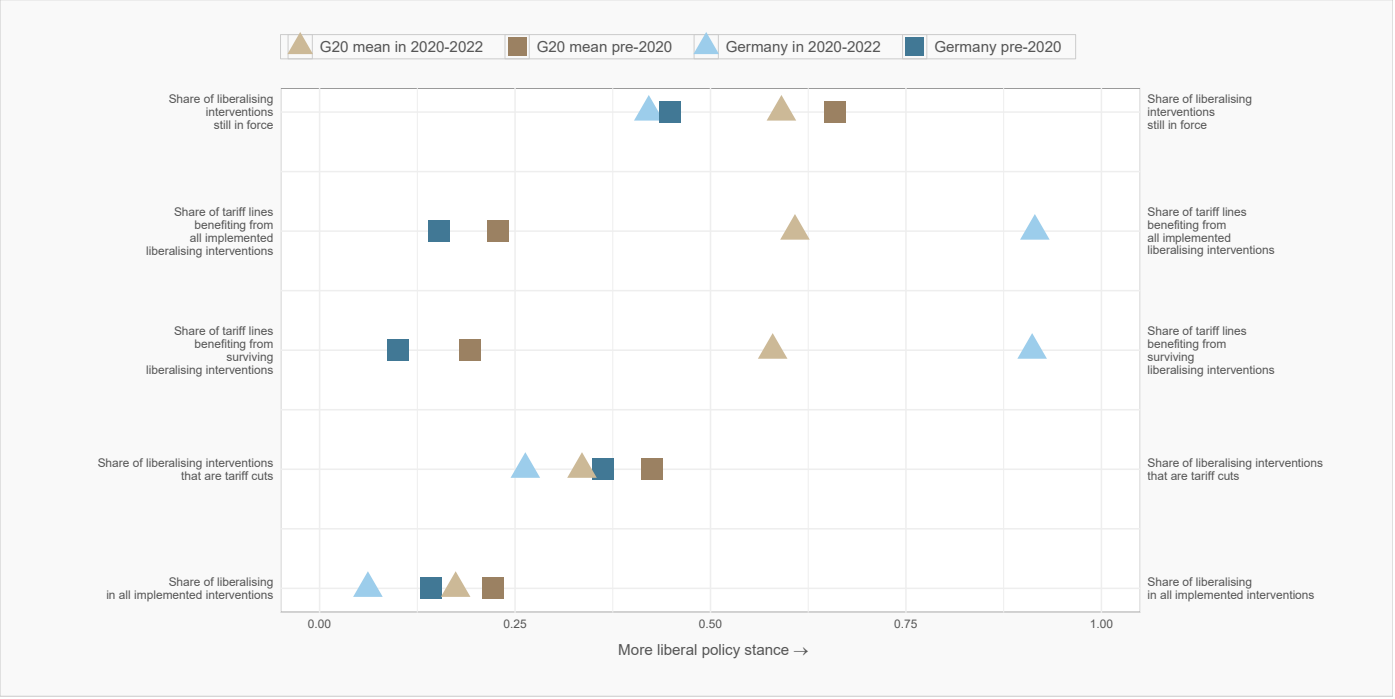


DISCRIMINATORY INTERVENTIONS HARMING GERMANY'S INTERESTS



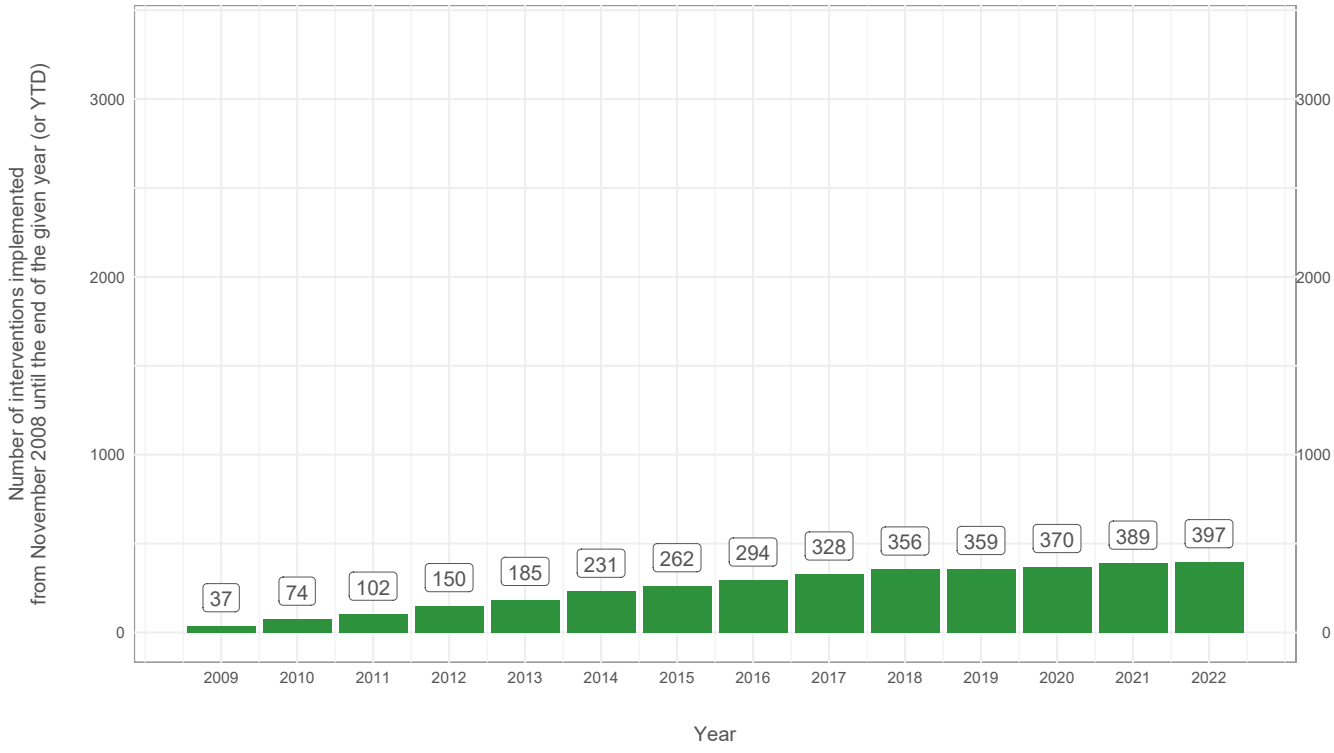
GERMANY

Track record of liberalisation



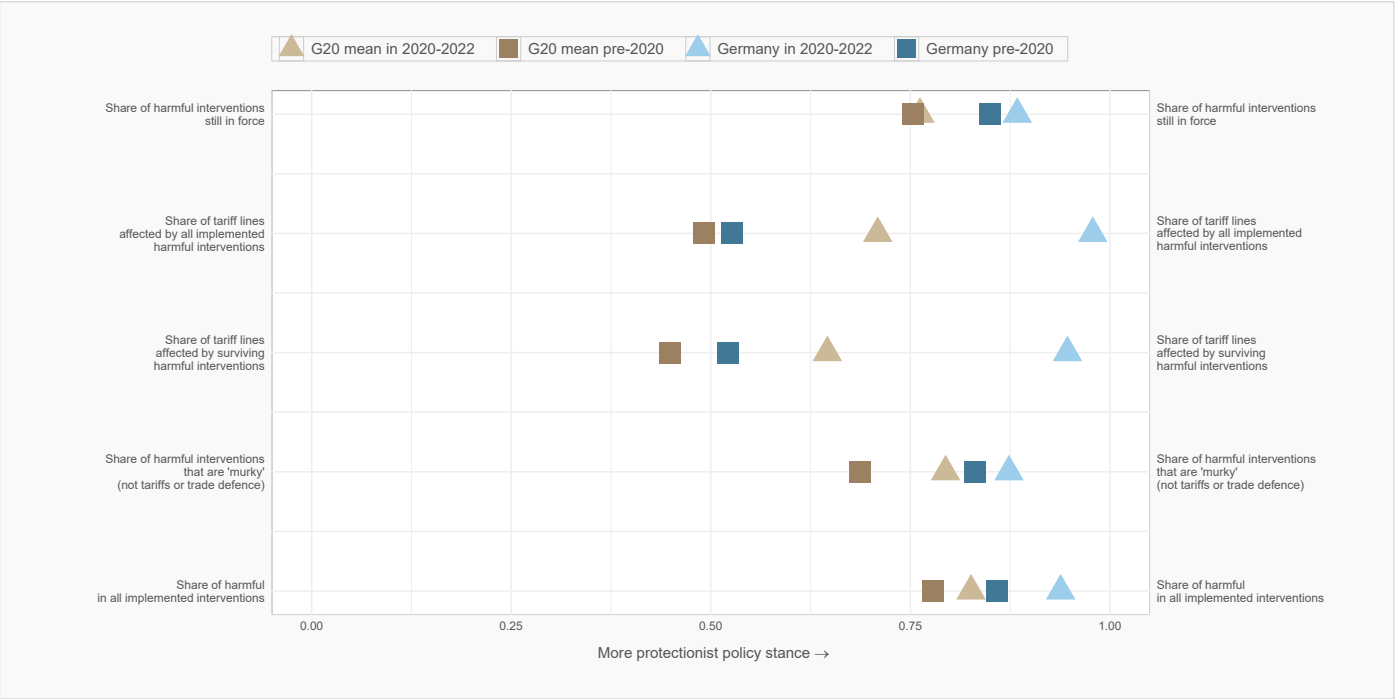
GERMANY

Number of liberalising interventions imposed since November 2008



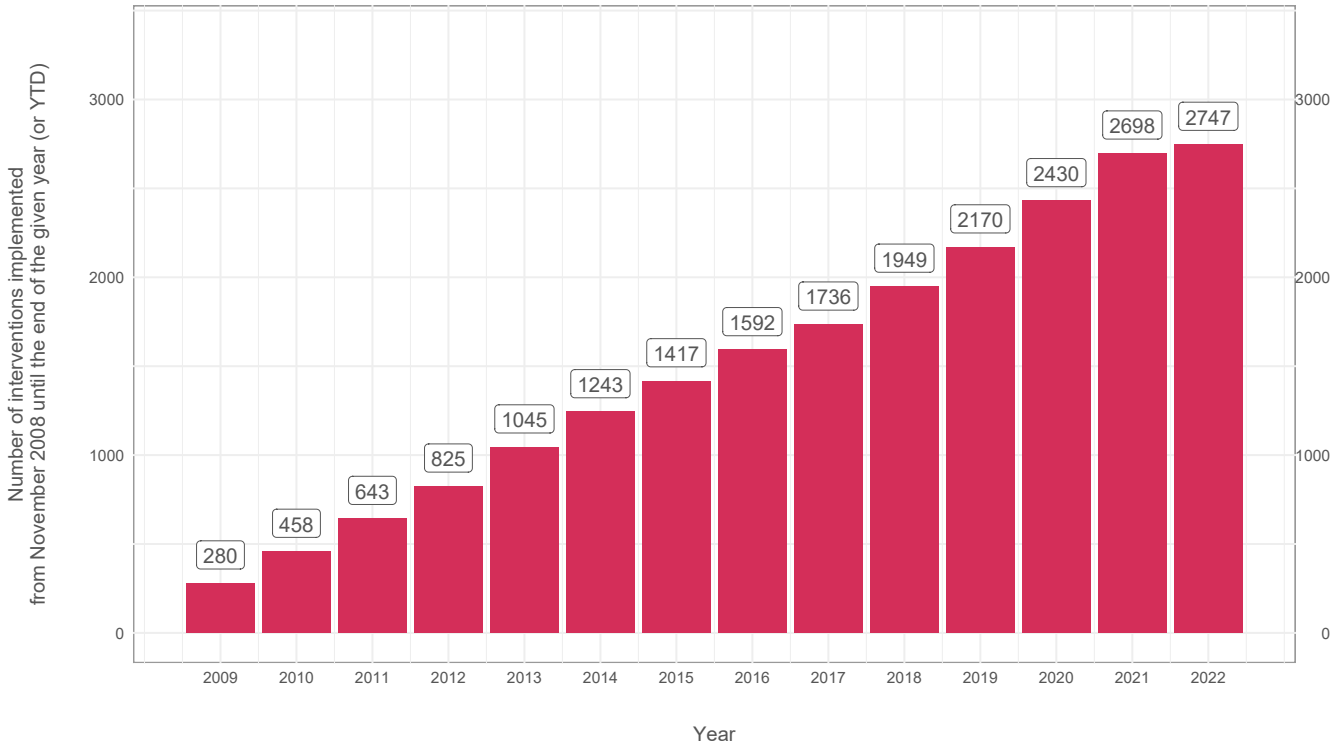
GERMANY

Track record of protectionism



GERMANY

Number of discriminatory interventions imposed since November 2008



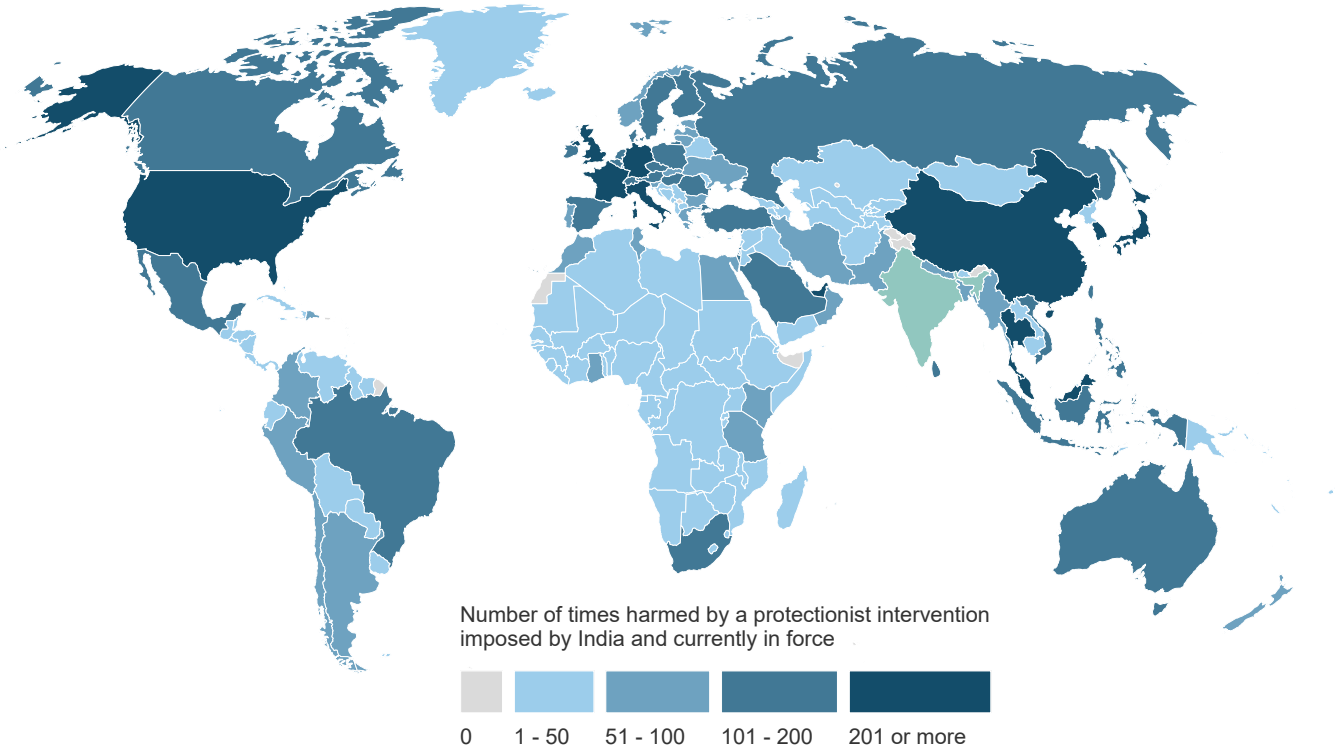
INDIA

What is at stake for India's goods exporters?

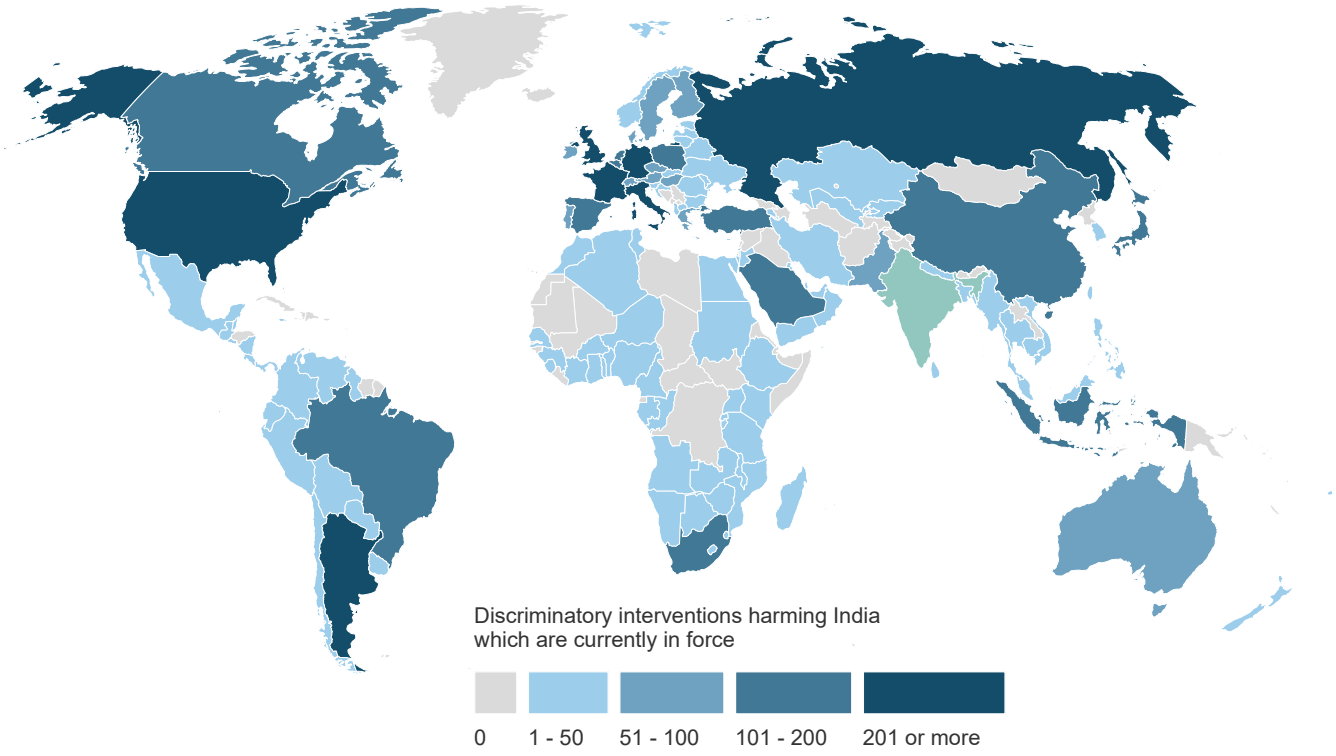
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	39.80	47.84	58.13	54.14	61.72	66.15	76.22	76.97	77.40	77.68	78.31	78.43	77.76	77.74
D	Contingent trade-protective measures	0.16	0.23	0.62	0.81	0.83	1.00	1.04	1.61	1.77	2.47	3.05	3.05	3.23	3.34
E	Non-automatic licensing, quotas etc.	0.14	4.18	6.06	7.64	7.18	7.49	7.83	8.73	9.94	10.22	10.07	9.99	9.52	9.70
F	Price-control measures, including additional taxes and charges	5.35	5.37	5.37	5.37	5.37	5.53	5.59	5.62	5.63	5.66	5.69	5.78	5.89	5.81
G	Finance measures	0.60	0.89	1.28	1.28	1.36	1.28	1.31	1.31	1.31	1.37	1.51	1.50	1.49	1.51
I	Trade-related investment measures	0.04	0.17	0.14	0.15	0.18	0.42	1.02	0.61	0.42	0.34	0.33	0.37	0.81	1.06
L	Subsidies (excl. export subsidies)	3.46	7.25	12.82	14.73	30.97	33.28	35.53	36.25	35.90	36.24	37.23	38.17	22.92	23.82
M	Government procurement restrictions	1.10	1.22	1.32	1.65	1.76	1.92	2.28	2.47	2.40	2.44	2.60	2.64	2.85	3.16
P	Export-related measures (incl. subsidies)	32.44	40.64	51.31	45.92	50.30	55.46	67.14	67.70	69.26	69.81	70.67	70.88	70.74	70.64
	Tariff measures	1.48	2.12	2.89	5.57	6.25	24.52	12.86	15.66	17.25	18.71	23.23	21.93	22.81	23.04
	Instrument unclear	0.10	0.26	0.17	0.20	0.25	0.43	0.55	0.72	0.82	0.88	0.94	0.94	0.92	0.92

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY INDIA'S DISCRIMINATORY INTERVENTIONS

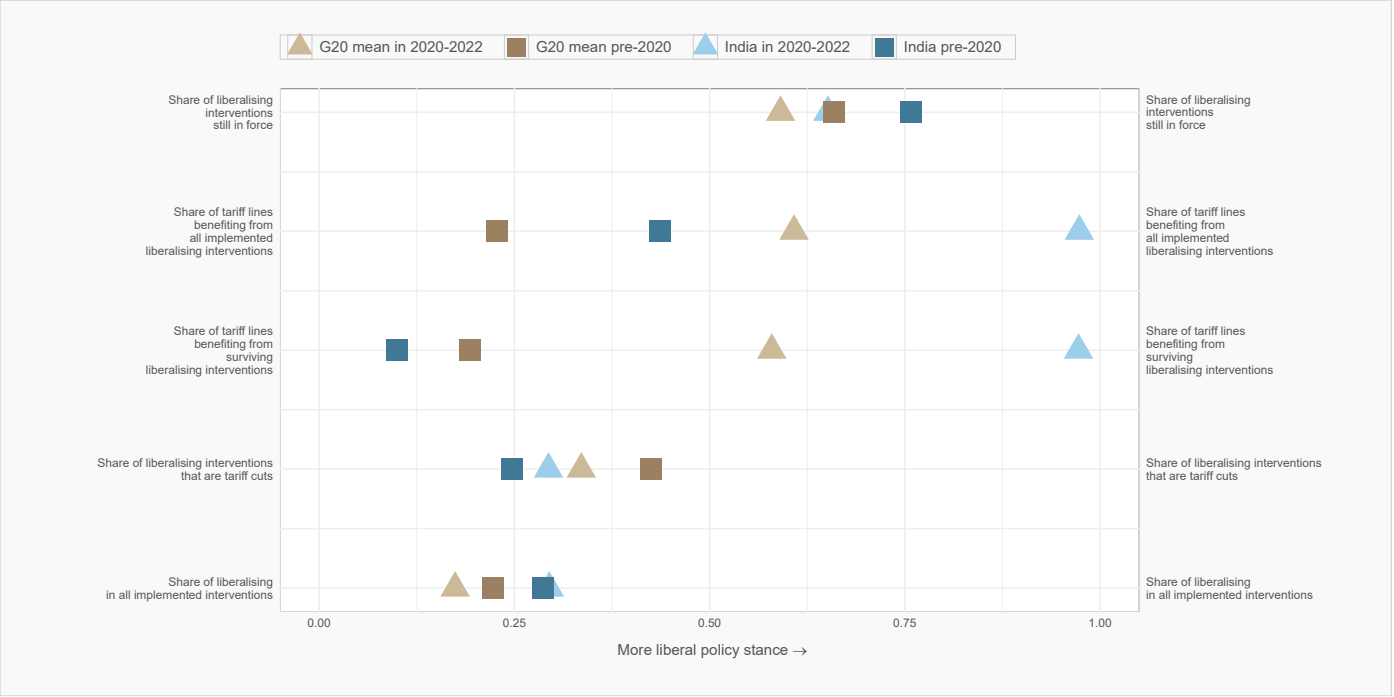


DISCRIMINATORY INTERVENTIONS HARMING INDIA'S INTERESTS



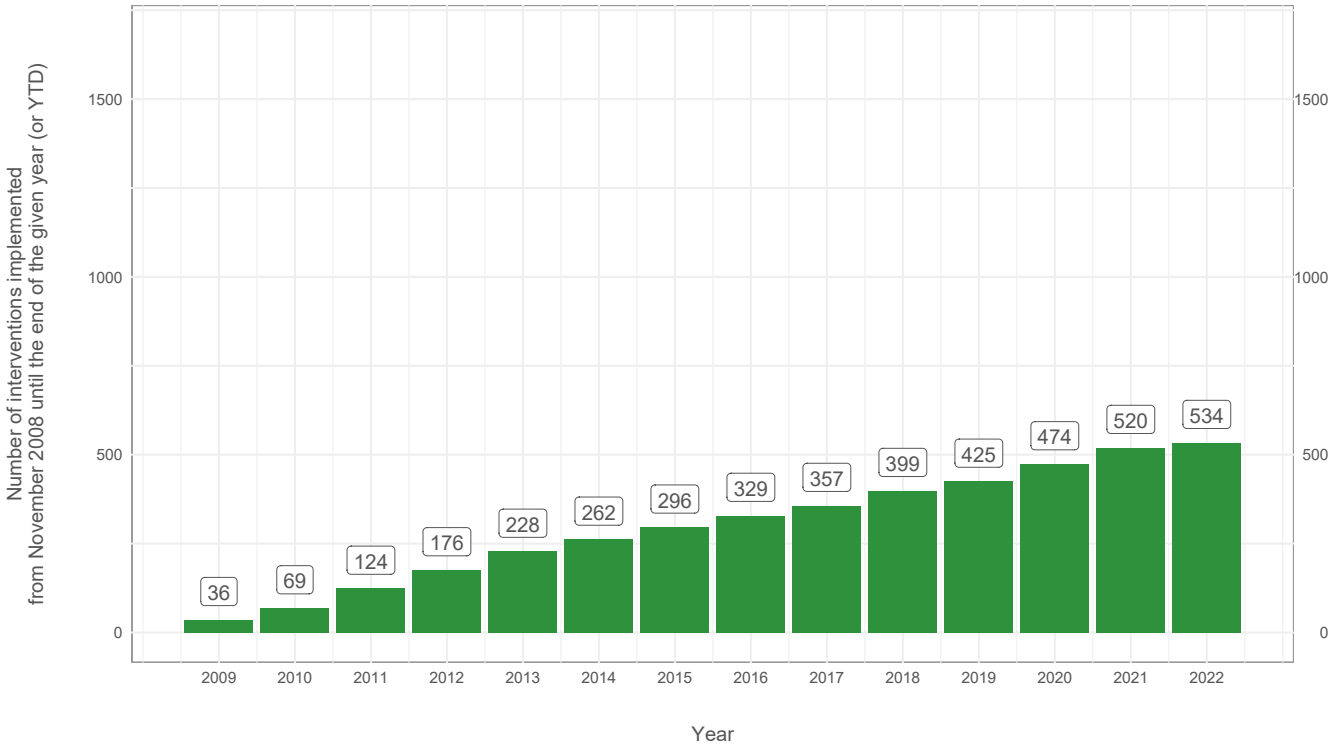
INDIA

Track record of liberalisation



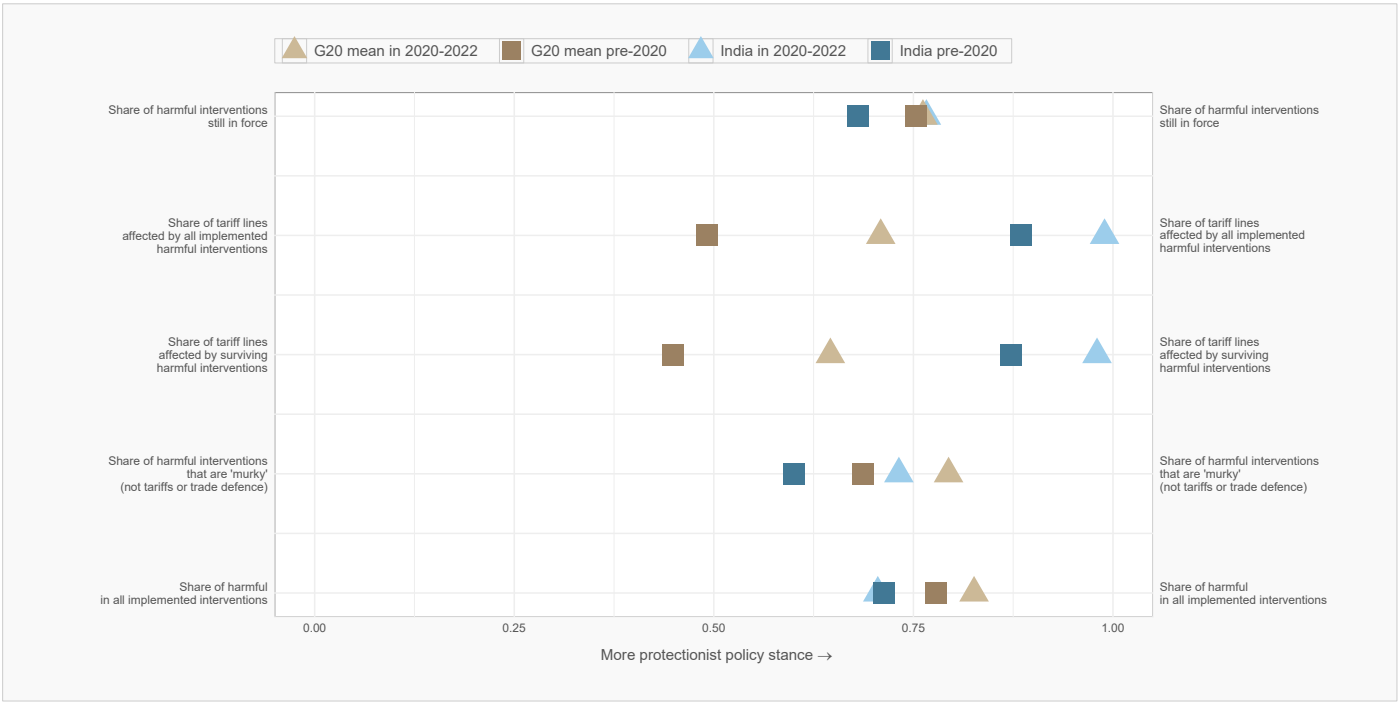
INDIA

Number of liberalising interventions imposed since November 2008



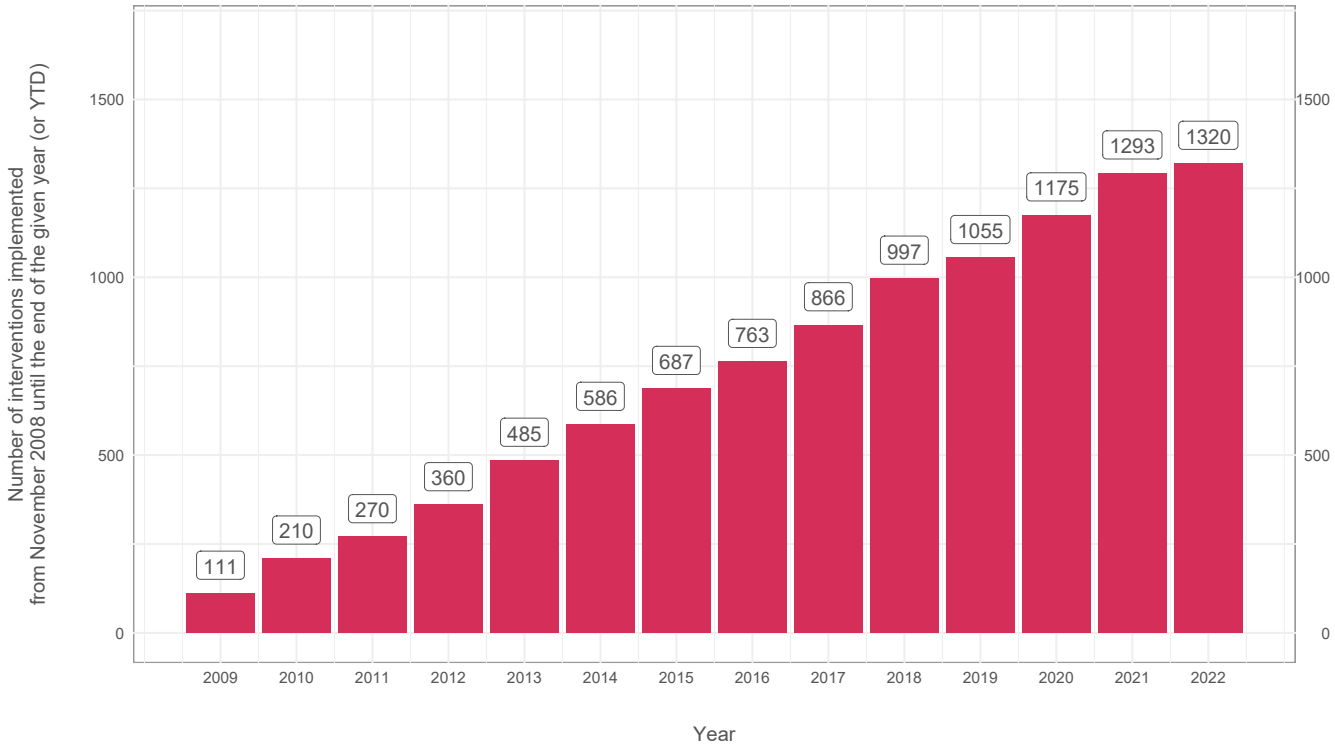
INDIA

Track record of protectionism



INDIA

Number of discriminatory interventions imposed since November 2008



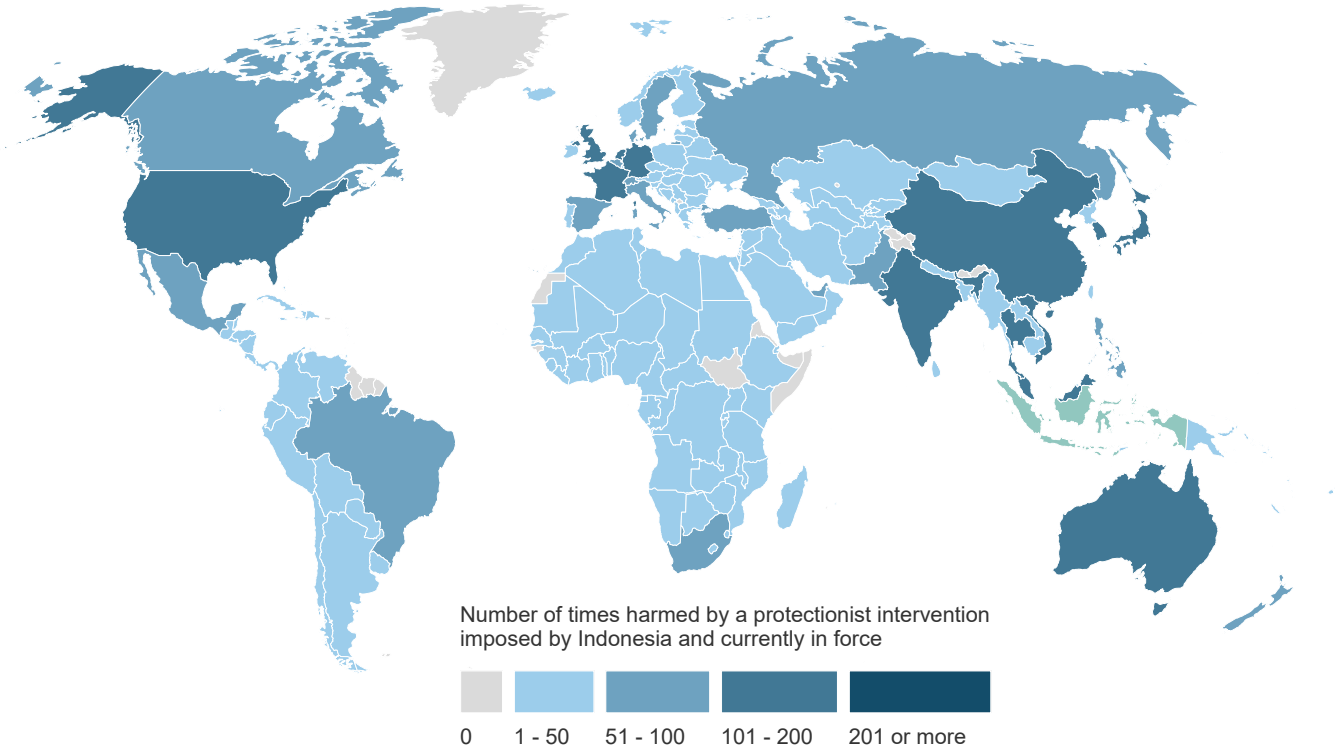
INDONESIA

What is at stake for Indonesia's goods exporters?

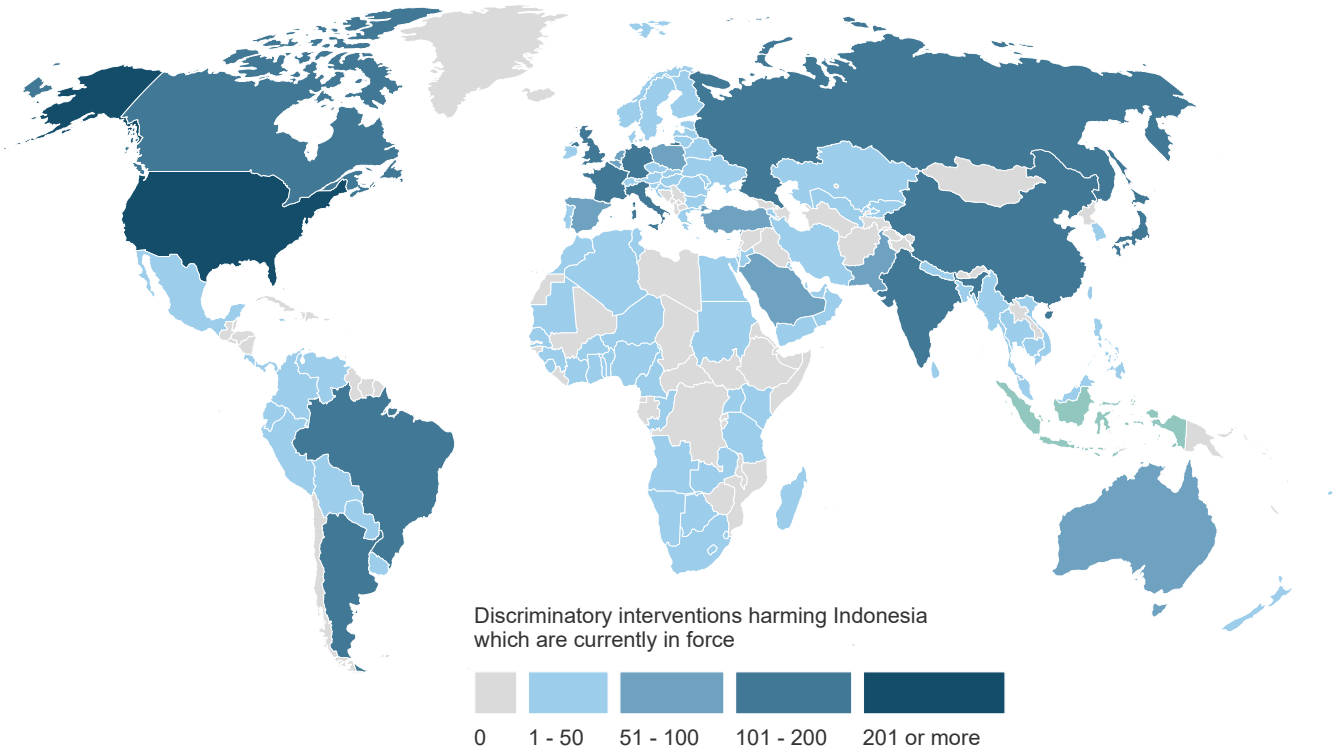
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	41.60	48.34	51.86	55.56	61.42	68.12	67.60	68.51	69.44	69.74	72.39	72.58	75.65	76.85
D	Contingent trade-protective measures	0.18	0.30	0.34	0.40	0.46	0.48	0.50	0.55	0.60	1.26	1.30	1.33	2.02	2.25
E	Non-automatic licensing, quotas etc.	1.19	0.99	3.00	3.41	3.18	3.22	3.60	4.67	4.80	4.82	4.84	5.09	5.14	5.23
F	Price-control measures, including additional taxes and charges	1.20	1.20	1.26	1.30	1.30	2.02	2.53	2.54	2.54	5.05	5.32	5.43	5.43	5.30
G	Finance measures	0.06	0.31	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.71	0.73	0.72	0.71	0.72
I	Trade-related investment measures	0.00	0.03	0.03	0.03	0.04	0.12	0.15	0.21	0.24	0.24	0.23	0.28	0.39	0.50
L	Subsidies (excl. export subsidies)	5.02	8.23	10.31	10.48	21.62	23.44	25.30	26.13	26.25	26.49	27.41	27.15	19.48	21.03
M	Government procurement restrictions	0.32	1.70	1.67	1.85	1.99	2.06	2.27	2.27	2.32	2.37	2.65	2.60	2.64	3.26
P	Export-related measures (incl. subsidies)	32.48	37.70	40.45	43.40	48.33	56.15	55.02	56.37	57.30	57.77	60.68	61.02	64.30	66.32
	Tariff measures	3.66	4.92	5.70	7.64	8.32	17.81	11.27	13.21	16.13	16.01	16.90	16.61	16.73	16.80
	Instrument unclear	0.01	0.21	0.05	0.05	0.19	0.32	0.47	0.85	1.13	1.20	1.21	1.21	1.28	1.35

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY INDONESIA'S DISCRIMINATORY INTERVENTIONS

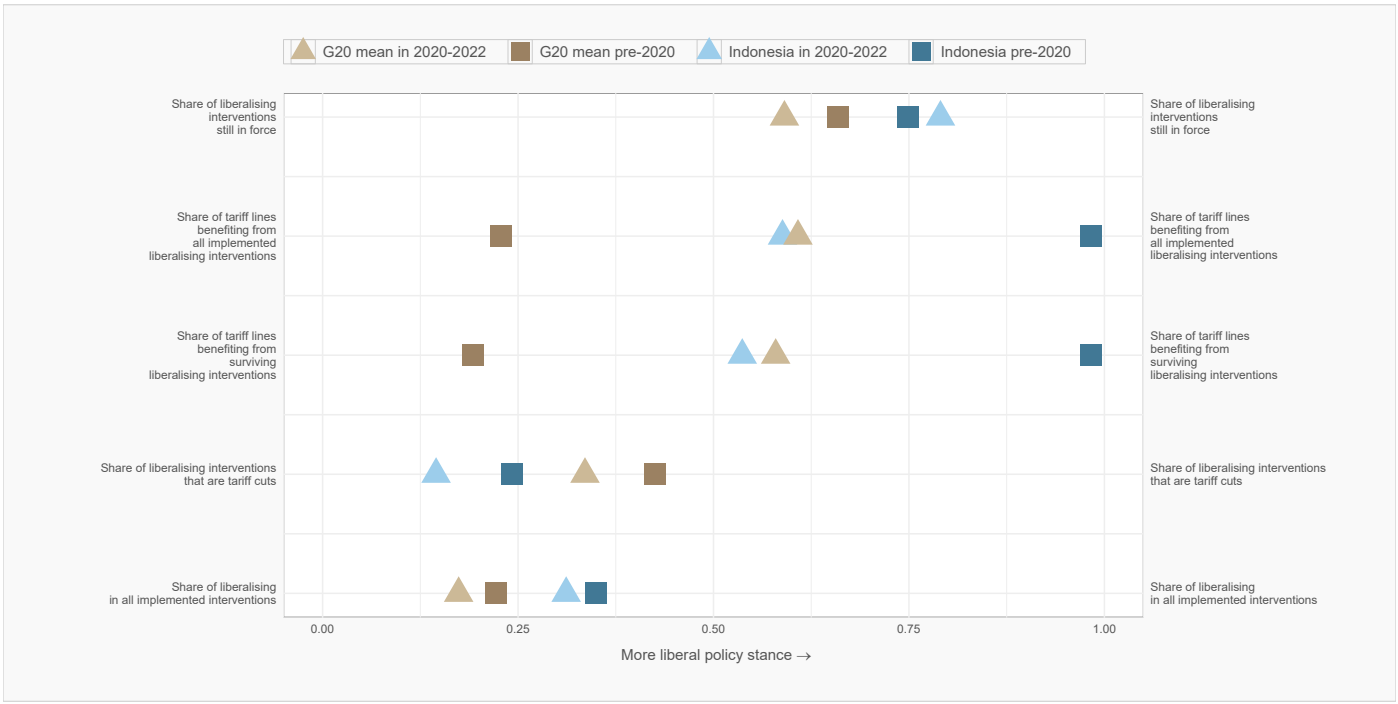


DISCRIMINATORY INTERVENTIONS HARMING INDONESIA'S INTERESTS



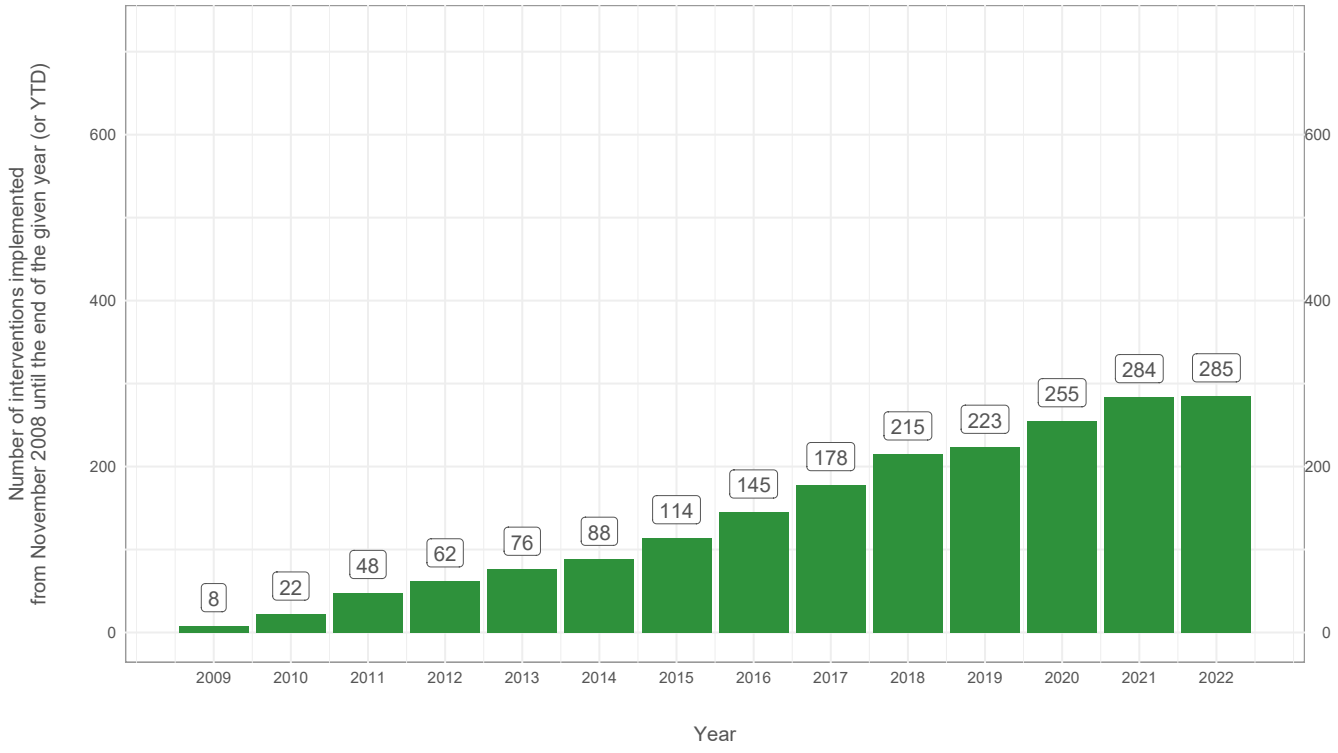
INDONESIA

Track record of liberalisation



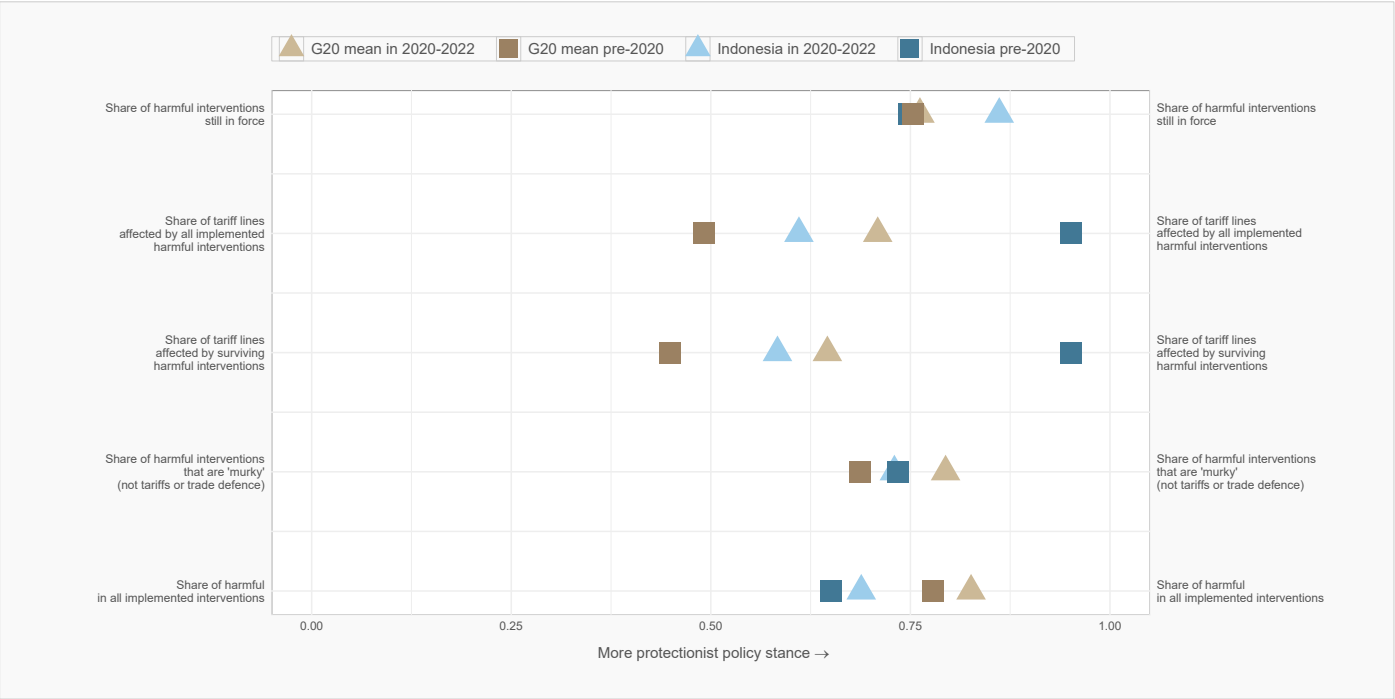
INDONESIA

Number of liberalising interventions imposed since November 2008



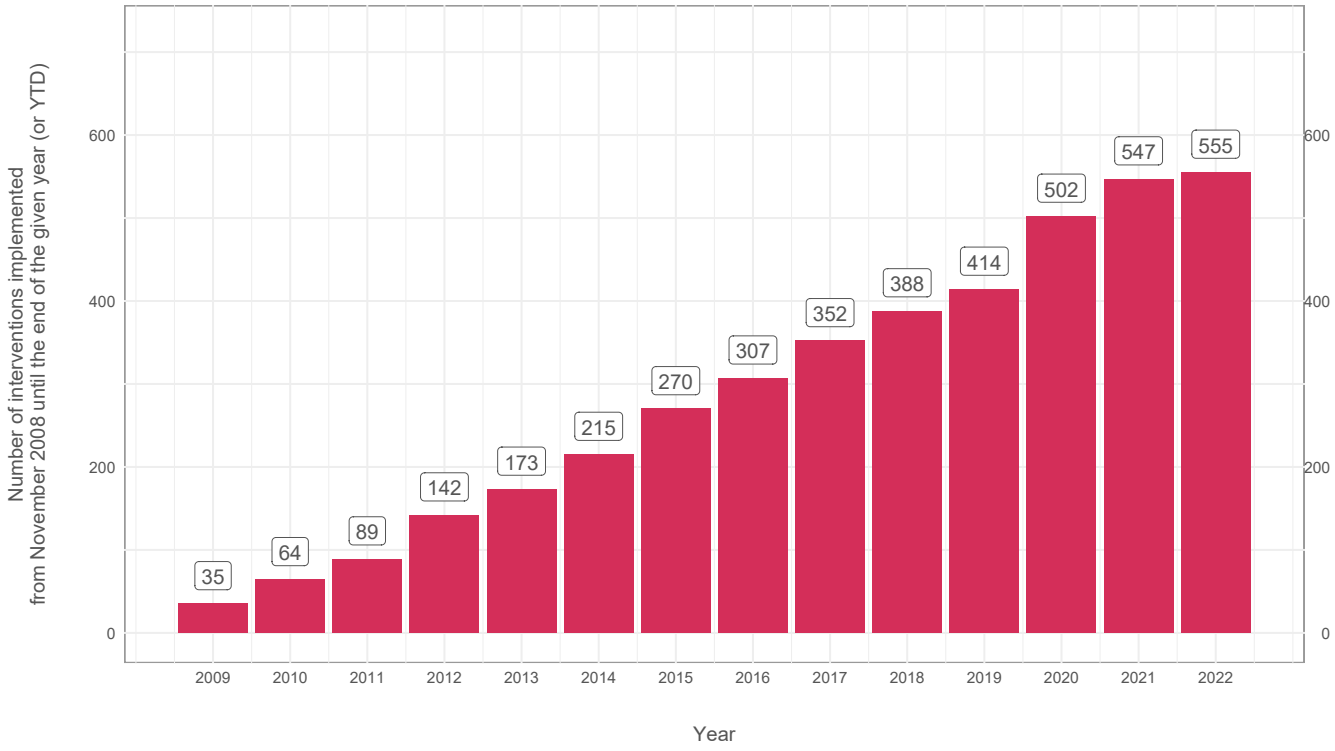
INDONESIA

Track record of protectionism



INDONESIA

Number of discriminatory interventions imposed since November 2008



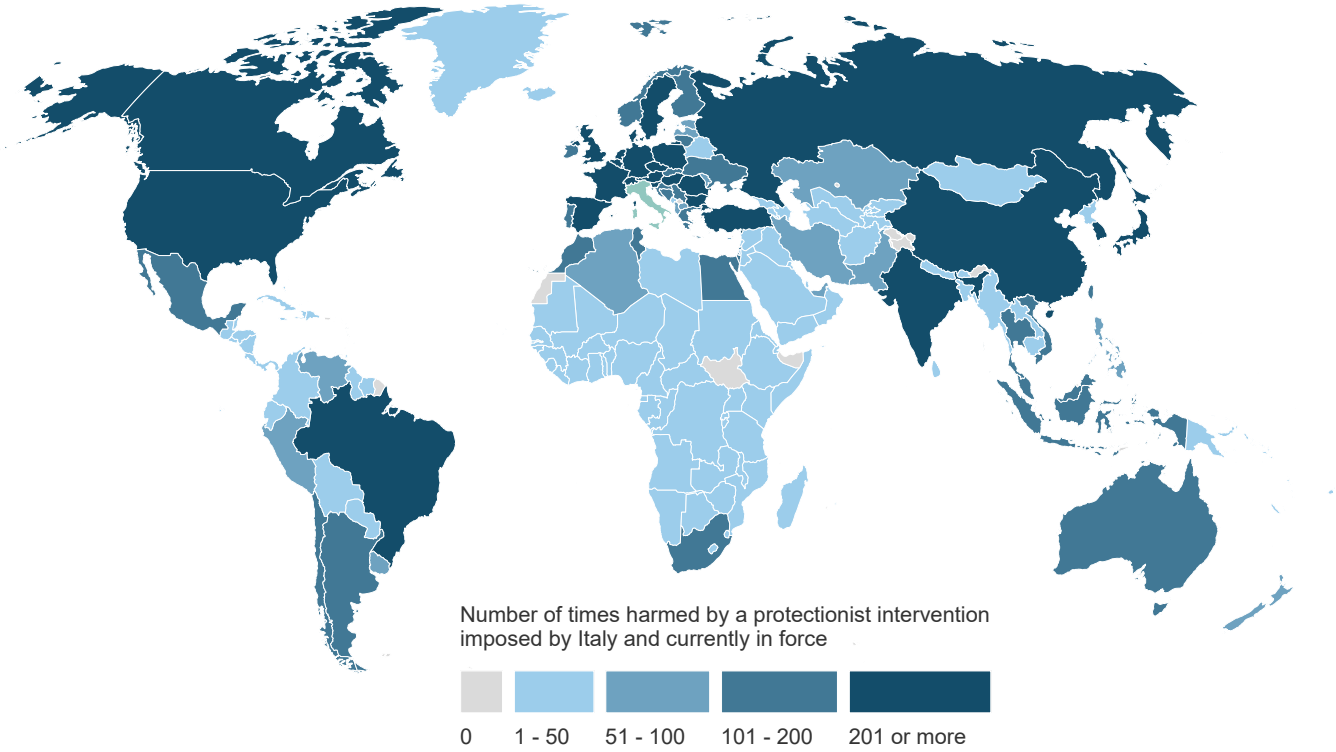
ITALY

What is at stake for Italy's goods exporters?

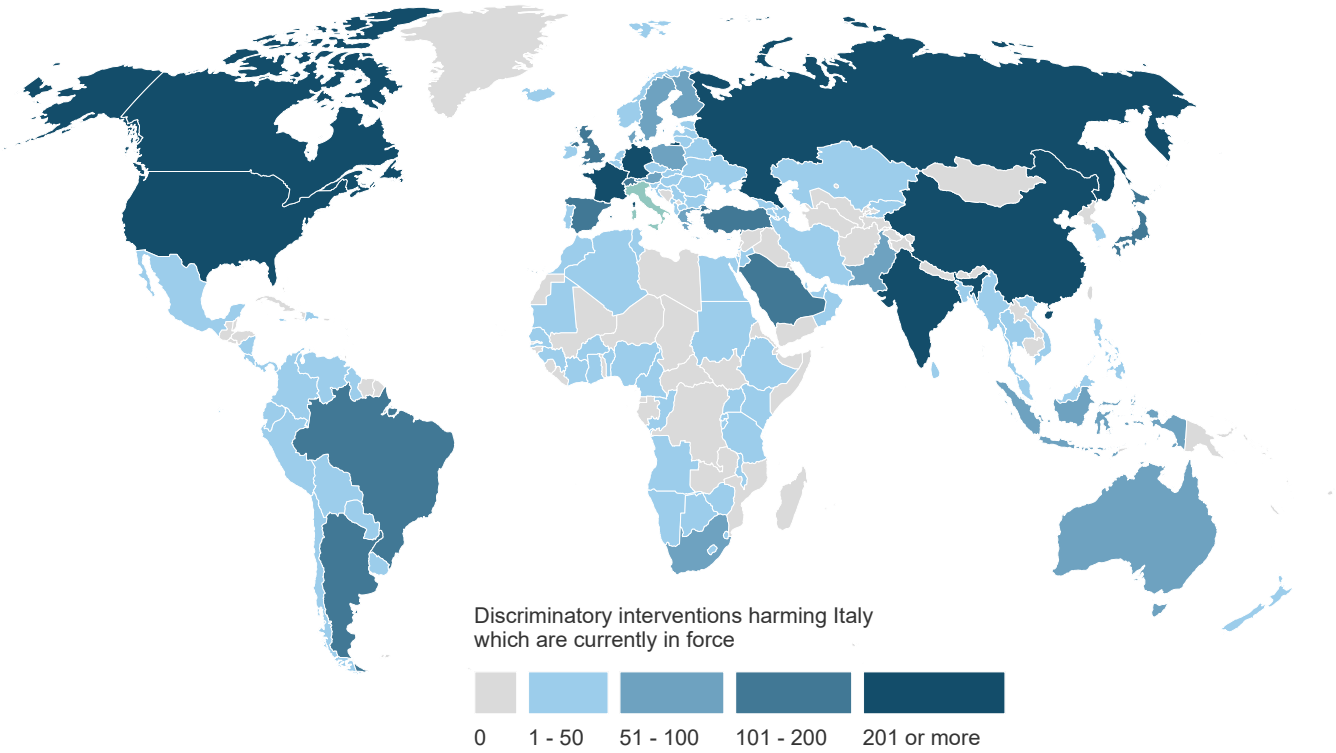
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	50.00	62.37	64.74	67.49	69.78	71.84	73.44	75.48	76.91	77.81	79.91	80.19	78.40	78.76
D	Contingent trade-protective measures	0.03	0.05	0.07	0.11	0.14	0.19	0.18	0.29	0.32	0.37	0.48	0.57	0.66	0.70
E	Non-automatic licensing, quotas etc.	0.20	0.22	0.63	0.75	0.80	0.83	1.09	1.09	1.36	1.64	1.69	1.72	1.73	1.68
F	Price-control measures, including additional taxes and charges	0.00	0.03	0.12	0.19	0.19	0.21	0.35	0.41	0.43	0.78	0.82	0.97	0.98	0.86
G	Finance measures	0.24	0.35	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.40	0.39	0.39	0.40
I	Trade-related investment measures	0.03	0.75	0.91	0.93	0.96	1.07	1.20	1.30	1.36	1.33	1.30	1.32	1.59	1.80
L	Subsidies (excl. export subsidies)	7.50	15.58	15.79	16.72	18.31	22.25	26.97	29.91	31.50	32.64	34.14	35.92	33.63	33.85
M	Government procurement restrictions	0.37	0.42	0.40	0.68	0.76	1.27	1.71	1.80	1.97	2.14	2.36	2.40	2.67	3.02
P	Export-related measures (incl. subsidies)	44.33	54.97	58.58	62.51	65.13	65.19	65.06	68.06	69.30	70.14	72.40	72.63	69.78	70.56
	Tariff measures	0.86	1.30	1.41	2.29	2.88	2.68	2.96	3.33	4.06	4.57	5.69	6.78	7.11	7.36
	Instrument unclear	0.07	0.14	0.16	0.17	0.26	0.30	0.47	0.61	0.71	0.80	0.81	0.81	0.82	0.83

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY ITALY'S DISCRIMINATORY INTERVENTIONS

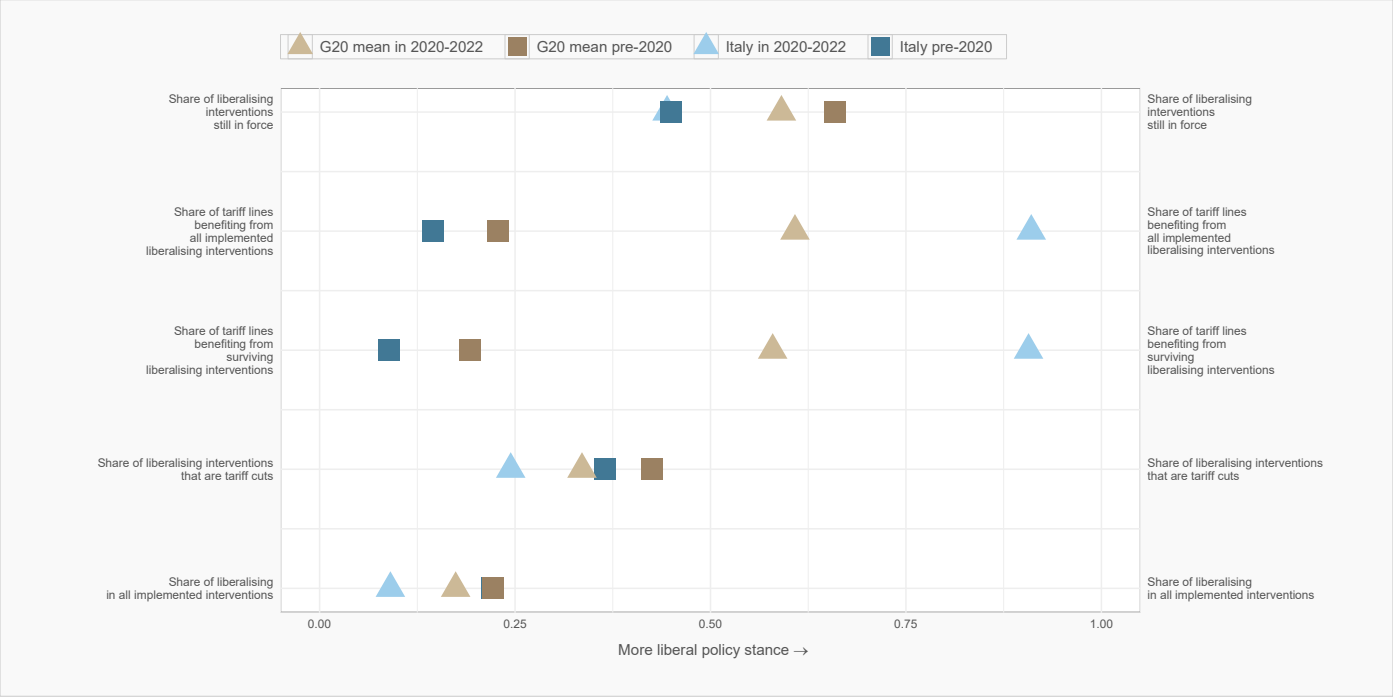


DISCRIMINATORY INTERVENTIONS HARMING ITALY'S INTERESTS



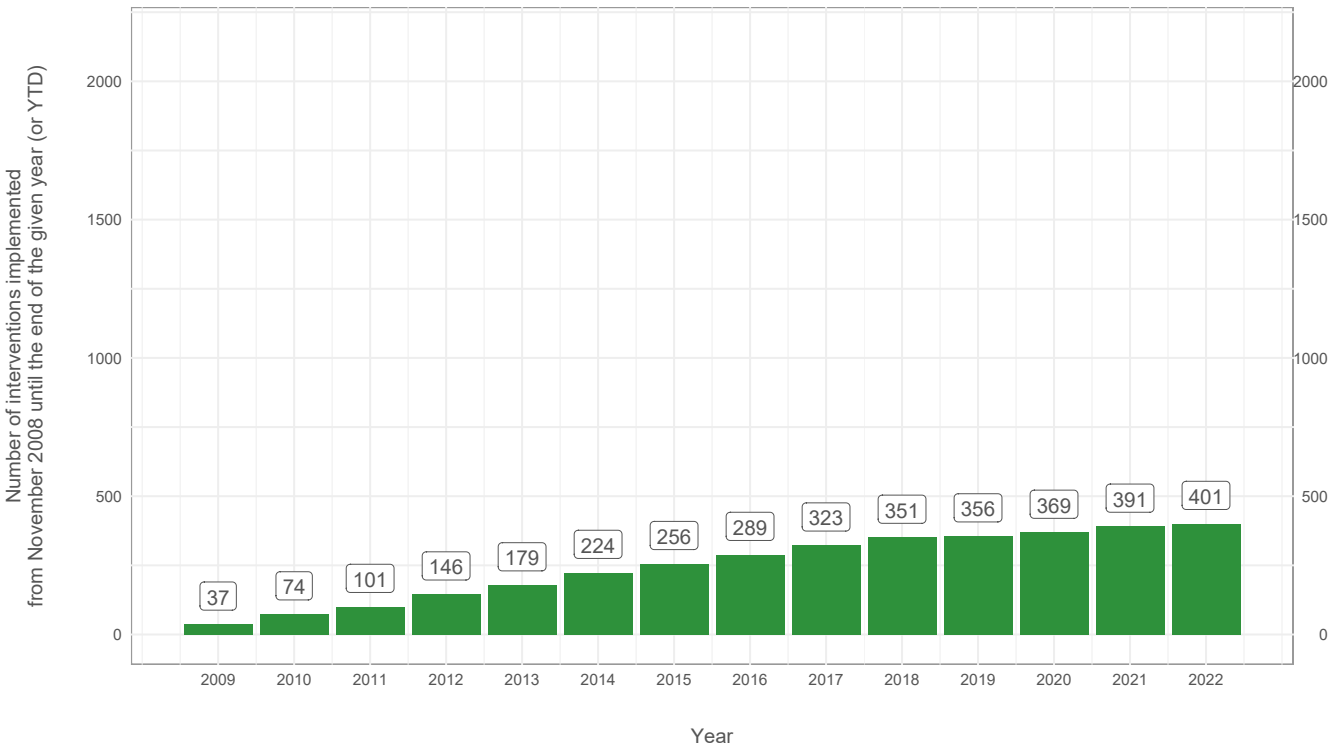
ITALY

Track record of liberalisation



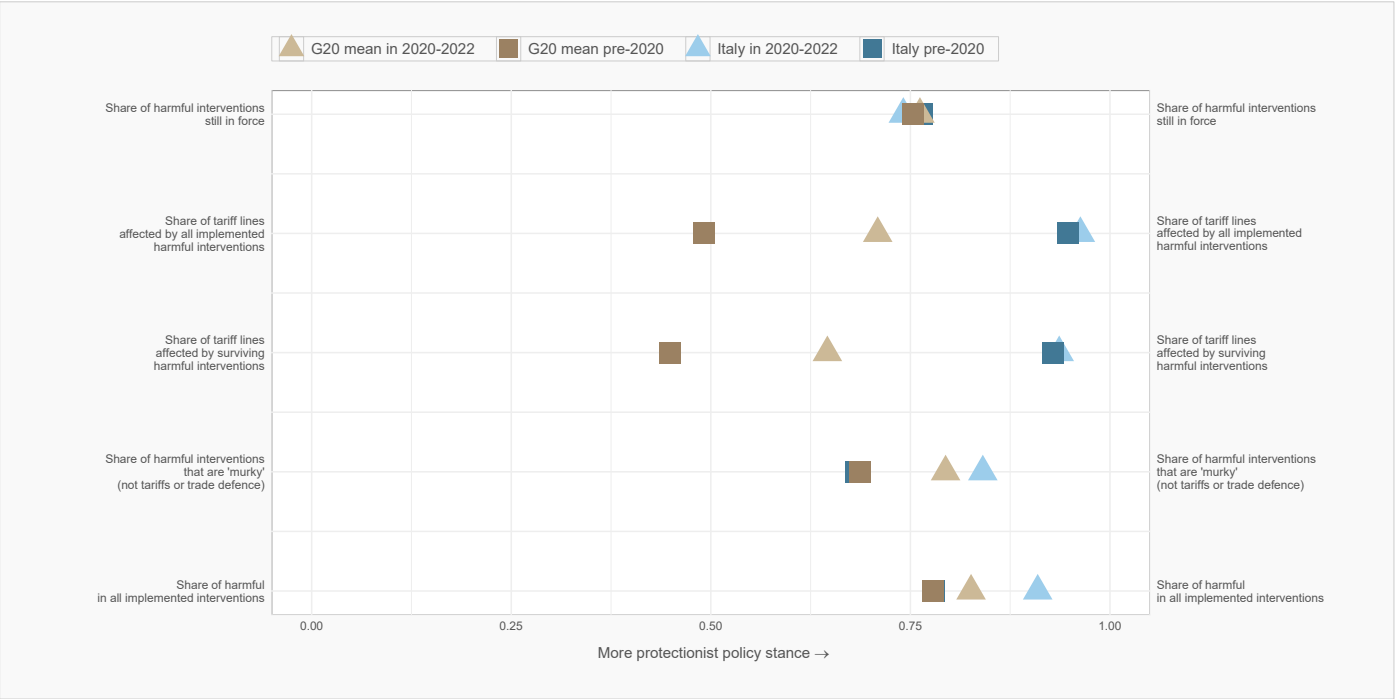
ITALY

Number of liberalising interventions imposed since November 2008



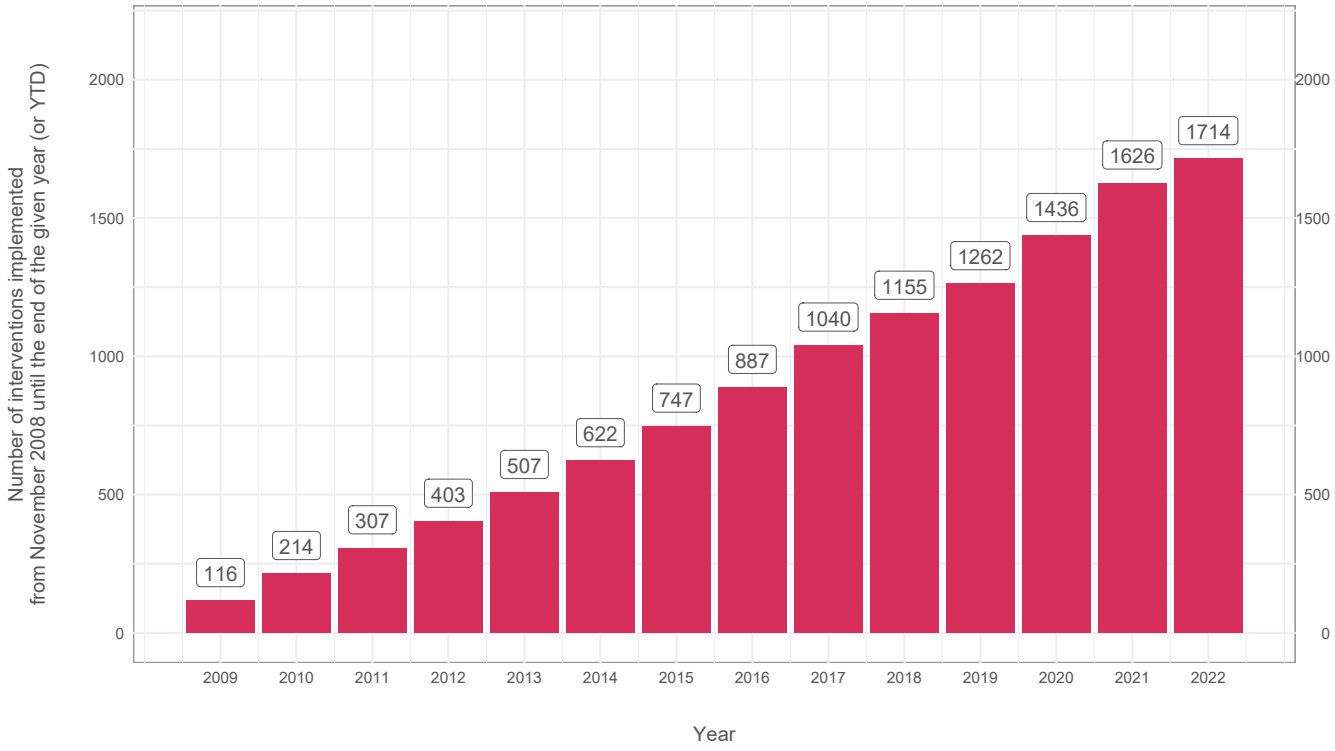
ITALY

Track record of protectionism



ITALY

Number of discriminatory interventions imposed since November 2008



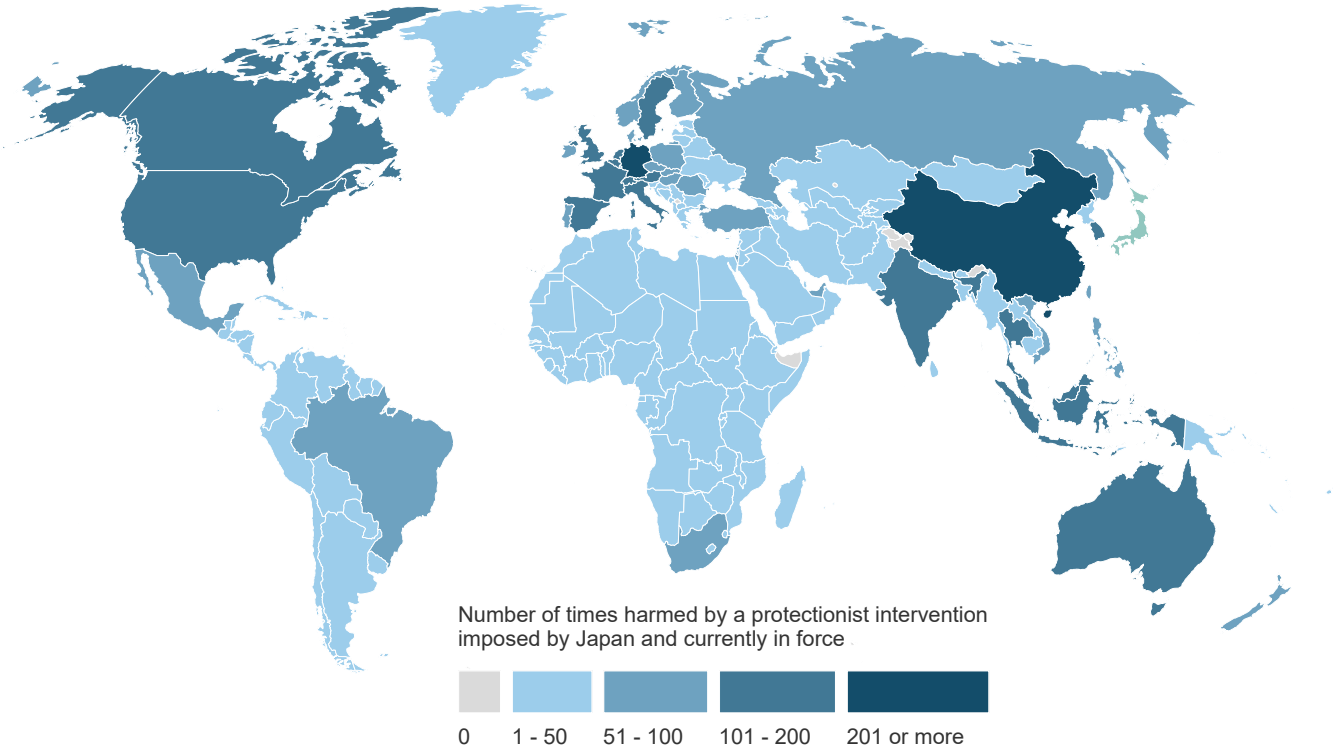
JAPAN

What is at stake for Japan's goods exporters?

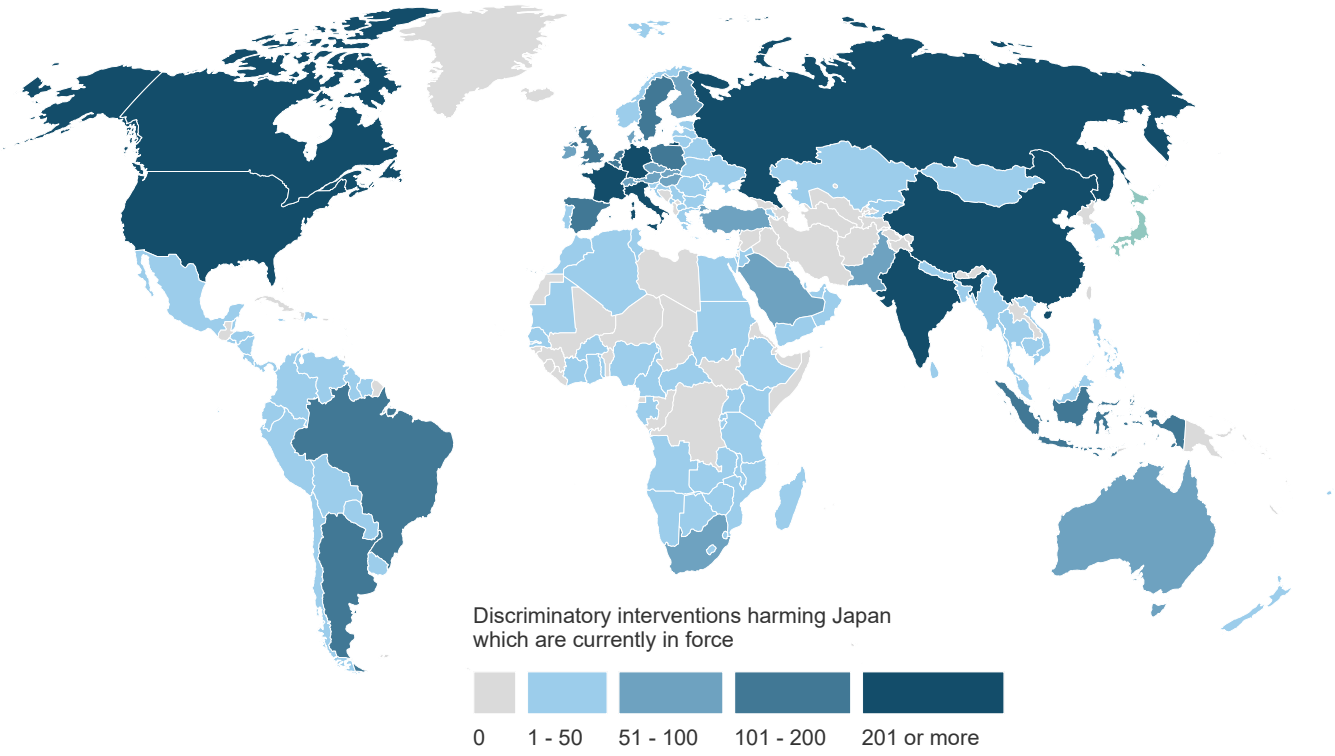
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	59.62	72.39	75.79	80.25	85.42	86.24	86.25	86.75	87.88	88.38	89.79	90.03	86.58	87.45
D	Contingent trade-protective measures	0.15	0.32	0.60	0.96	1.11	1.18	1.16	1.39	1.45	1.61	1.72	1.74	1.78	1.80
E	Non-automatic licensing, quotas etc.	0.83	1.38	4.52	4.88	6.94	5.41	6.29	6.61	6.99	7.24	7.34	7.87	8.49	8.10
F	Price-control measures, including additional taxes and charges	0.04	0.06	0.08	0.10	0.09	0.45	0.91	1.03	1.32	1.64	1.71	1.88	2.02	2.02
G	Finance measures	0.17	0.46	0.83	0.83	0.84	0.83	0.83	0.83	0.83	0.85	0.89	0.89	0.89	0.91
I	Trade-related investment measures	0.76	1.53	1.47	1.55	1.57	1.60	2.07	2.32	2.23	2.20	2.12	2.24	2.99	3.15
L	Subsidies (excl. export subsidies)	21.52	32.03	36.14	38.06	48.63	49.23	50.81	51.55	51.49	51.58	53.03	54.26	40.63	40.71
M	Government procurement restrictions	0.47	1.47	1.75	1.99	2.07	2.49	3.56	3.57	3.64	3.68	3.71	3.82	3.94	4.85
P	Export-related measures (incl. subsidies)	39.69	52.57	57.73	66.77	70.30	67.82	66.54	68.24	70.01	70.79	72.48	72.94	71.12	72.36
	Tariff measures	3.86	5.33	6.36	11.13	14.39	11.99	13.26	17.16	22.19	22.49	23.10	24.04	26.13	26.60
	Instrument unclear	0.27	0.95	1.37	1.41	1.48	1.94	1.92	1.80	1.93	2.31	2.38	2.38	2.50	2.60

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY JAPAN'S DISCRIMINATORY INTERVENTIONS

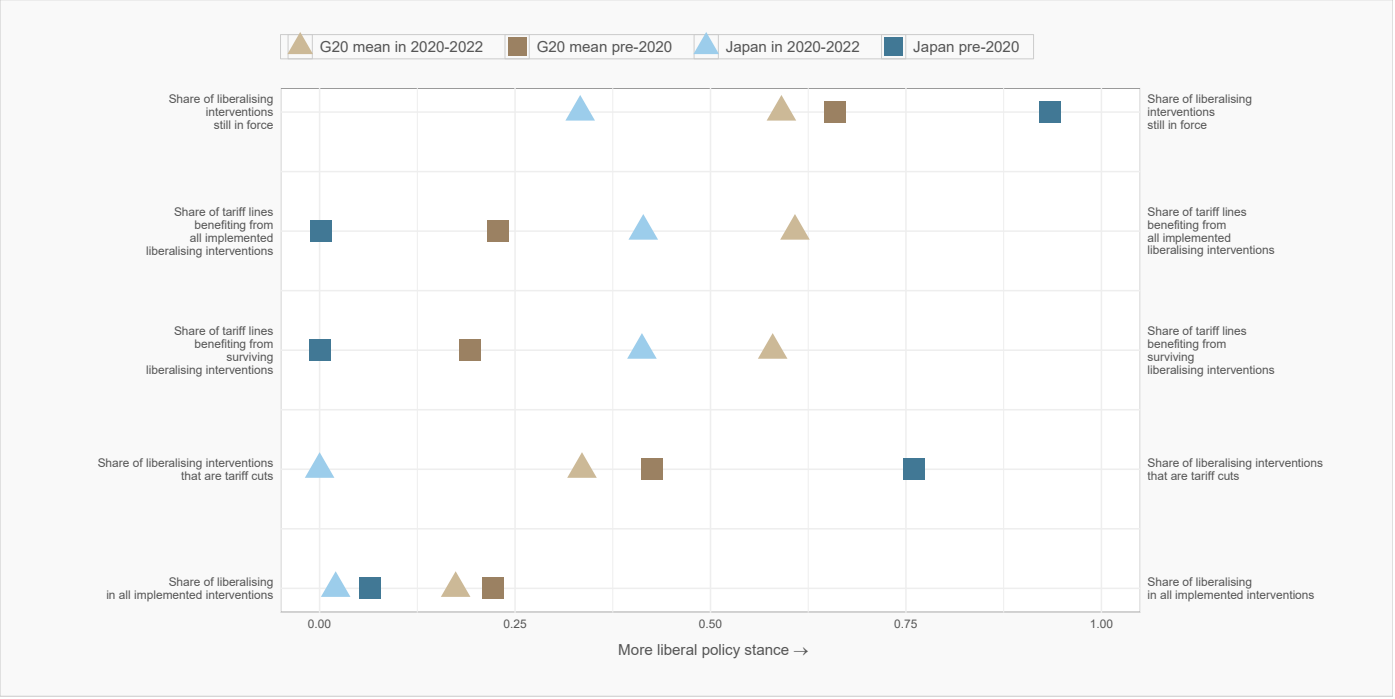


DISCRIMINATORY INTERVENTIONS HARMING JAPAN'S INTERESTS



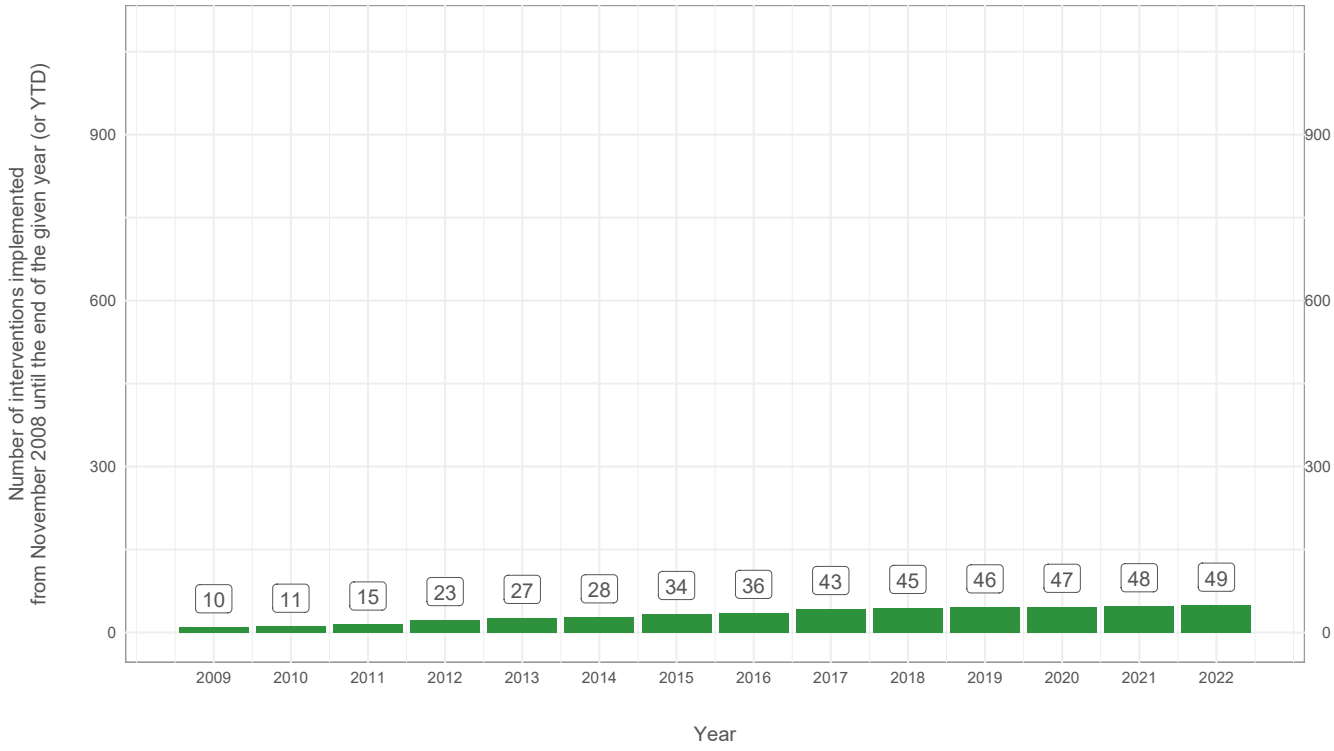
JAPAN

Track record of liberalisation



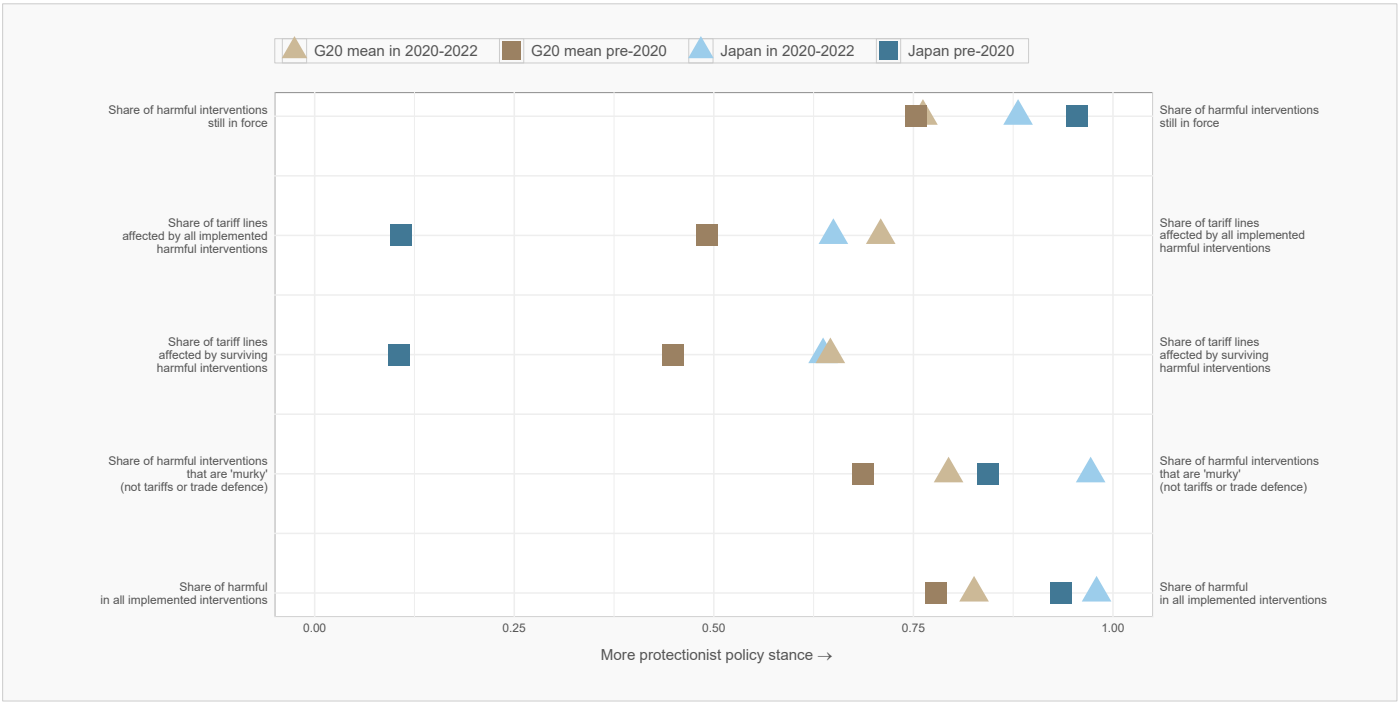
JAPAN

Number of liberalising interventions imposed since November 2008



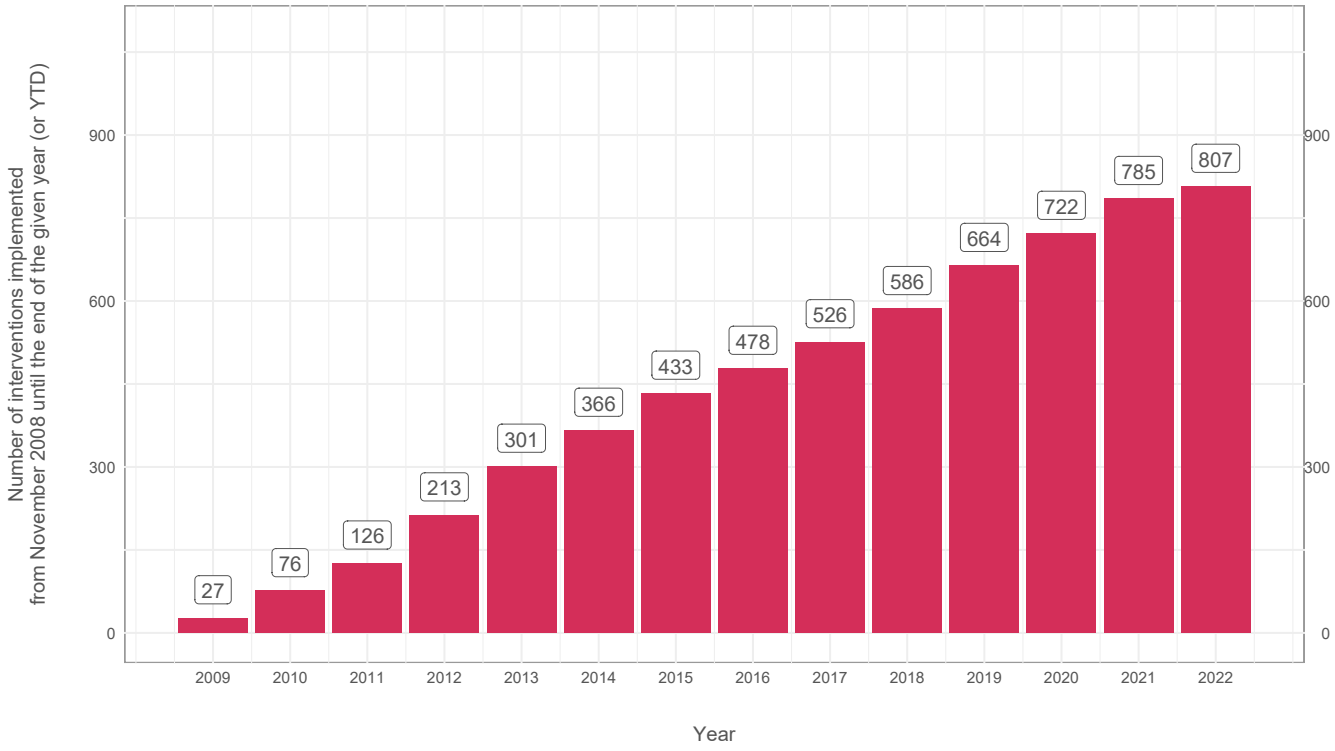
JAPAN

Track record of protectionism



JAPAN

Number of discriminatory interventions imposed since November 2008



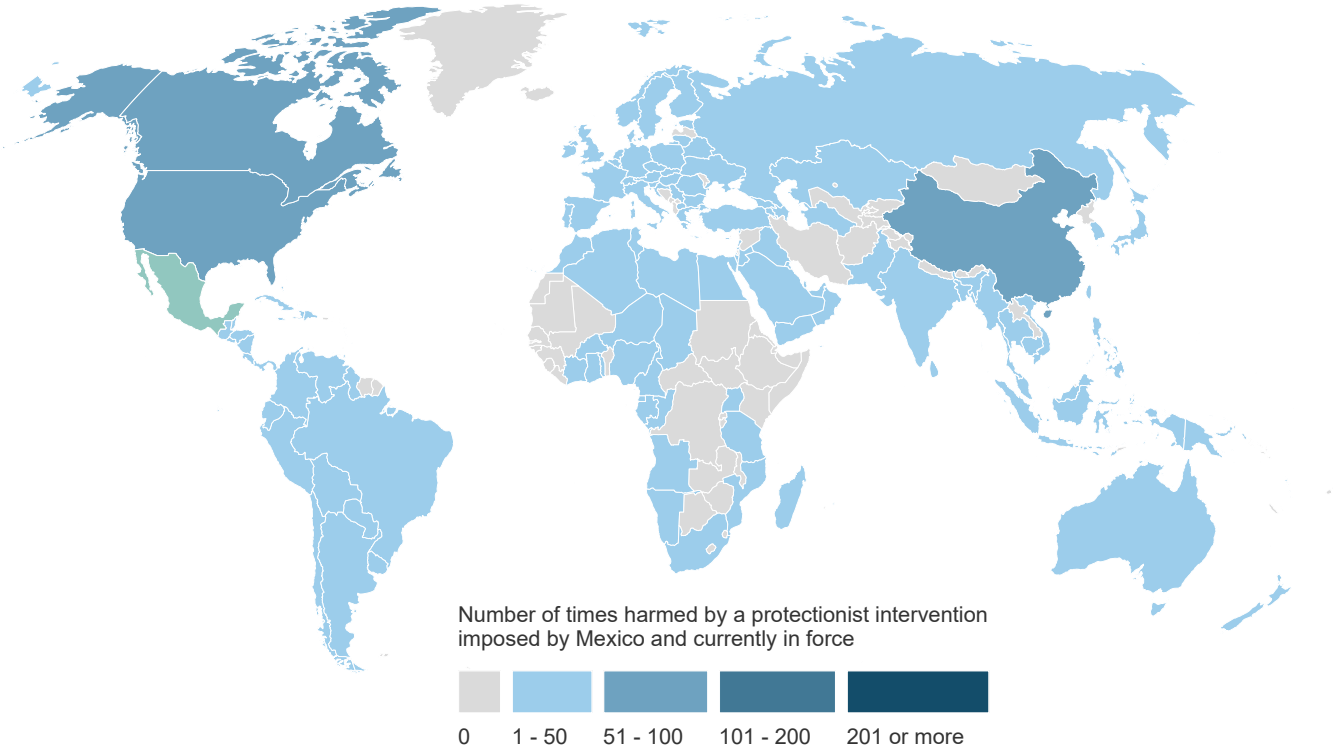
MEXICO

What is at stake for Mexico's goods exporters?

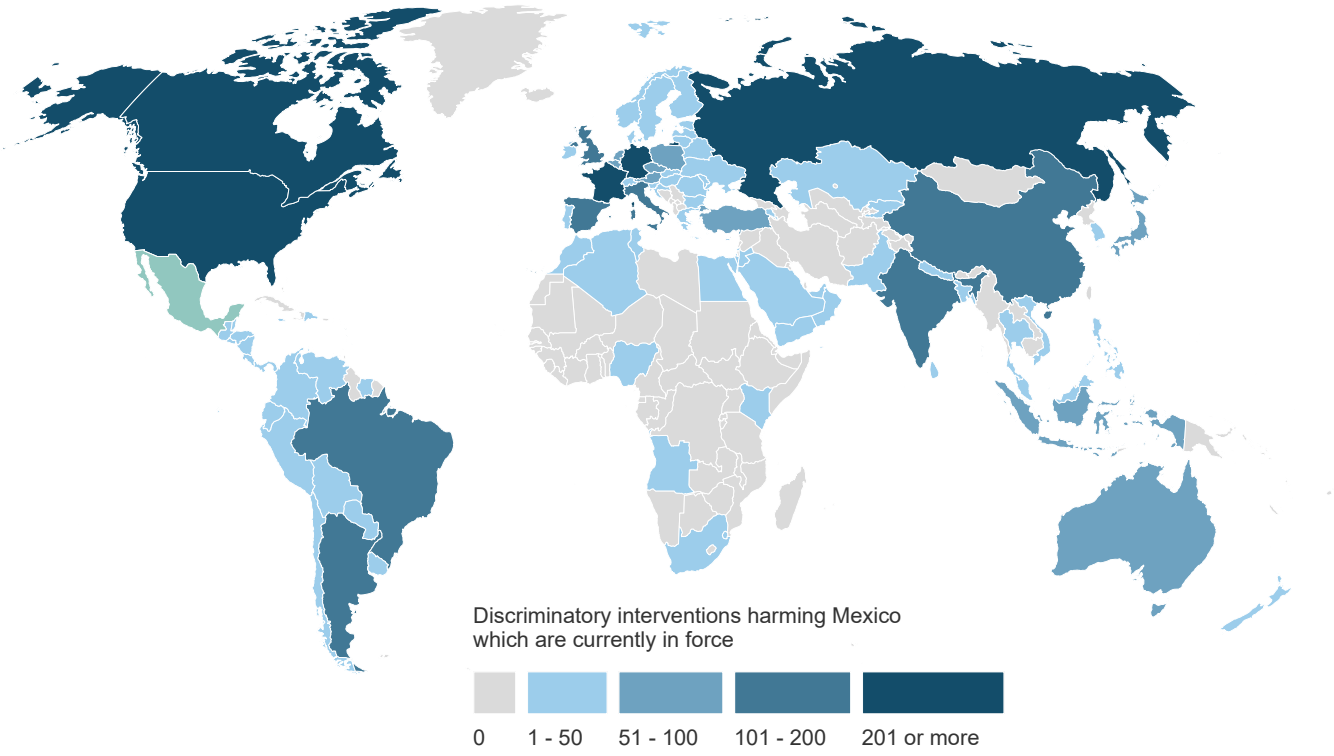
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	59.60	69.32	72.21	74.85	77.72	79.72	91.97	92.28	93.35	94.05	94.45	94.60	94.37	94.69
D	Contingent trade-protective measures	0.00	0.33	0.51	0.56	0.96	1.12	1.19	1.92	2.08	2.49	2.42	2.57	2.71	2.73
E	Non-automatic licensing, quotas etc.	0.11	0.23	0.59	0.81	0.91	0.98	0.99	0.96	1.77	1.91	1.90	2.05	2.14	1.72
F	Price-control measures, including additional taxes and charges	0.11	0.11	0.16	0.26	0.14	0.27	0.33	0.40	0.42	0.58	0.60	0.96	0.96	0.61
G	Finance measures	0.02	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
I	Trade-related investment measures	0.05	0.35	0.46	0.58	0.56	0.61	0.67	0.72	0.72	0.66	0.66	2.66	6.29	7.05
L	Subsidies (excl. export subsidies)	9.09	13.95	27.77	33.05	37.53	42.28	44.66	45.86	46.85	51.17	52.29	56.16	60.30	62.74
M	Government procurement restrictions	1.81	2.13	2.54	3.04	3.22	3.88	6.58	6.55	7.35	8.80	10.35	8.69	8.63	9.54
P	Export-related measures (incl. subsidies)	49.65	56.46	63.22	71.76	72.95	69.21	80.03	80.54	81.35	81.99	84.00	84.37	83.35	83.84
	Tariff measures	0.19	0.31	0.41	1.37	1.84	1.86	2.07	2.85	4.63	6.55	7.62	10.60	13.12	13.24
	Instrument unclear	0.00	0.13	0.08	0.09	0.31	0.66	0.67	0.77	0.88	0.94	0.96	0.96	0.96	0.98

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY MEXICO'S DISCRIMINATORY INTERVENTIONS

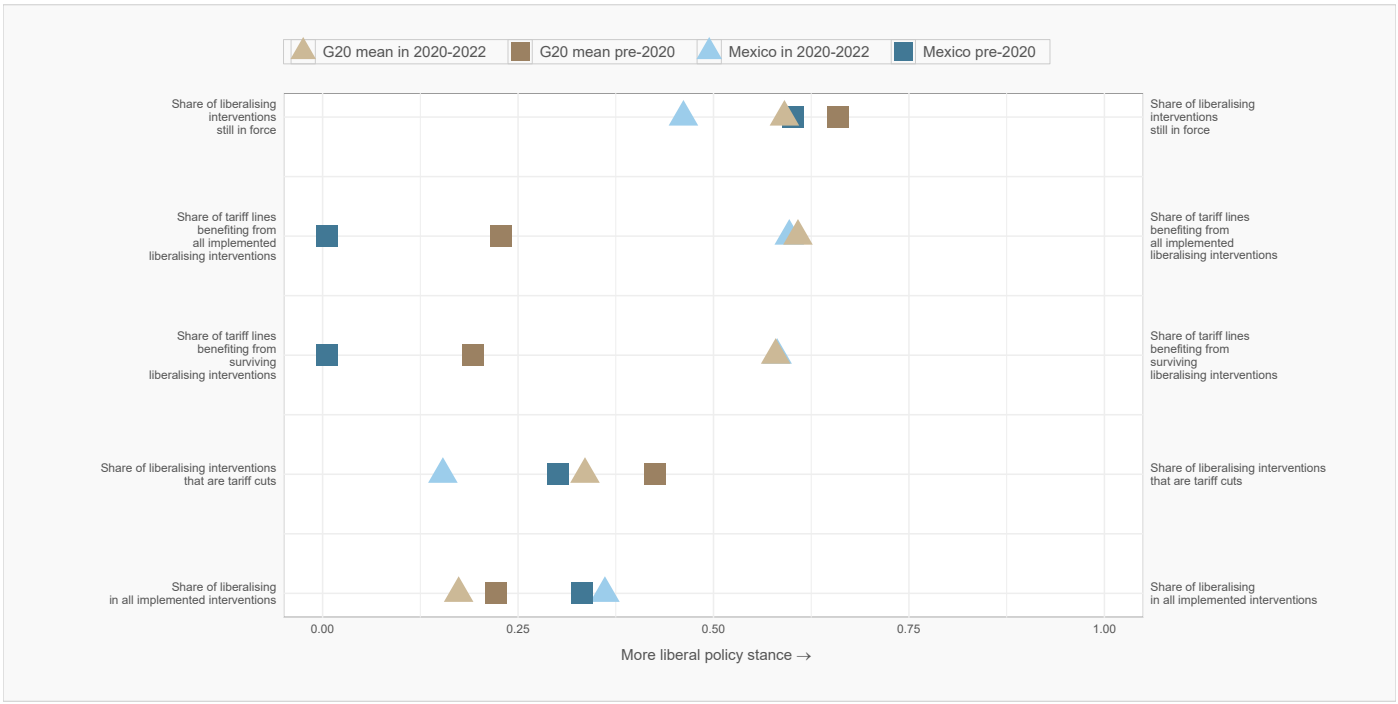


DISCRIMINATORY INTERVENTIONS HARMING MEXICO'S INTERESTS



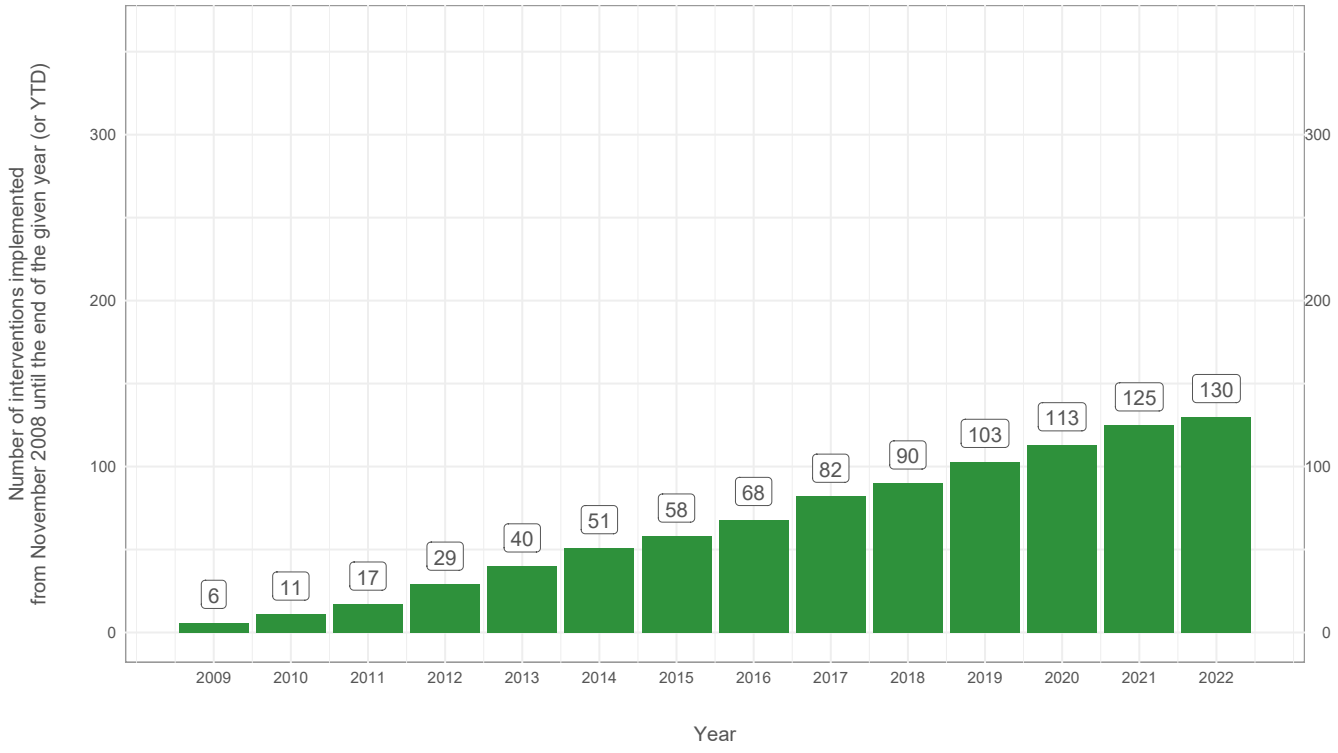
MEXICO

Track record of liberalisation



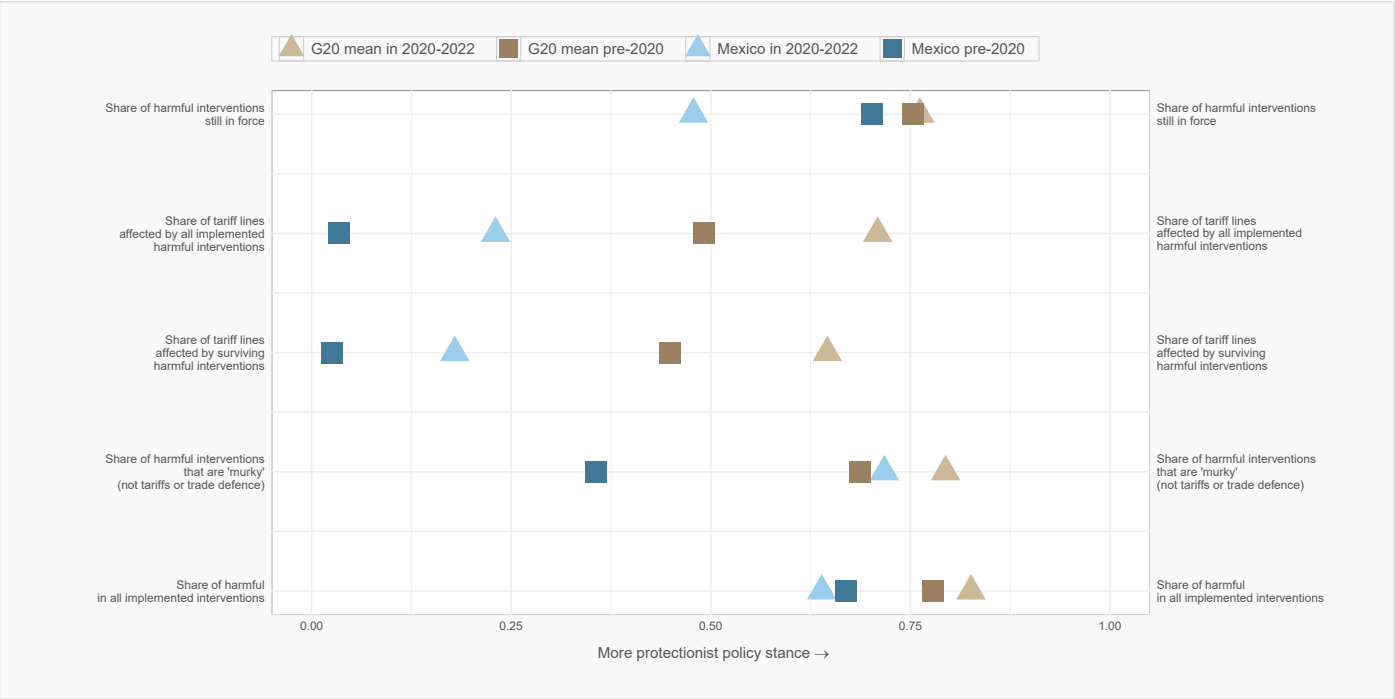
MEXICO

Number of liberalising interventions imposed since November 2008



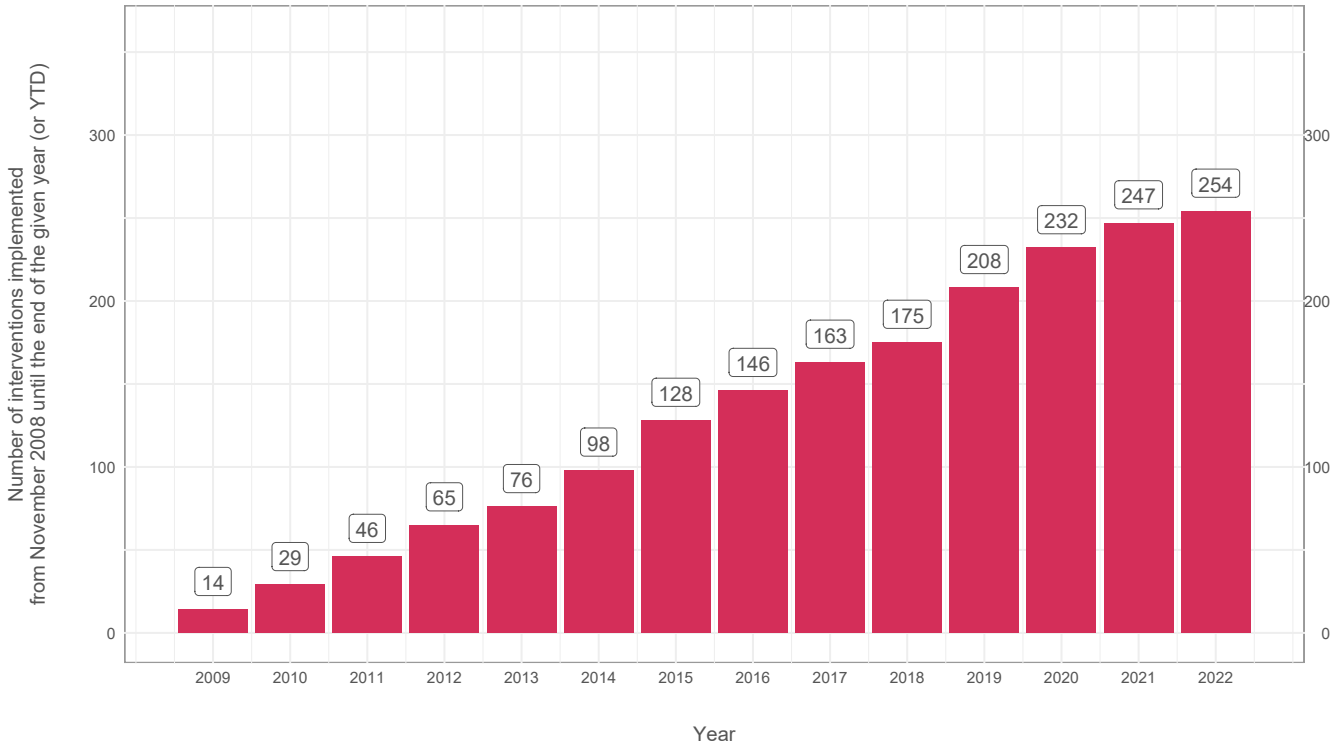
MEXICO

Track record of protectionism



MEXICO

Number of discriminatory interventions imposed since November 2008



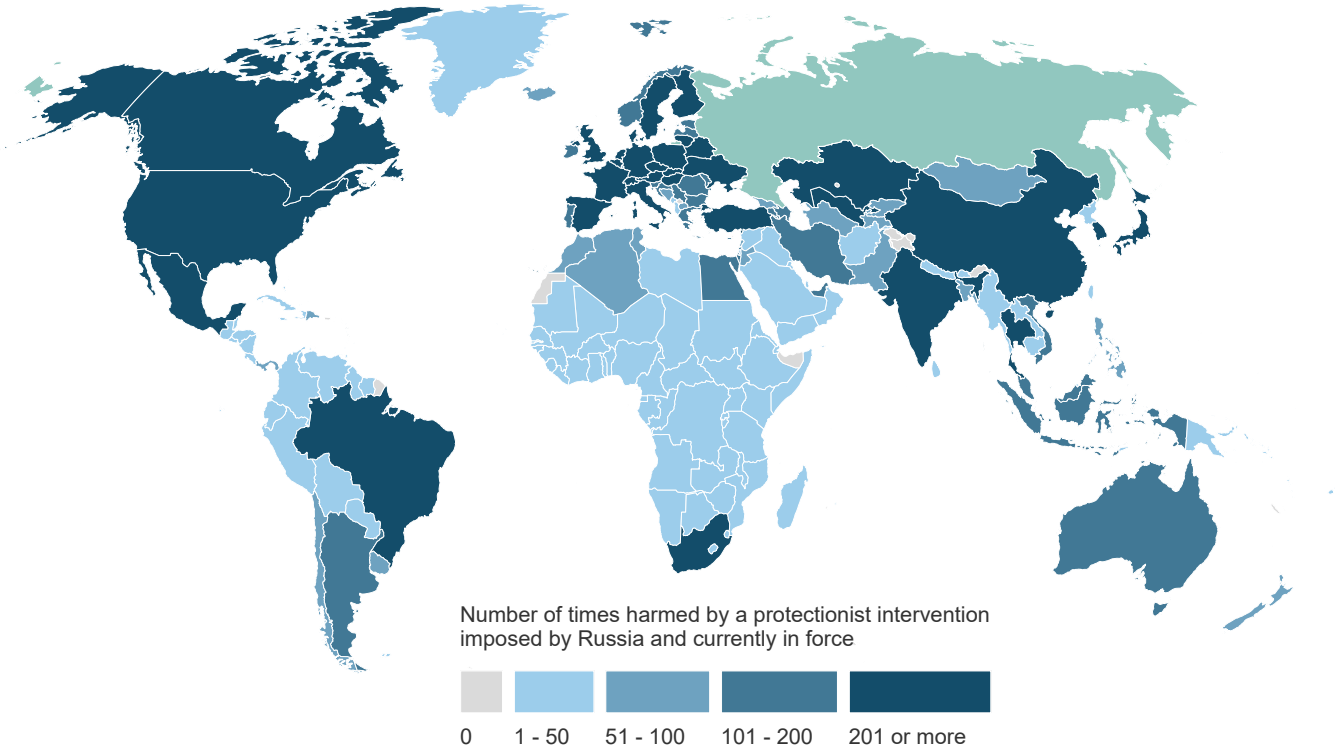
RUSSIA

What is at stake for Russia's goods exporters?

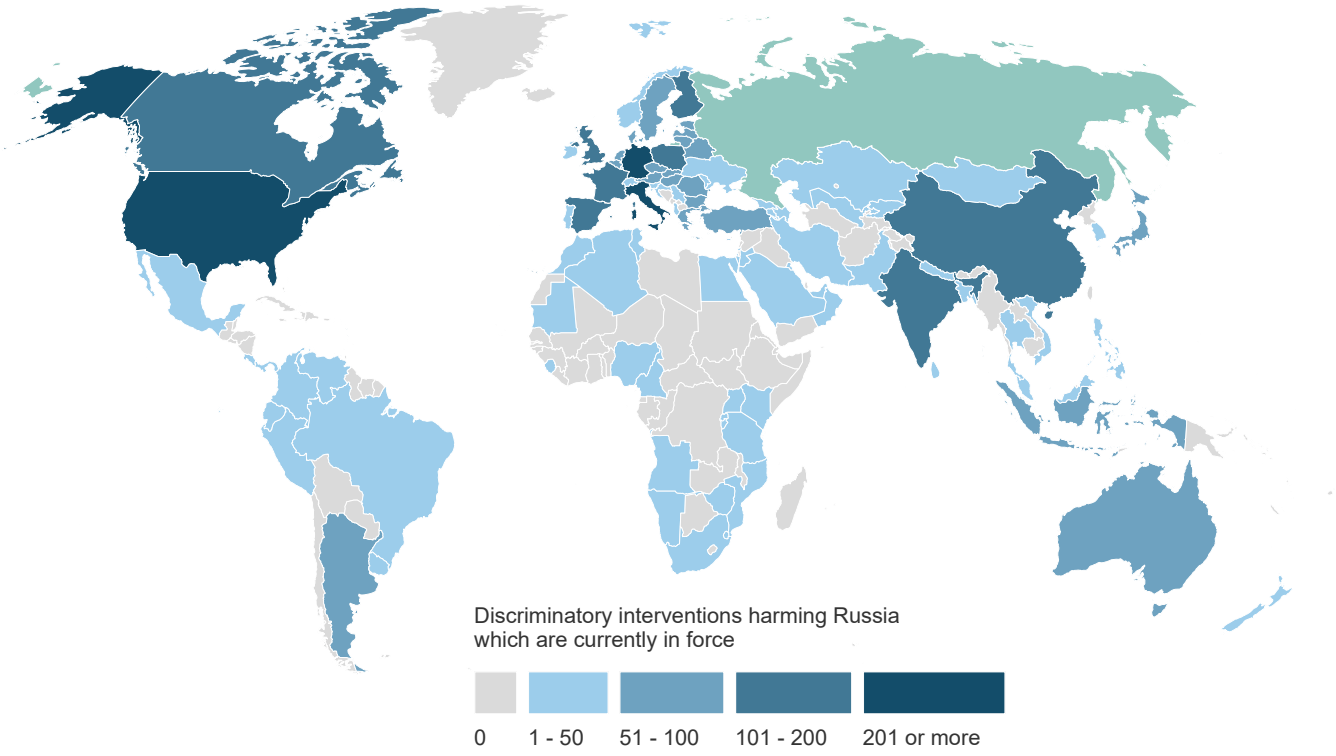
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...													
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	16.93	28.81	36.89	40.27	75.95	75.86	77.46	75.69	77.44	78.30	78.09	78.73	77.54	79.99
D	Contingent trade-protective measures	0.03	0.15	0.18	0.51	0.69	0.78	0.85	1.16	1.33	2.36	3.25	2.73	2.41	2.49
E	Non-automatic licensing, quotas etc.	0.43	0.14	3.77	4.03	4.76	4.64	4.68	5.15	5.71	5.82	5.85	8.50	8.48	16.93
F	Price-control measures, including additional taxes and charges	0.22	0.22	0.23	0.24	0.25	1.02	1.21	1.49	1.49	2.02	2.08	2.17	2.14	2.05
G	Finance measures	2.80	3.19	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.31
I	Trade-related investment measures	0.02	1.02	1.01	1.00	1.10	1.21	1.23	1.21	1.21	1.21	1.26	1.27	1.54	1.80
L	Subsidies (excl. export subsidies)	7.44	15.58	17.25	15.28	53.05	53.73	52.82	53.86	54.11	54.33	55.97	57.45	53.91	54.77
M	Government procurement restrictions	0.51	0.72	0.83	0.84	0.87	0.88	0.93	1.00	1.13	1.17	1.16	1.11	1.15	1.26
P	Export-related measures (incl. subsidies)	4.56	10.32	20.39	24.31	26.74	25.26	27.61	28.43	32.92	34.14	41.87	42.09	40.56	42.49
	Tariff measures	2.08	3.05	3.23	4.10	6.12	9.69	14.40	12.36	12.93	13.25	13.53	13.58	13.61	44.02
	Instrument unclear	0.00	0.06	0.00	0.08	0.19	2.21	3.57	3.68	3.82	3.76	3.84	3.84	3.84	4.40

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY RUSSIA'S DISCRIMINATORY INTERVENTIONS

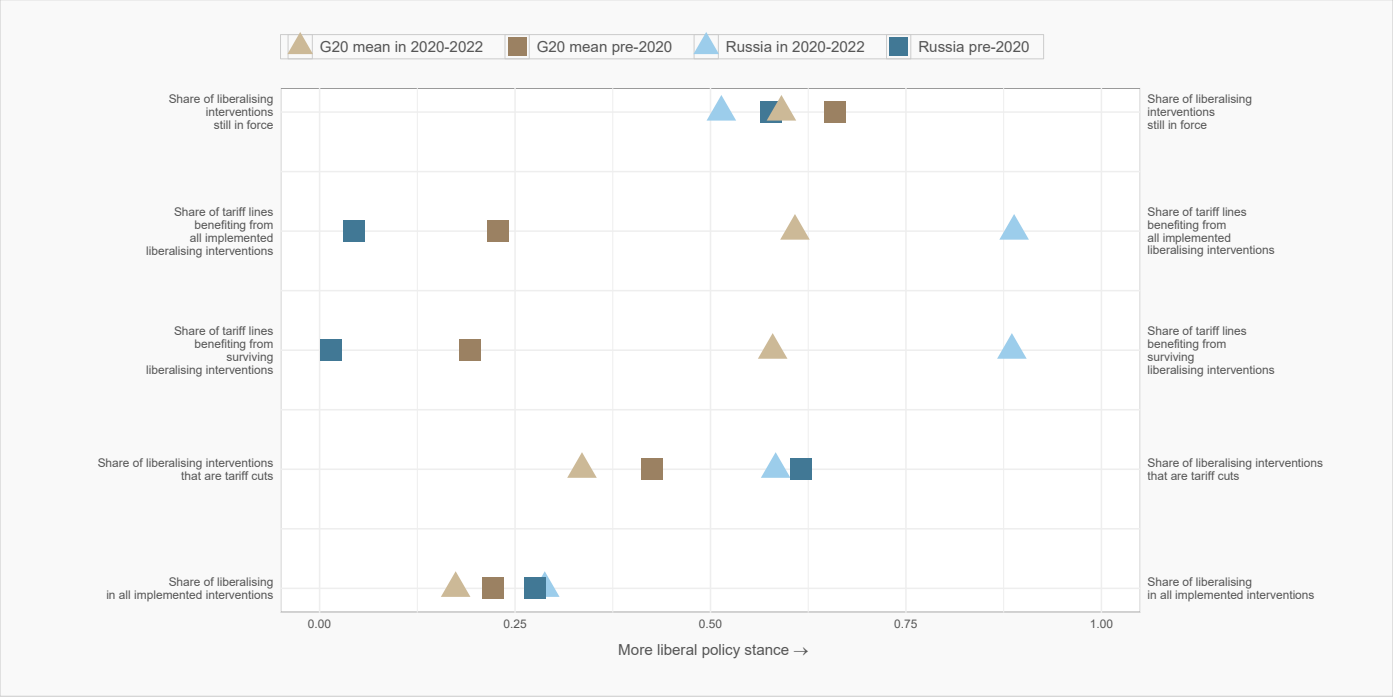


DISCRIMINATORY INTERVENTIONS HARMING RUSSIA'S INTERESTS



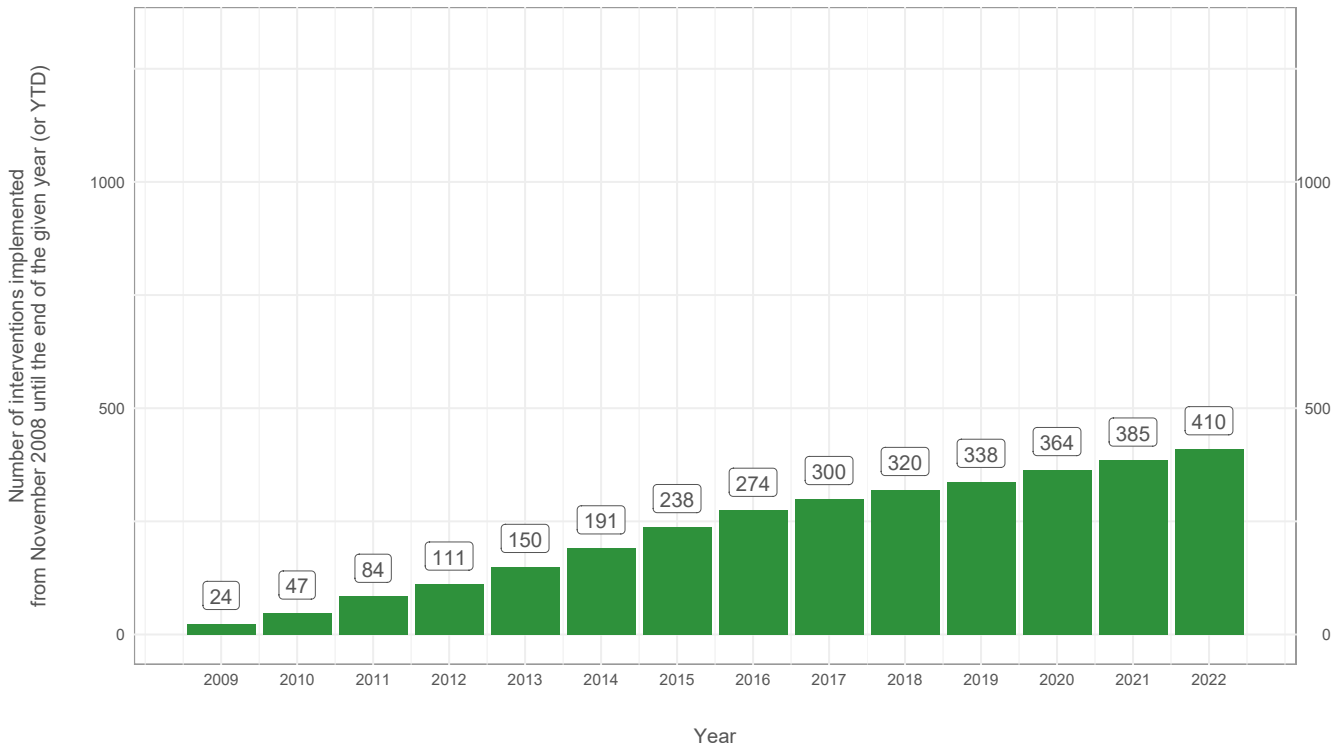
RUSSIA

Track record of liberalisation



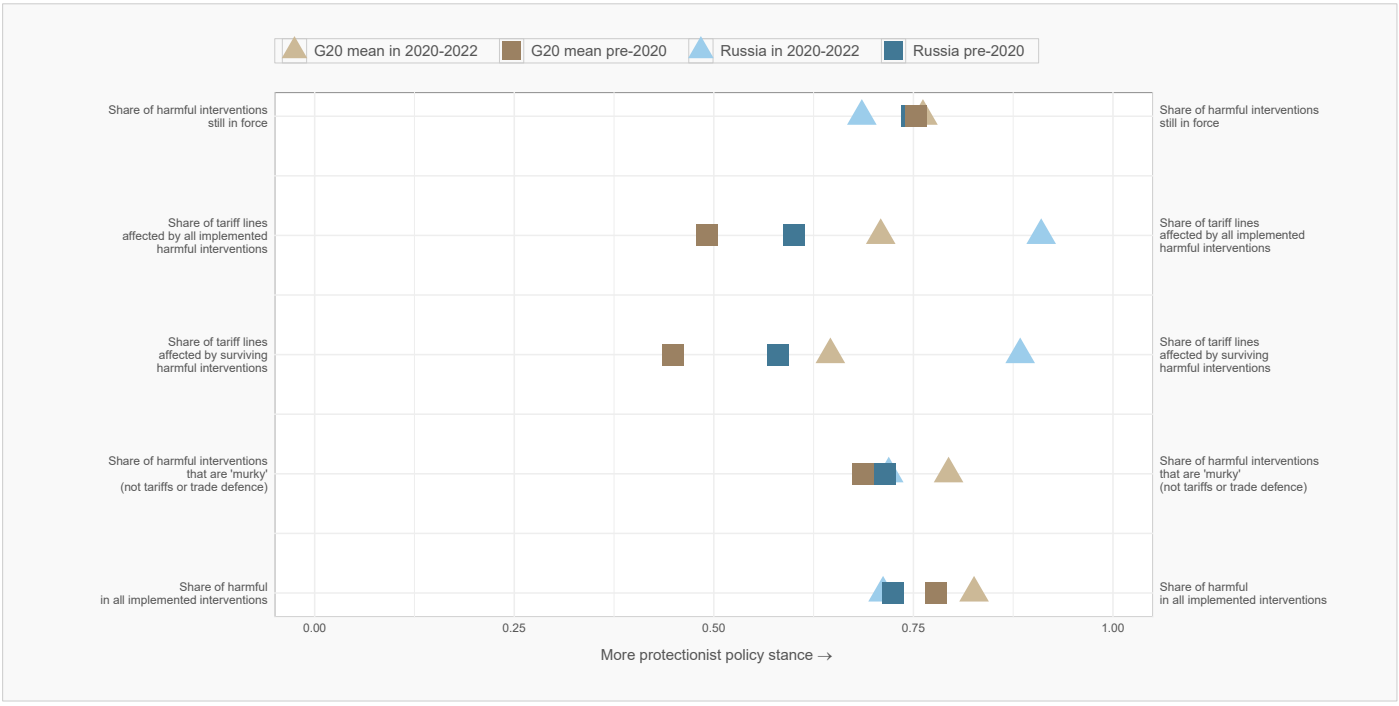
RUSSIA

Number of liberalising interventions imposed since November 2008



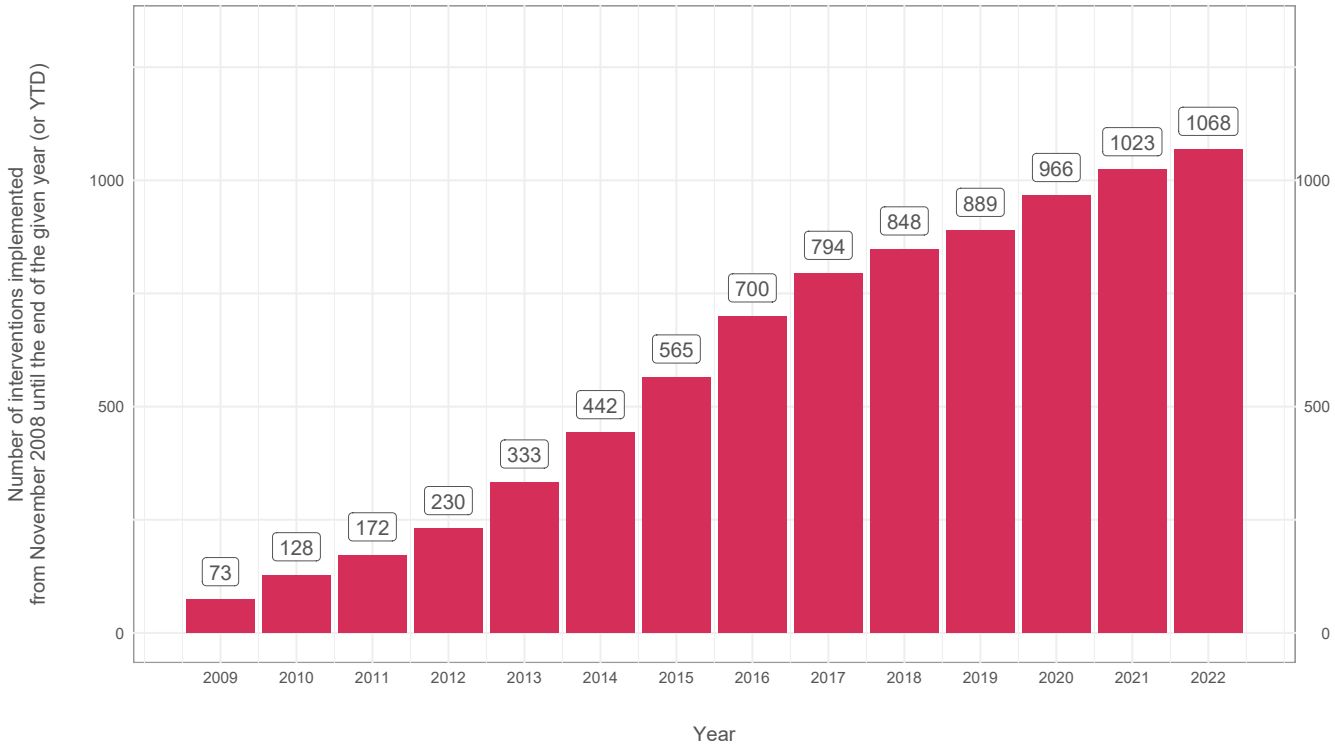
RUSSIA

Track record of protectionism



RUSSIA

Number of discriminatory interventions imposed since November 2008



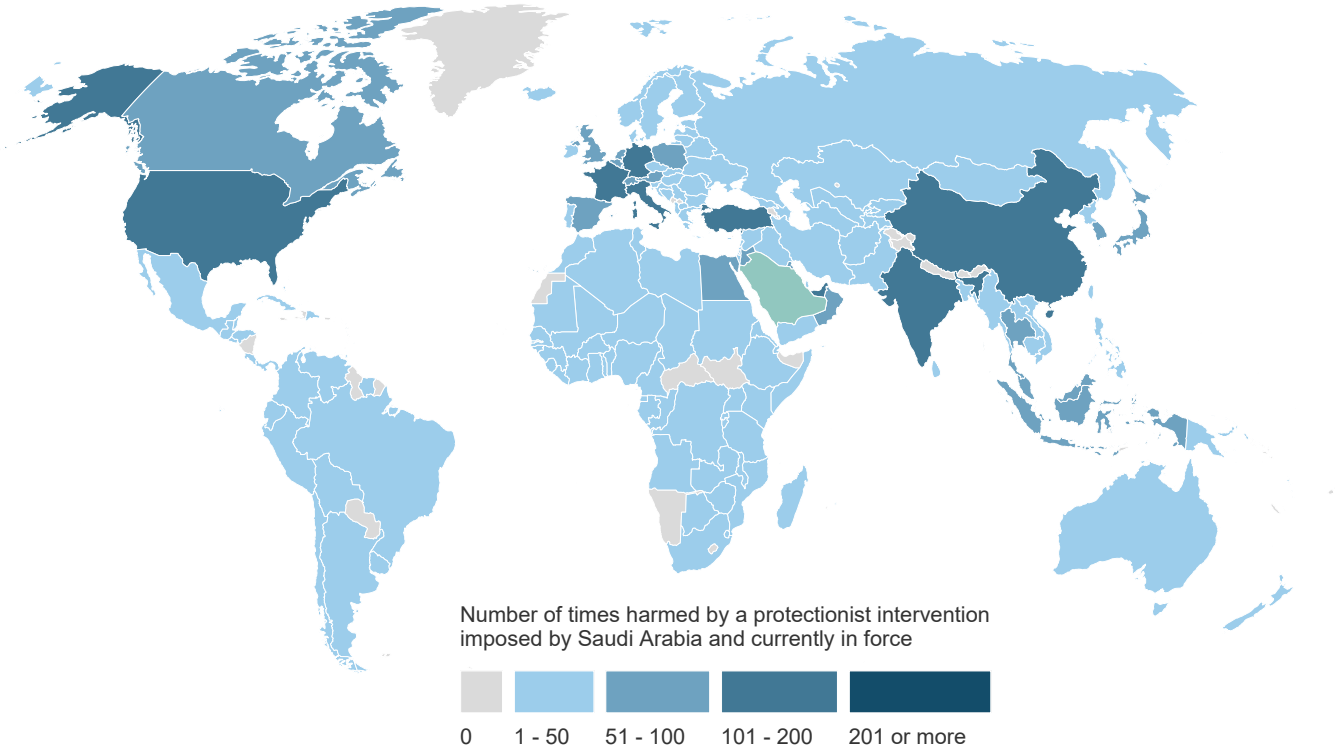
SAUDI ARABIA

What is at stake for Saudi Arabia's goods exporters?

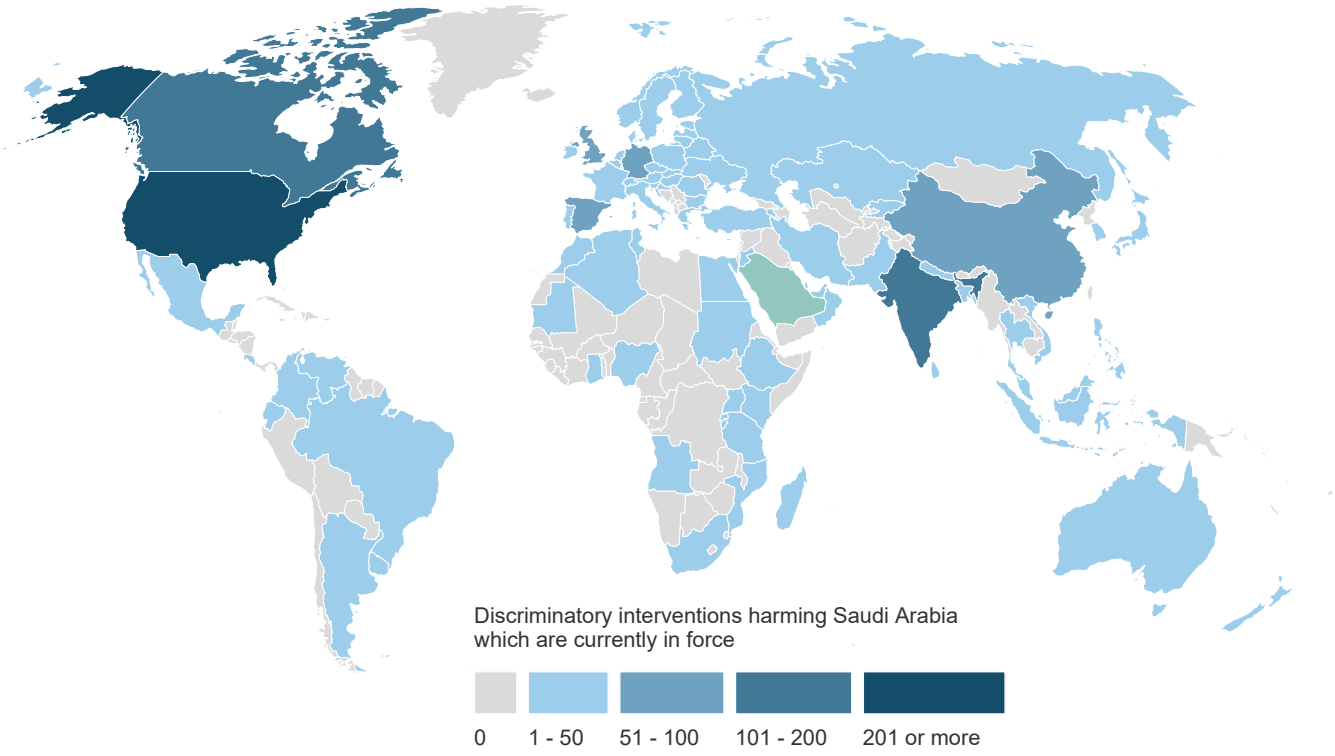
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	19.41	40.20	46.17	47.89	60.27	62.56	67.47	68.23	68.54	68.09	68.48	70.04	91.27	91.50
D	Contingent trade-protective measures	0.01	0.04	0.08	0.10	0.08	0.08	0.05	0.00	0.00	0.00	0.00	0.02	0.11	0.18
E	Non-automatic licensing, quotas etc.	4.54	0.04	5.97	6.73	6.02	6.04	7.31	7.87	7.96	8.17	8.73	8.87	8.32	9.10
F	Price-control measures, including additional taxes and charges	0.07	0.07	0.16	0.28	0.28	0.40	0.41	0.41	0.41	4.86	5.29	5.29	5.24	5.00
G	Finance measures	0.05	0.07	0.10	0.10	0.10	0.10	1.17	1.53	1.53	1.53	1.53	1.53	1.53	1.54
I	Trade-related investment measures	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.00	2.90
L	Subsidies (excl. export subsidies)	8.71	25.19	27.47	22.43	41.25	41.55	41.49	41.55	42.11	42.43	42.47	43.01	36.76	37.32
M	Government procurement restrictions	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
P	Export-related measures (incl. subsidies)	2.36	5.80	10.44	12.44	13.75	13.98	40.72	42.09	42.50	41.37	47.28	47.00	83.52	84.14
	Tariff measures	8.32	9.93	10.21	10.85	11.34	12.98	15.22	17.05	19.07	23.17	23.51	25.10	25.85	25.88
	Instrument unclear	0.00	0.00	0.00	0.00	0.04	0.87	0.89	0.89	0.89	1.36	2.34	2.34	2.34	2.41

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY SAUDI ARABIA'S DISCRIMINATORY INTERVENTIONS

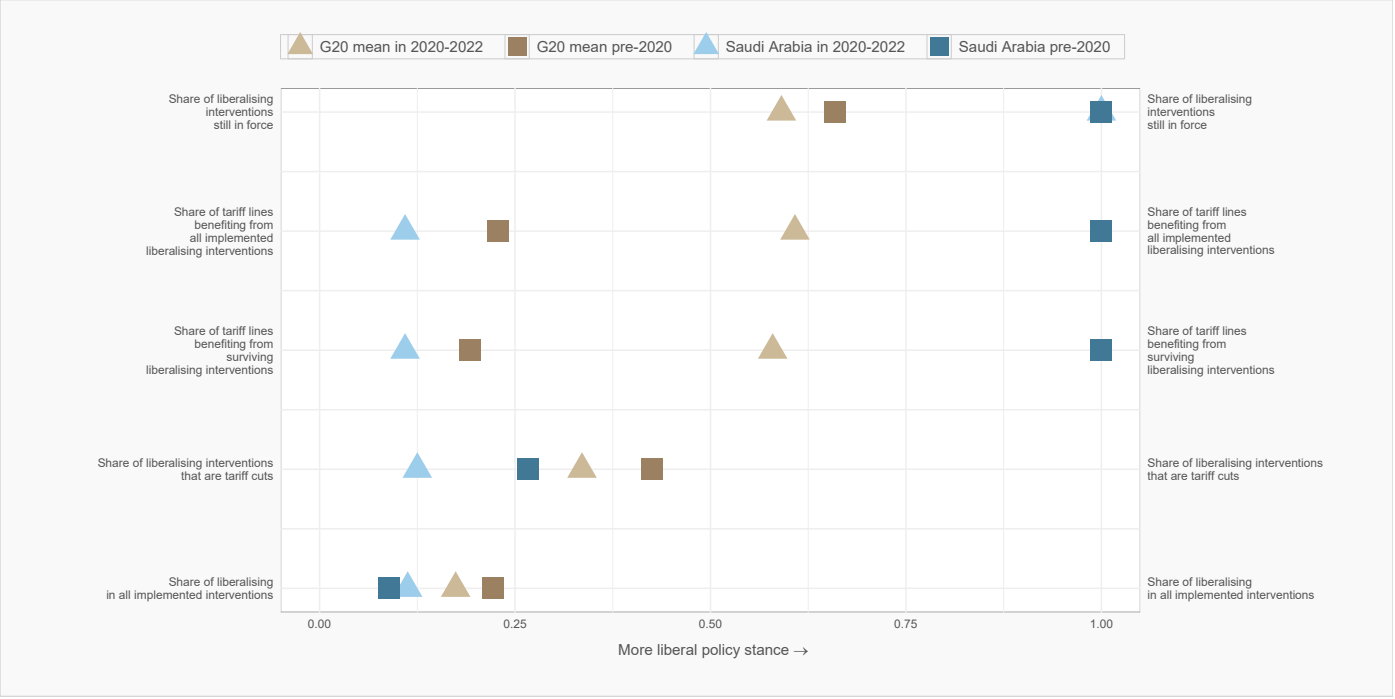


DISCRIMINATORY INTERVENTIONS HARMING SAUDI ARABIA'S INTERESTS



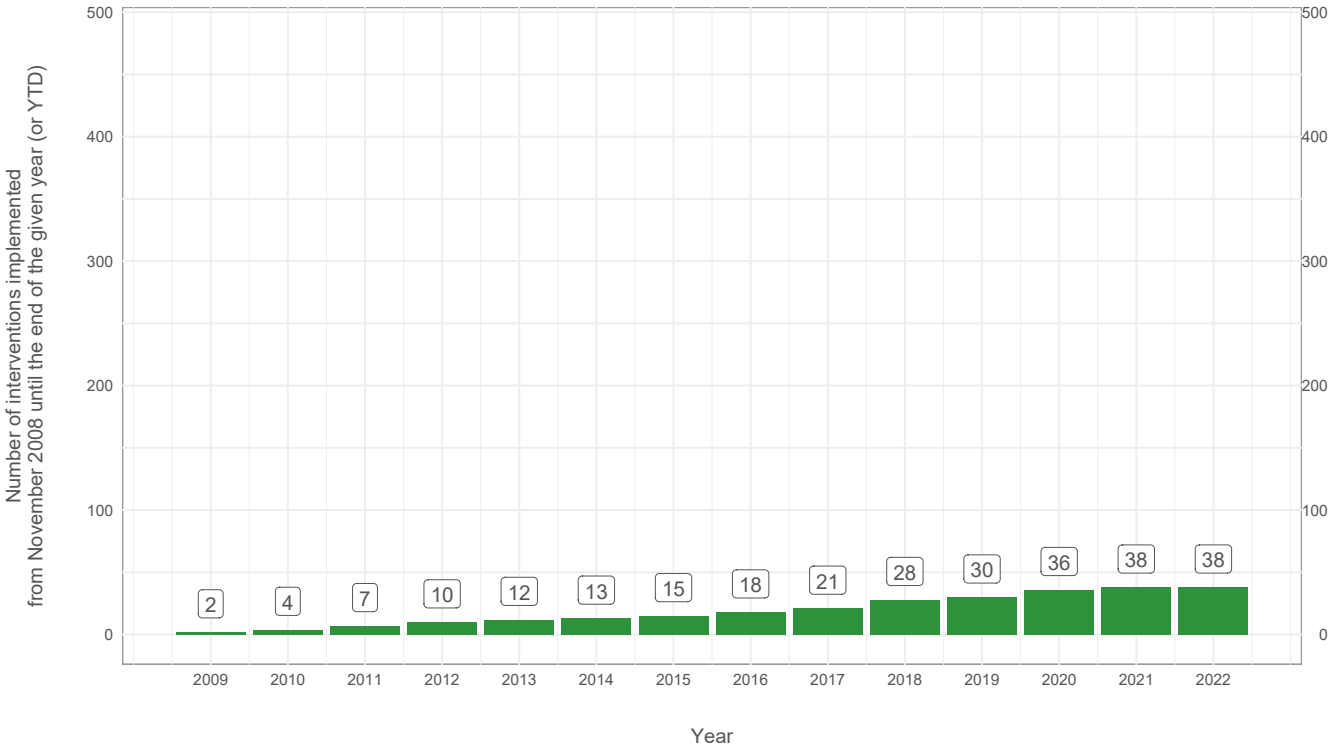
SAUDI ARABIA

Track record of liberalisation



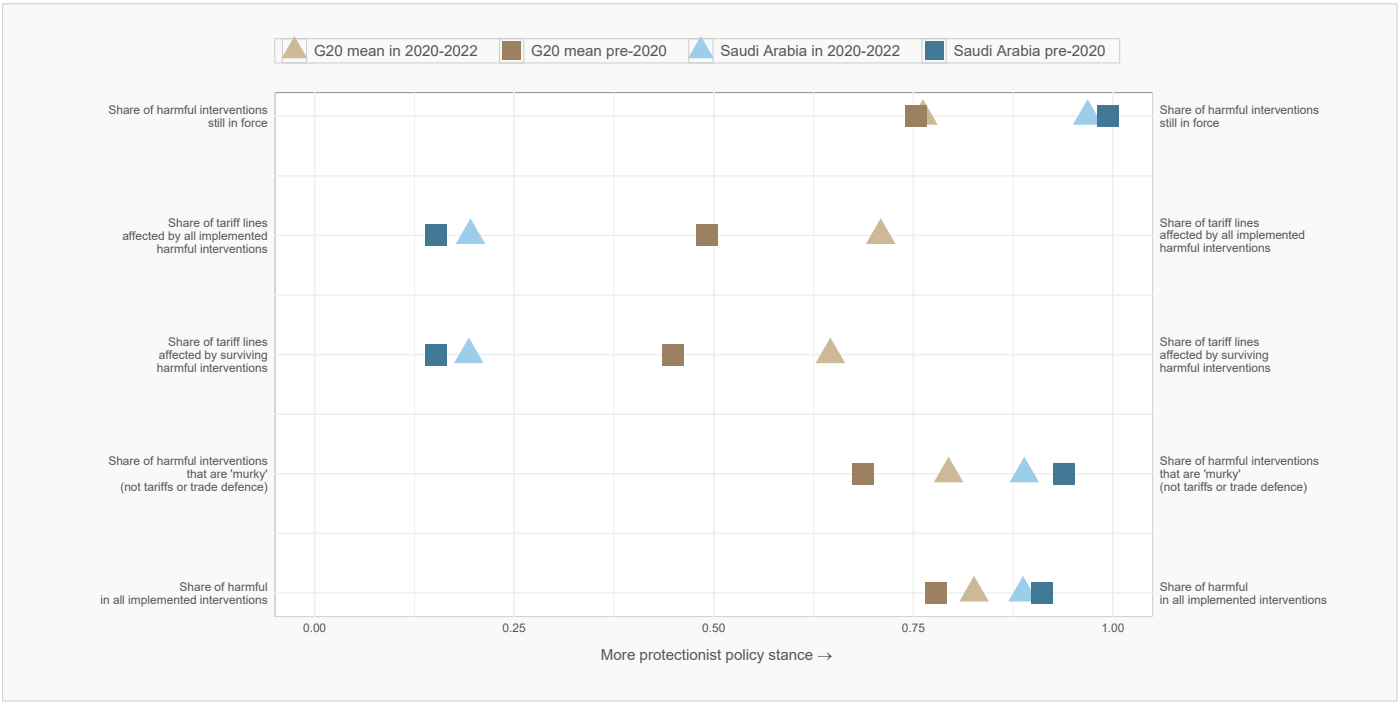
SAUDI ARABIA

Number of liberalising interventions imposed since November 2008



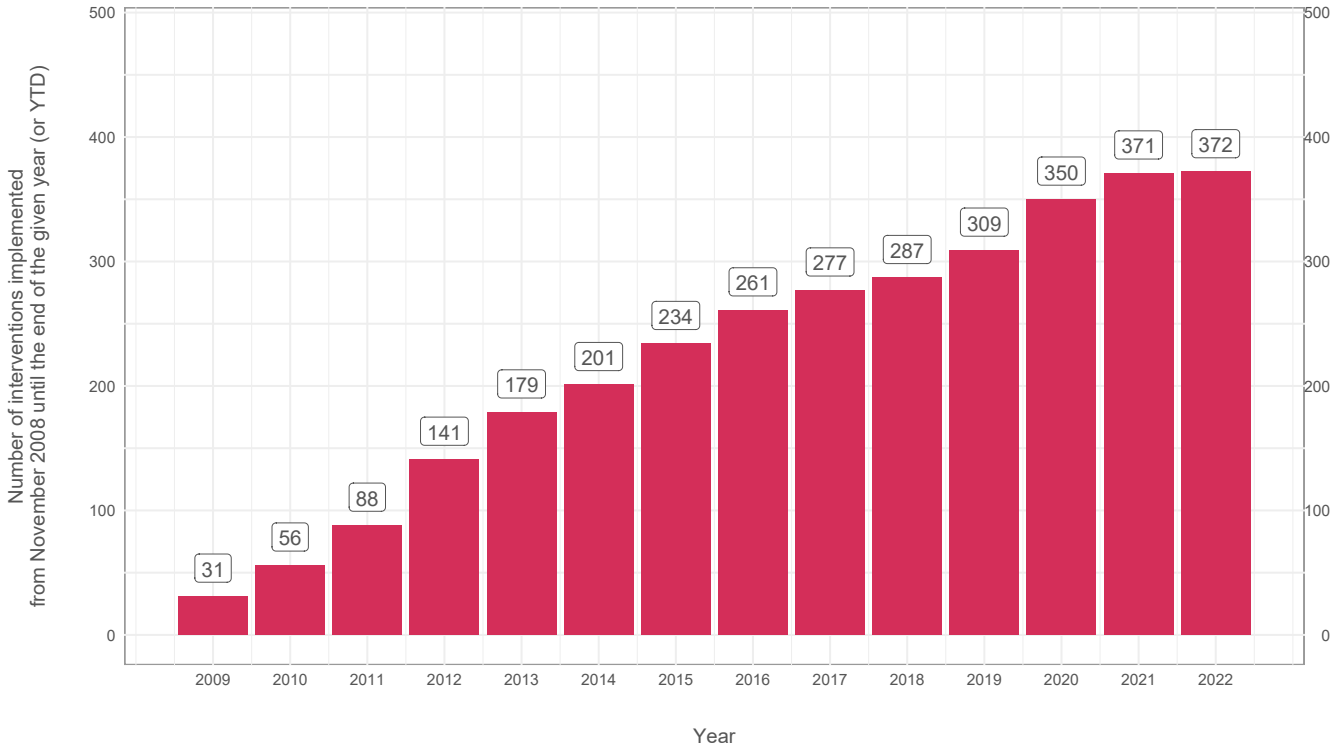
SAUDI ARABIA

Track record of protectionism



SAUDI ARABIA

Number of discriminatory interventions imposed since November 2008



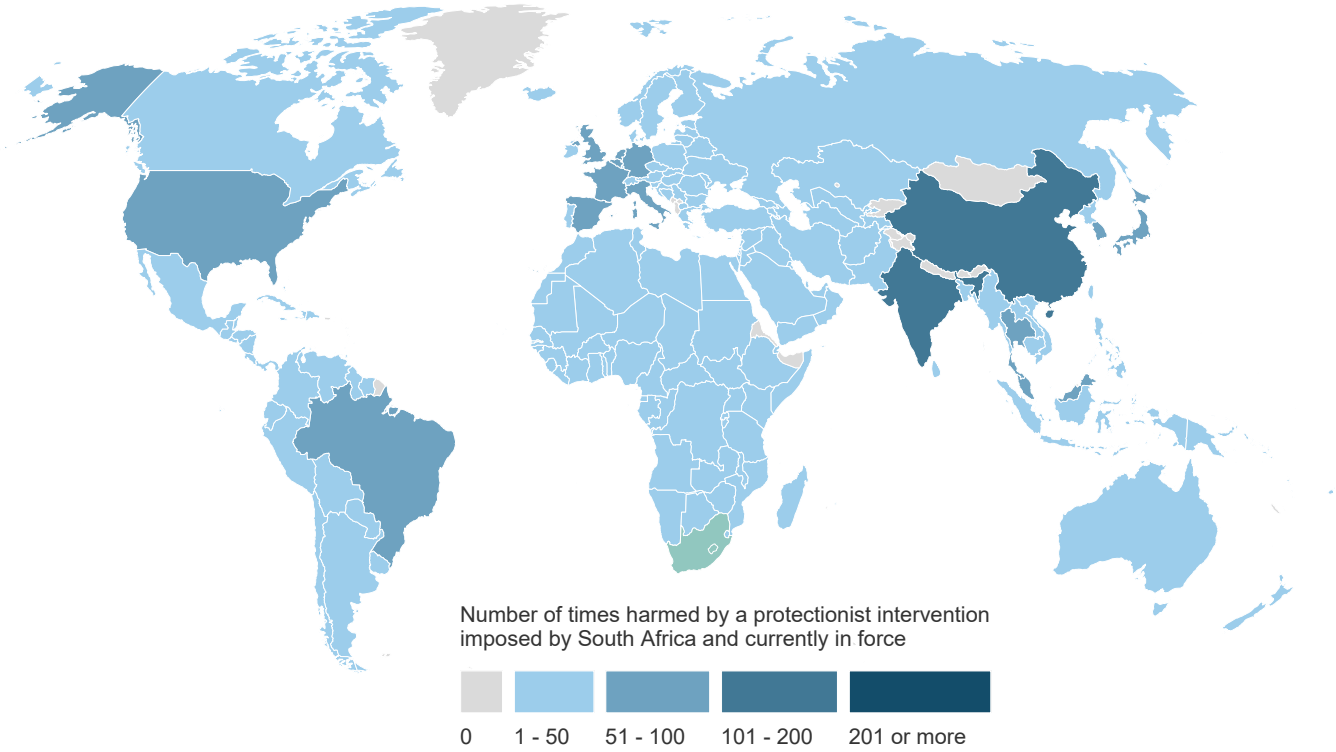
SOUTH AFRICA

What is at stake for South Africa's goods exporters?

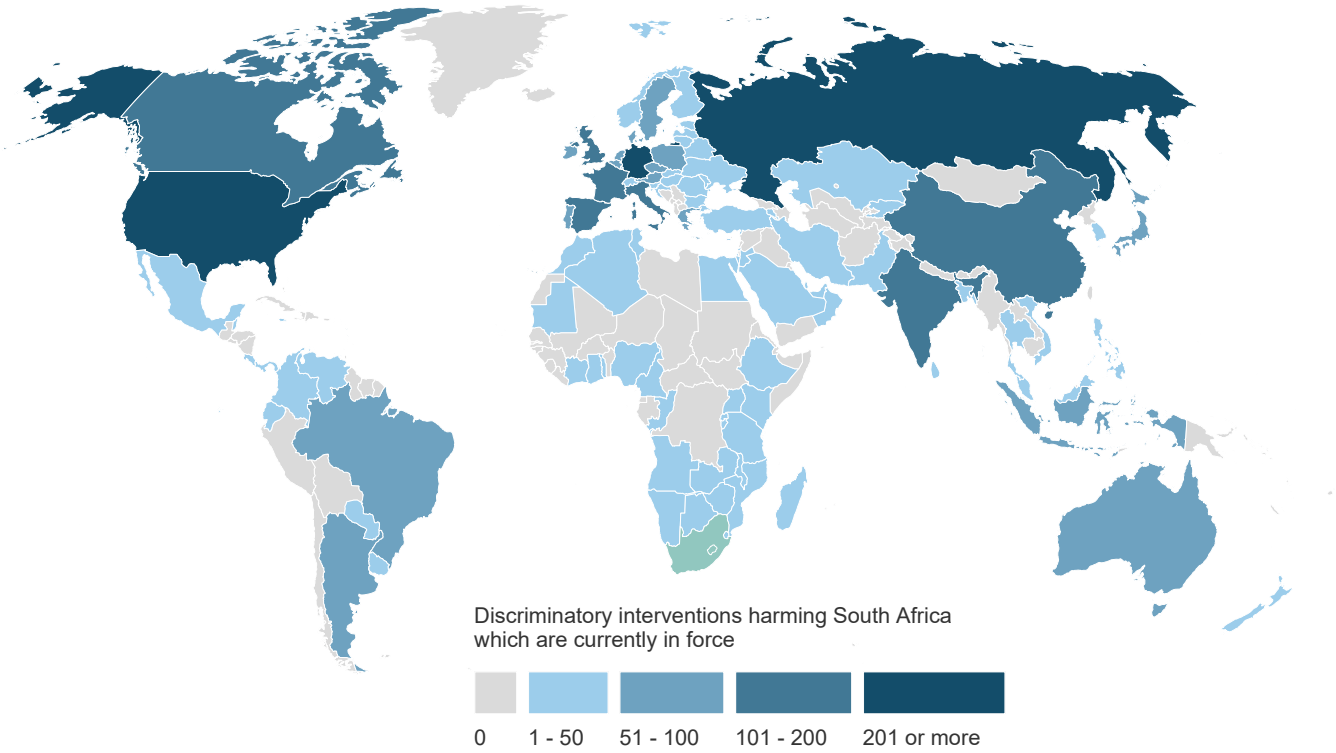
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	29.83	36.94	45.49	49.39	63.55	60.52	56.70	58.60	60.00	60.37	61.14	62.33	63.71	68.14
D	Contingent trade-protective measures	0.03	0.05	0.06	0.06	0.06	0.11	0.13	0.53	0.63	1.02	1.26	1.03	1.31	2.75
E	Non-automatic licensing, quotas etc.	0.62	1.95	3.98	4.61	4.79	5.27	5.01	5.61	6.01	6.26	6.25	7.64	7.79	7.92
F	Price-control measures, including additional taxes and charges	2.12	2.12	2.15	2.22	2.22	2.23	2.25	2.25	2.27	4.90	5.15	5.19	3.64	3.45
G	Finance measures	0.44	0.47	0.52	0.52	0.52	0.52	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.55
I	Trade-related investment measures	0.00	0.12	0.16	0.16	0.20	0.26	0.28	0.30	0.32	0.31	0.29	0.26	0.56	0.78
L	Subsidies (excl. export subsidies)	6.86	9.20	10.17	12.23	36.76	37.08	33.22	33.86	34.27	34.27	35.96	37.17	34.62	36.90
M	Government procurement restrictions	0.90	0.86	1.06	1.15	1.20	1.29	1.45	1.52	1.50	1.58	1.68	1.67	1.70	3.70
P	Export-related measures (incl. subsidies)	19.17	24.90	33.94	38.48	40.42	33.57	31.20	34.24	36.73	38.07	39.90	40.22	38.59	46.21
	Tariff measures	1.77	5.12	6.56	8.47	10.18	10.47	11.29	11.90	12.47	13.97	14.36	14.53	15.10	15.36
	Instrument unclear	0.05	0.70	0.69	0.70	1.78	2.66	0.32	0.44	1.09	2.39	2.42	2.42	2.43	2.45

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY SOUTH AFRICA'S DISCRIMINATORY INTERVENTIONS

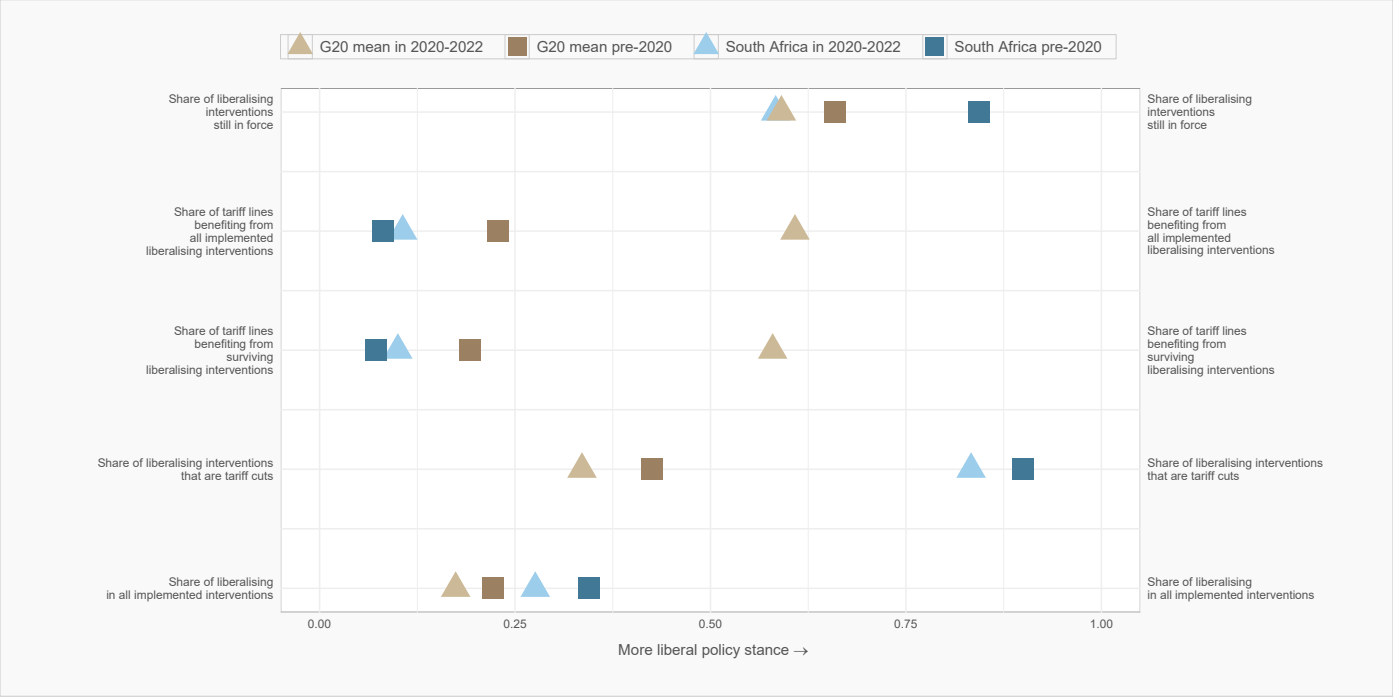


DISCRIMINATORY INTERVENTIONS HARMING SOUTH AFRICA'S INTERESTS



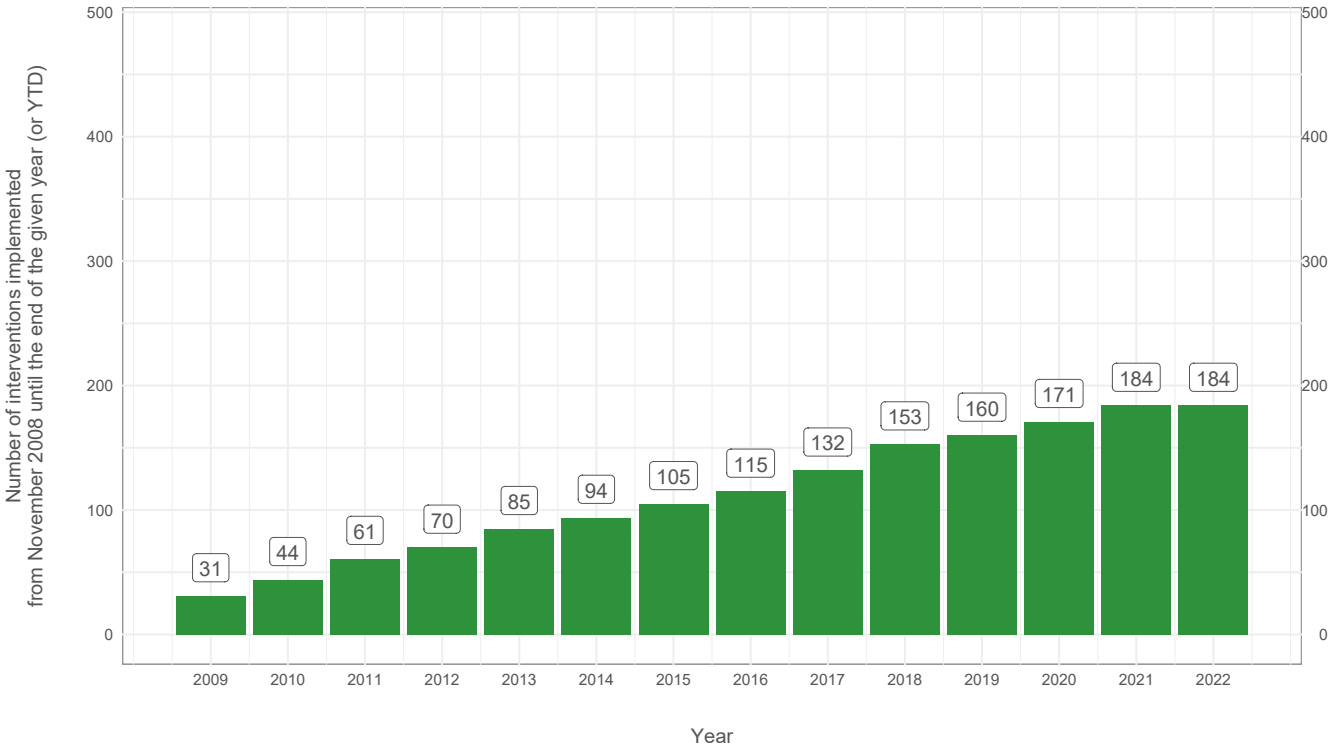
SOUTH AFRICA

Track record of liberalisation



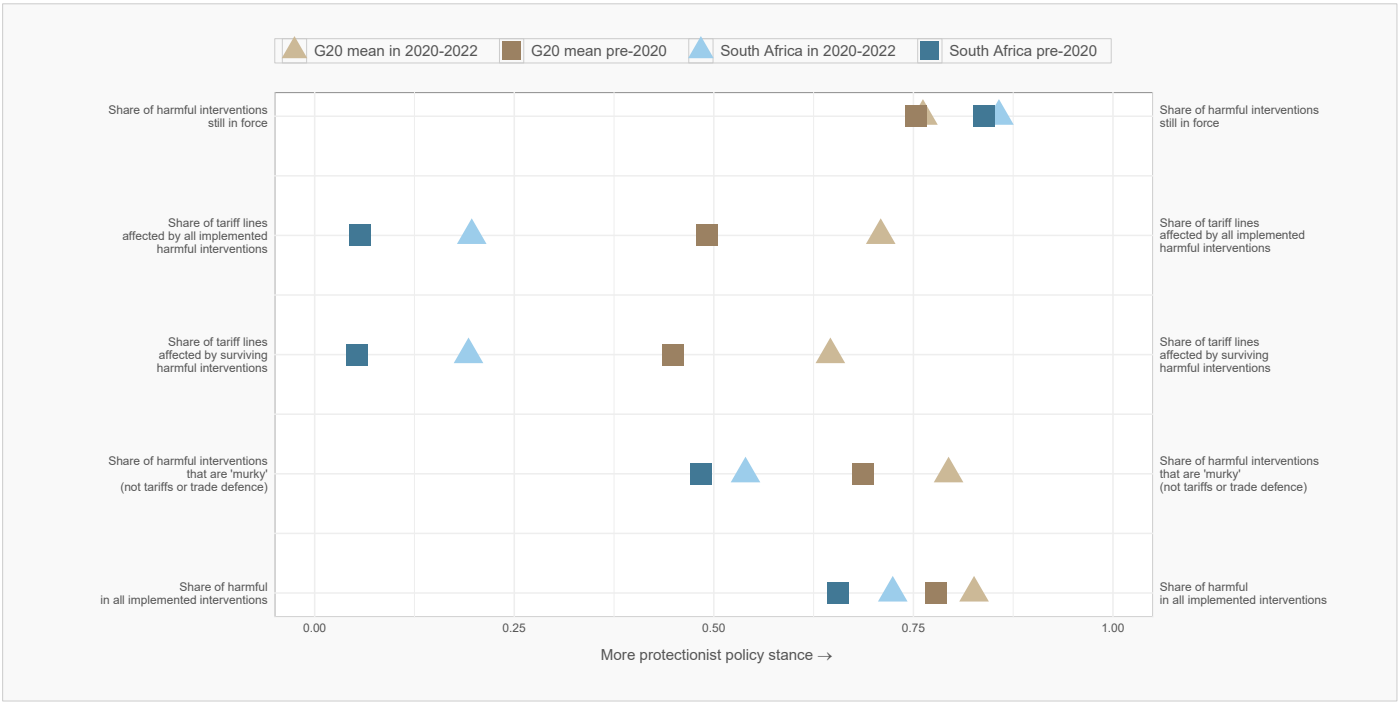
SOUTH AFRICA

Number of liberalising interventions imposed since November 2008



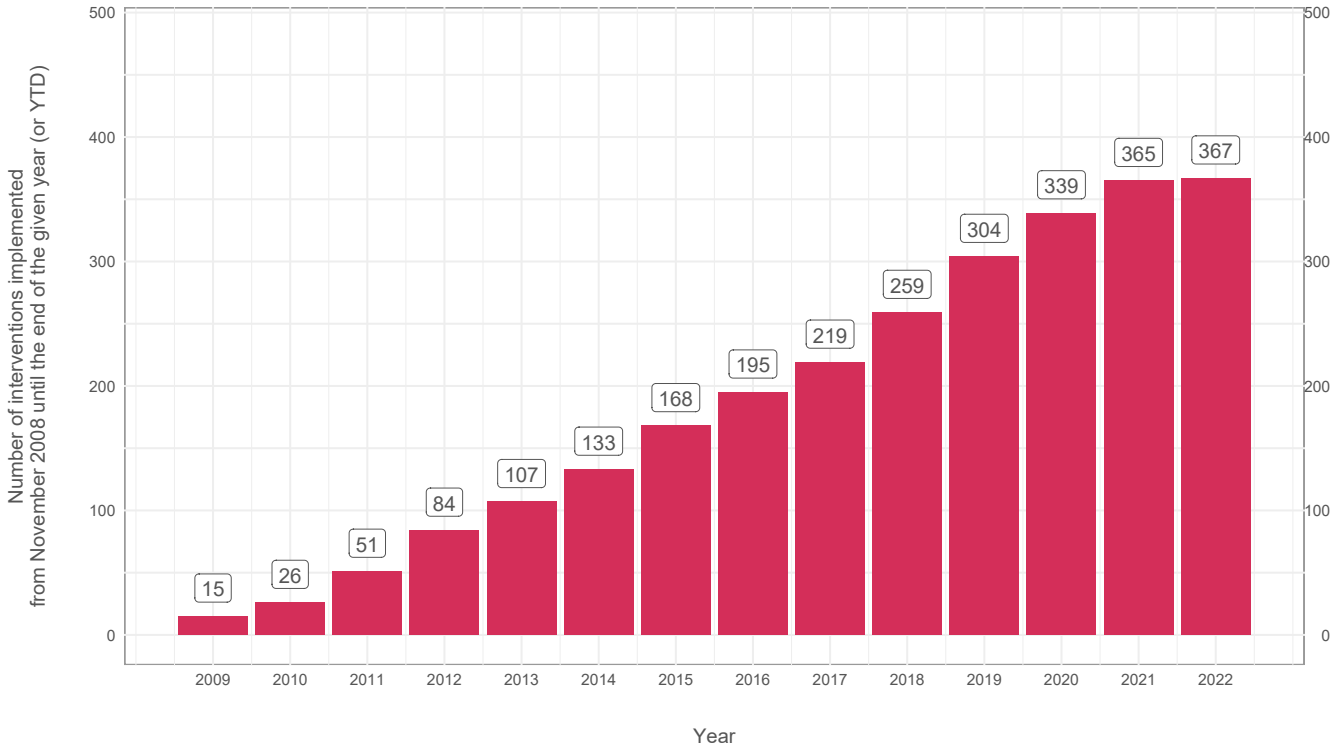
SOUTH AFRICA

Track record of protectionism



SOUTH AFRICA

Number of discriminatory interventions imposed since November 2008



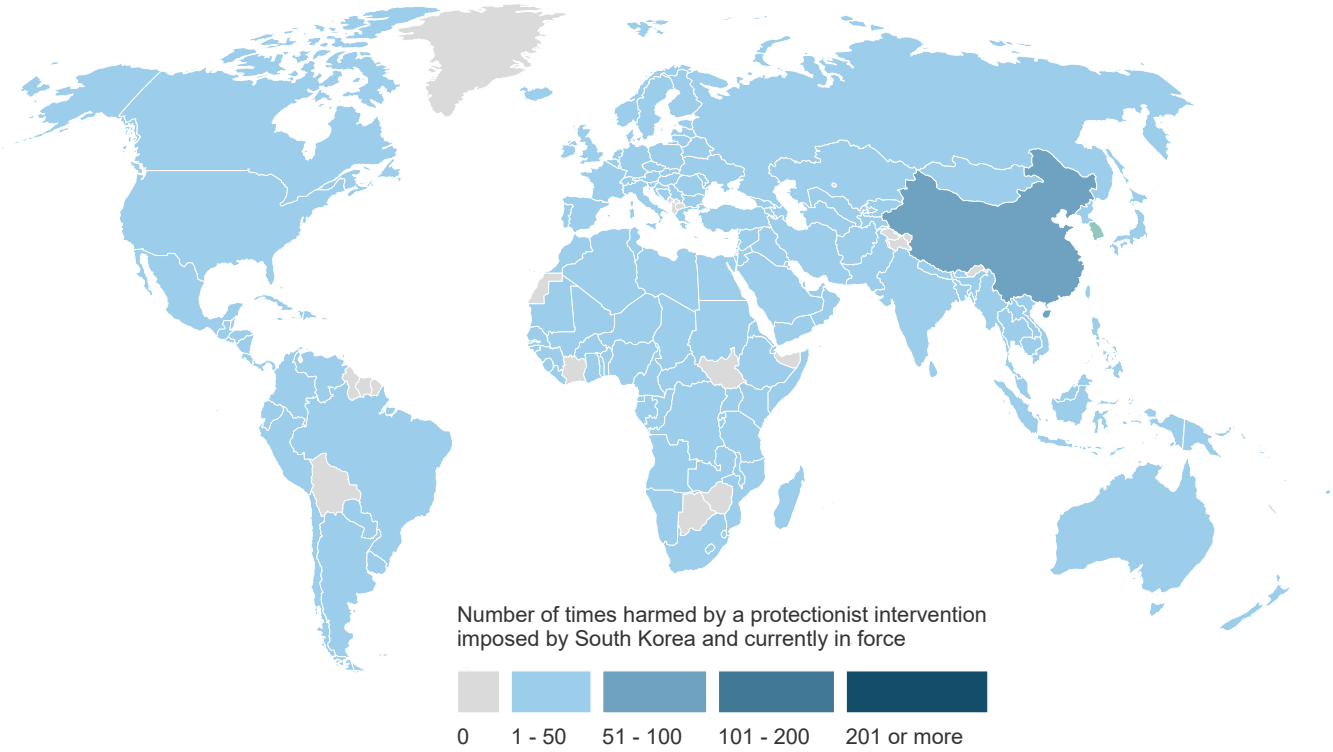
SOUTH KOREA

What is at stake for South Korea's goods exporters?

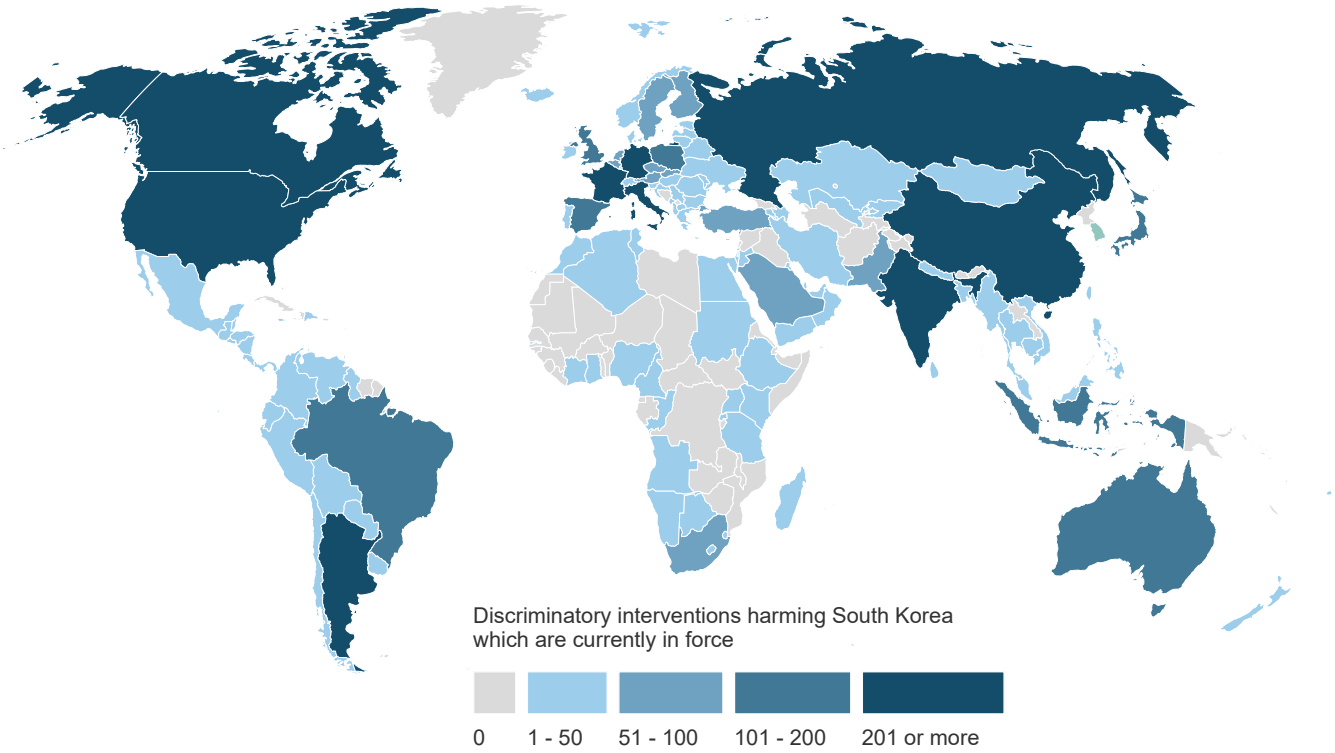
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	61.07	76.85	79.49	83.29	88.22	88.69	88.33	89.06	90.05	90.63	91.86	92.16	89.64	90.32
D	Contingent trade-protective measures	0.25	1.21	1.32	1.61	1.84	1.89	1.87	2.25	2.47	3.09	3.53	3.69	3.73	3.77
E	Non-automatic licensing, quotas etc.	0.51	0.92	5.09	5.32	5.60	5.85	6.79	7.62	7.99	8.15	8.27	8.37	9.80	8.57
F	Price-control measures, including additional taxes and charges	0.06	0.13	0.14	0.12	0.08	1.53	1.97	2.04	2.25	3.07	3.30	3.73	3.75	3.66
G	Finance measures	0.19	0.66	1.37	1.37	1.37	1.37	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.39
I	Trade-related investment measures	0.38	0.78	0.94	1.03	1.04	1.09	1.49	1.69	1.75	1.82	1.79	2.55	4.23	4.63
L	Subsidies (excl. export subsidies)	24.74	35.65	39.68	41.85	52.00	52.36	54.28	55.05	54.23	55.94	56.95	57.80	42.94	43.72
M	Government procurement restrictions	0.85	2.19	2.33	2.48	2.79	3.24	3.70	3.71	3.93	4.02	3.95	4.13	4.45	5.38
P	Export-related measures (incl. subsidies)	41.99	57.42	62.15	69.77	74.09	73.95	72.02	73.32	74.40	75.46	77.77	78.11	76.99	78.23
	Tariff measures	4.46	10.21	10.95	13.67	18.47	14.97	15.20	18.98	27.63	28.18	29.46	29.50	31.21	31.43
	Instrument unclear	0.12	0.56	0.80	0.84	0.76	0.82	0.85	0.96	0.96	1.42	1.58	1.58	1.61	1.63

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY SOUTH KOREA'S DISCRIMINATORY INTERVENTIONS

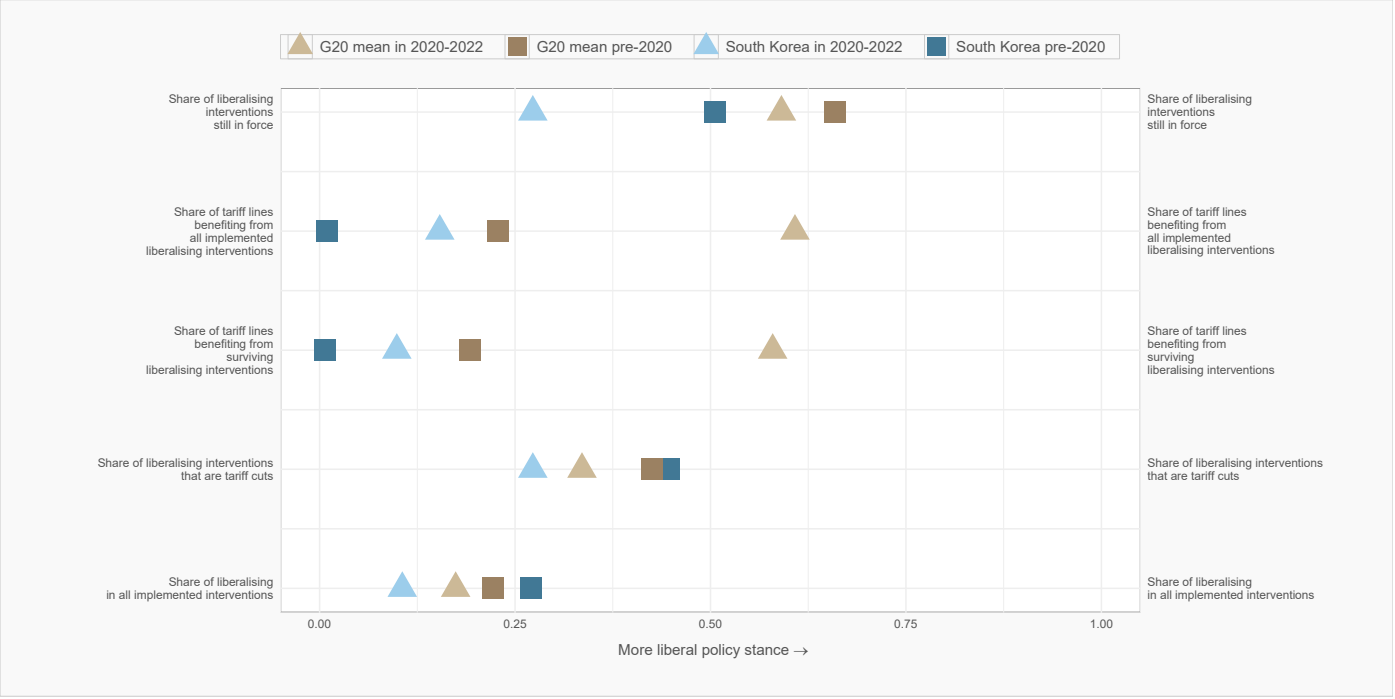


DISCRIMINATORY INTERVENTIONS HARMING SOUTH KOREA'S INTERESTS



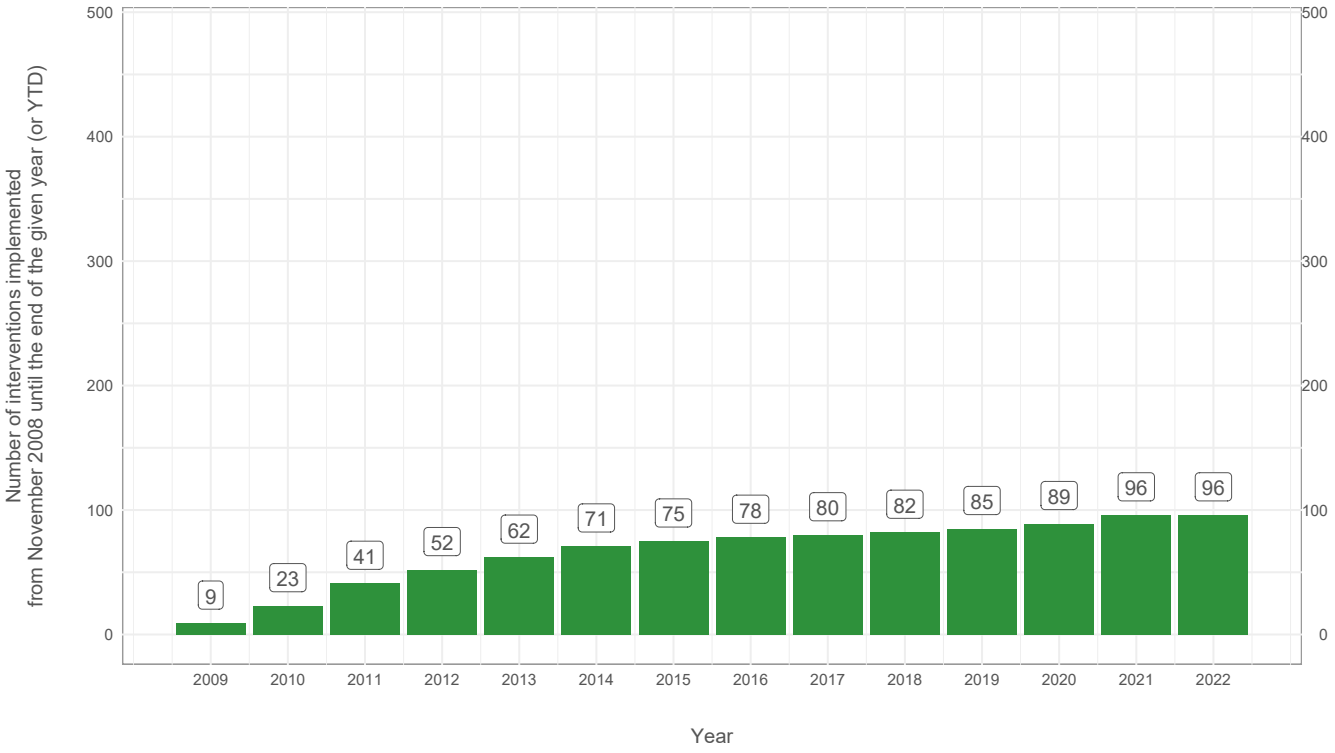
SOUTH KOREA

Track record of liberalisation



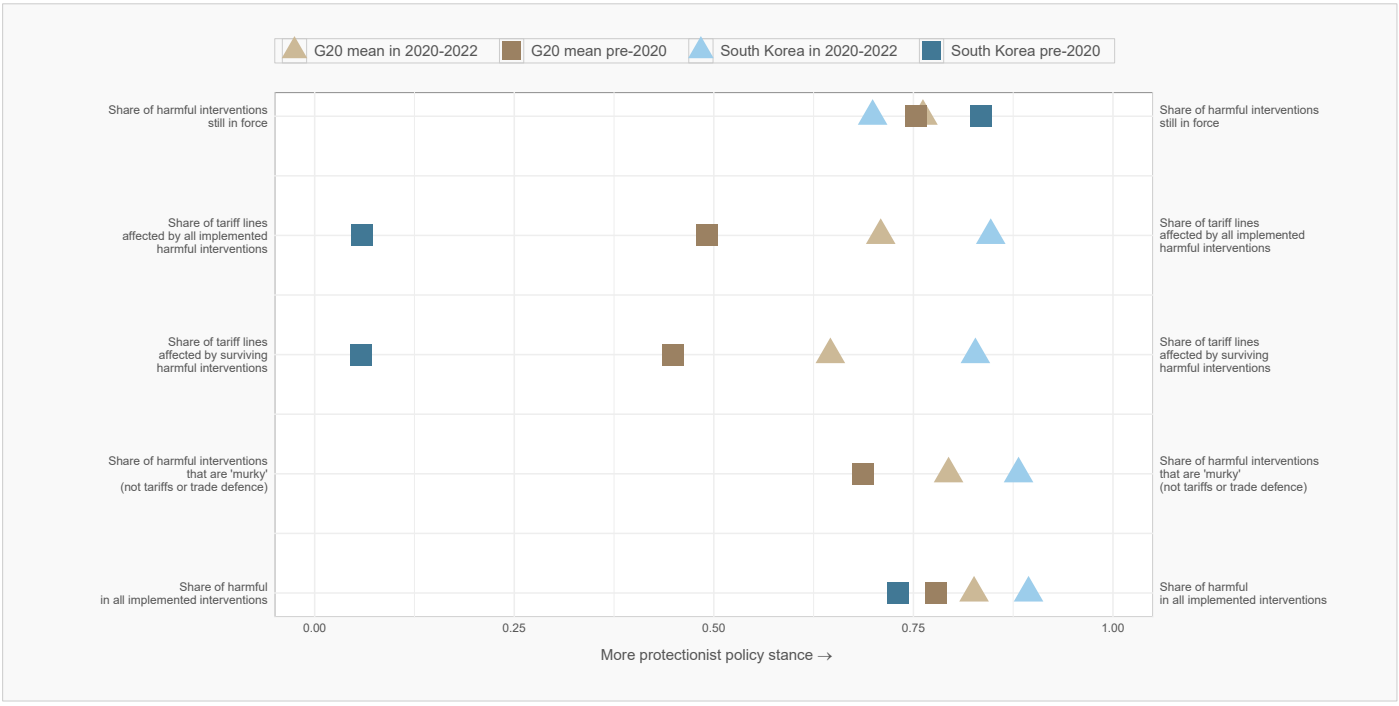
SOUTH KOREA

Number of liberalising interventions imposed since November 2008



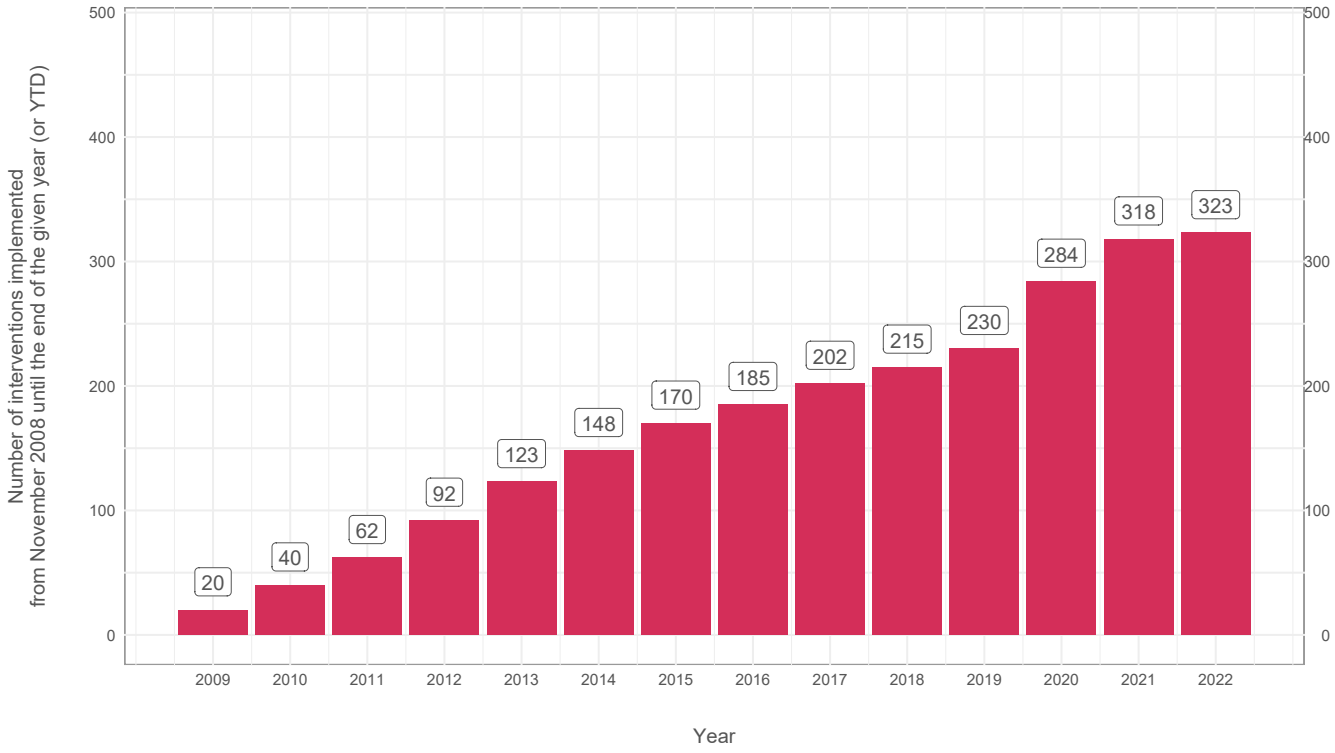
SOUTH KOREA

Track record of protectionism



SOUTH KOREA

Number of discriminatory interventions imposed since November 2008



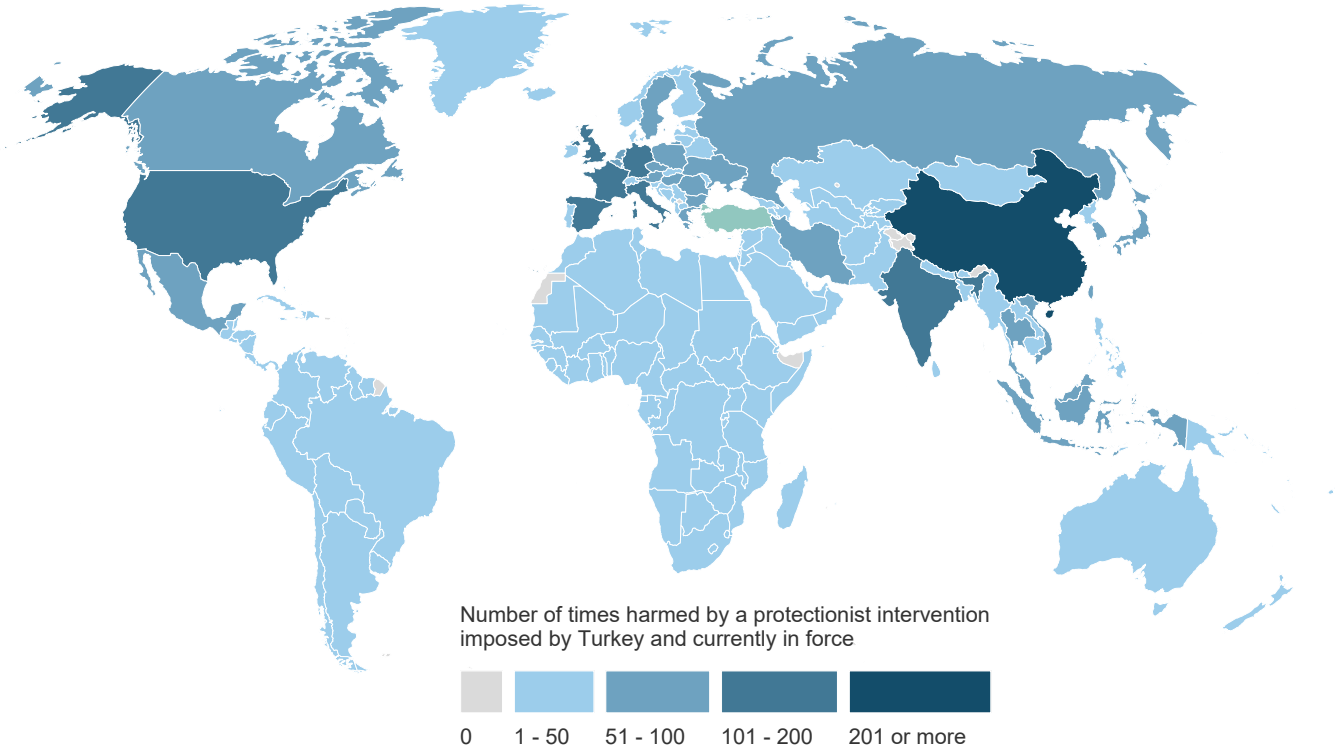
TURKEY

What is at stake for Turkey's goods exporters?

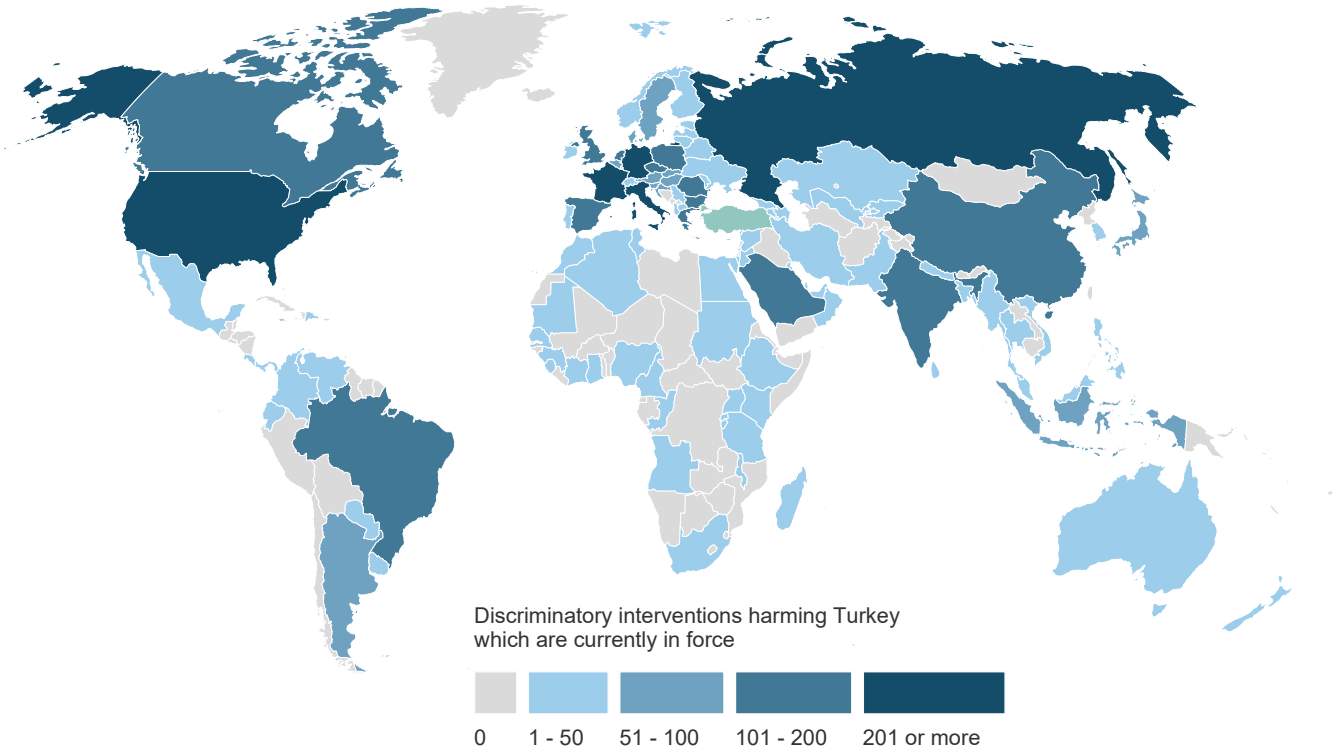
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	57.30	68.35	70.53	73.04	81.18	83.01	82.83	83.50	84.19	84.64	85.50	85.70	83.19	83.57
D	Contingent trade-protective measures	0.08	0.02	0.11	0.13	0.26	0.68	0.87	1.00	1.07	2.86	4.88	4.44	4.20	4.50
E	Non-automatic licensing, quotas etc.	0.07	0.17	0.72	0.93	0.96	1.00	1.22	2.83	4.40	4.57	4.58	3.79	3.25	3.04
F	Price-control measures, including additional taxes and charges	0.43	0.46	0.46	0.47	0.47	0.57	0.60	0.61	0.61	1.00	1.04	1.06	1.06	1.04
G	Finance measures	0.53	0.50	0.51	0.51	0.51	0.51	0.72	0.79	0.79	0.80	0.82	0.82	0.82	0.83
I	Trade-related investment measures	0.48	2.14	2.37	2.37	2.39	2.42	2.51	2.52	2.53	2.50	2.50	2.58	3.13	3.74
L	Subsidies (excl. export subsidies)	12.26	19.50	19.30	20.17	60.74	64.48	65.44	66.17	66.37	67.10	68.19	68.84	44.99	45.46
M	Government procurement restrictions	0.94	1.38	1.38	1.46	1.53	2.02	2.54	2.76	2.89	2.92	2.91	3.34	3.48	3.49
P	Export-related measures (incl. subsidies)	47.54	58.71	61.60	64.62	66.88	66.43	65.96	68.02	68.97	69.68	71.52	71.94	71.07	72.03
	Tariff measures	1.31	2.06	2.58	3.90	4.64	4.65	8.06	8.57	9.36	11.62	13.68	14.56	14.70	14.76
	Instrument unclear	0.00	0.46	0.66	0.70	0.70	0.75	0.81	0.90	0.92	1.07	1.30	1.30	1.28	1.32

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY TURKEY'S DISCRIMINATORY INTERVENTIONS

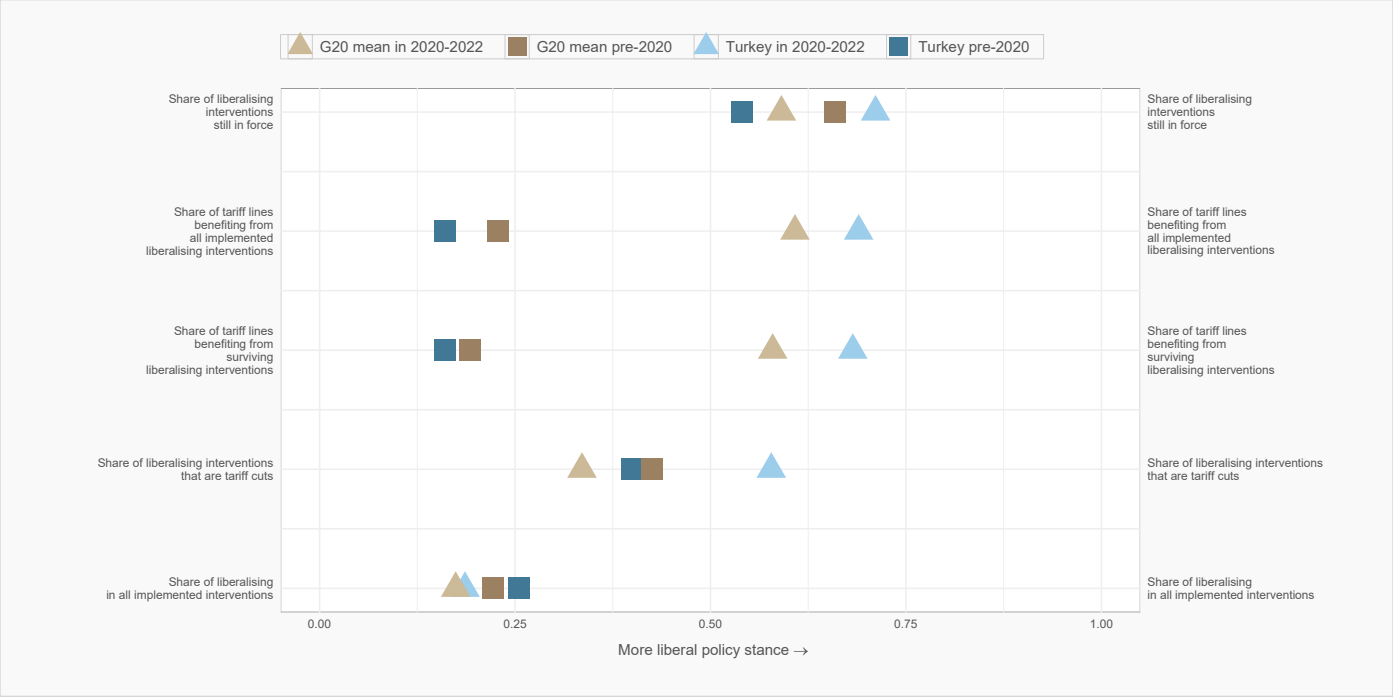


DISCRIMINATORY INTERVENTIONS HARMING TURKEY'S INTERESTS



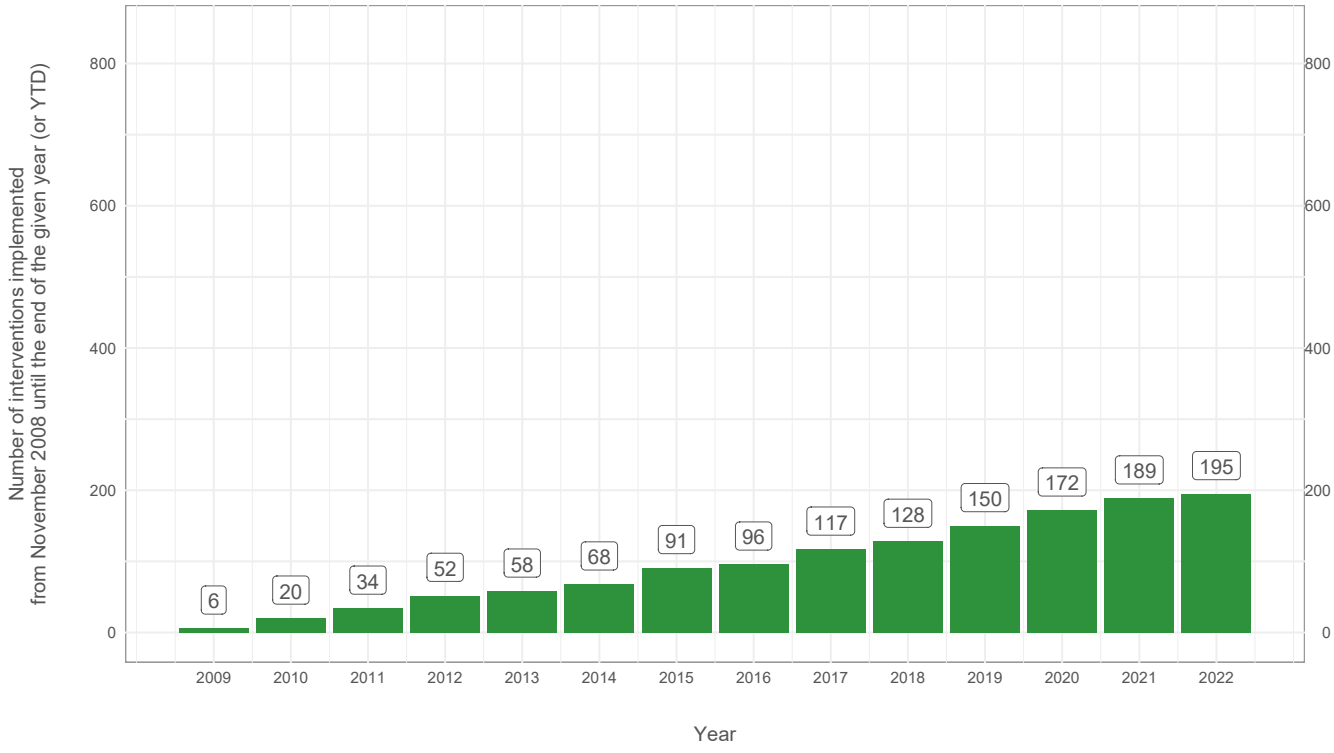
TURKEY

Track record of liberalisation



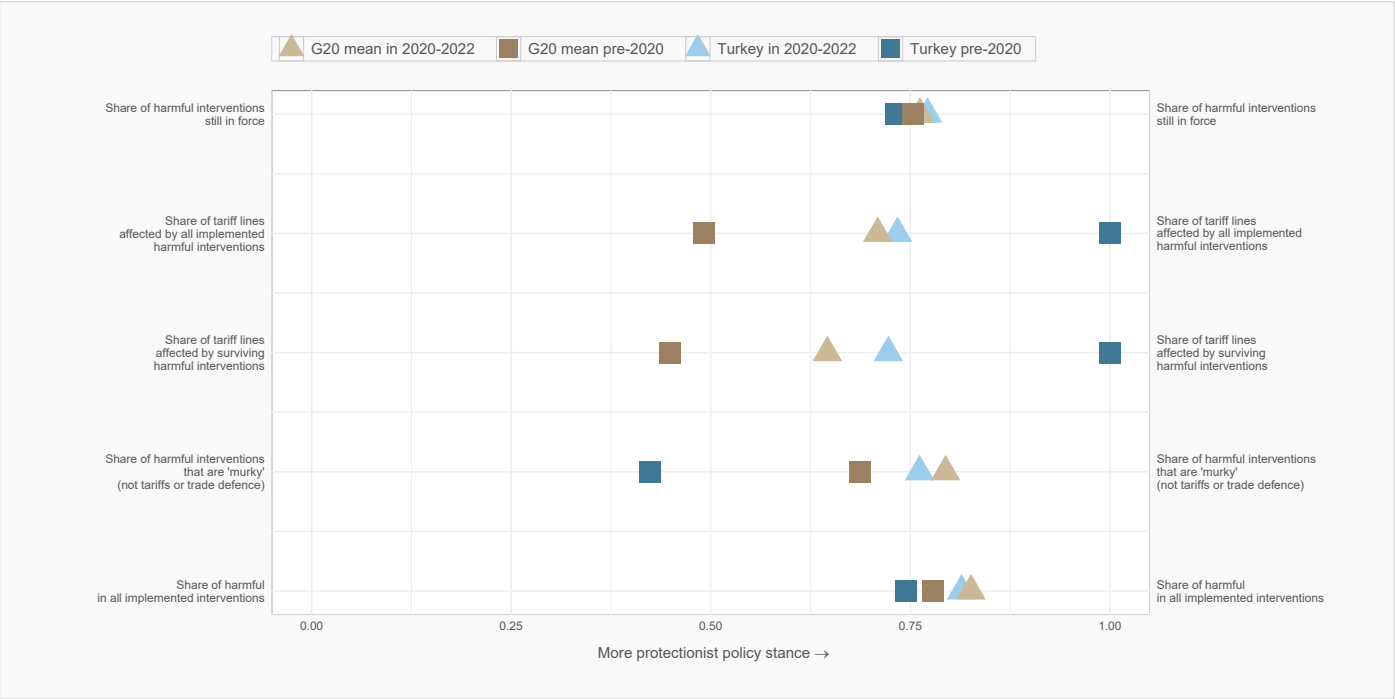
TURKEY

Number of liberalising interventions imposed since November 2008



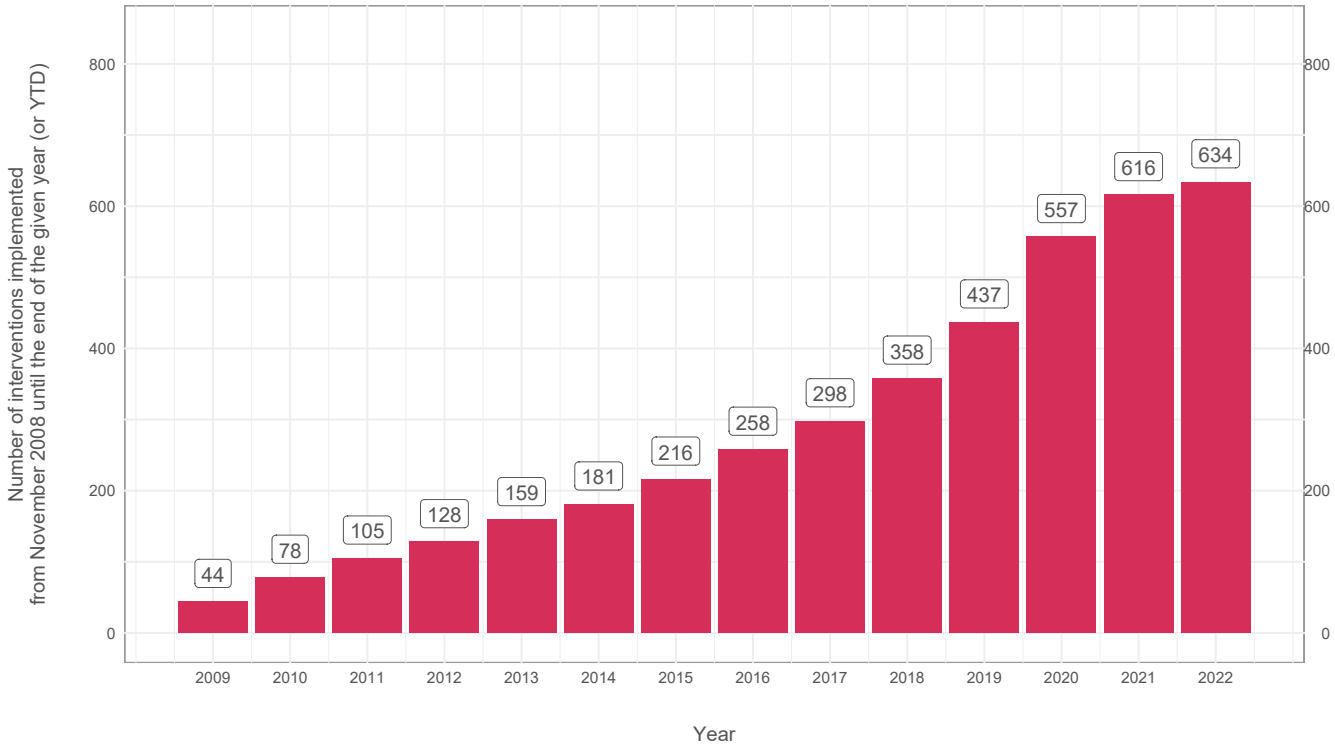
TURKEY

Track record of protectionism



TURKEY

Number of discriminatory interventions imposed since November 2008



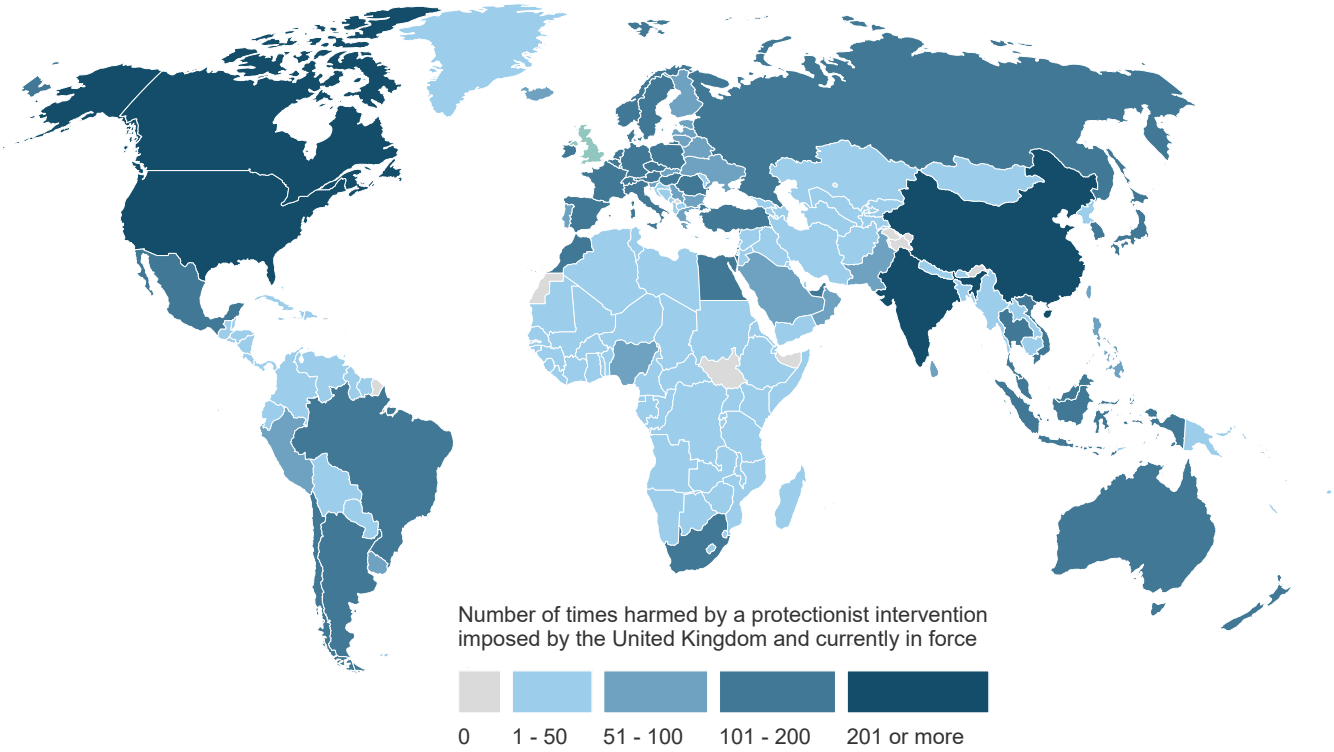
UNITED KINGDOM

What is at stake for the United Kingdom's goods exporters?

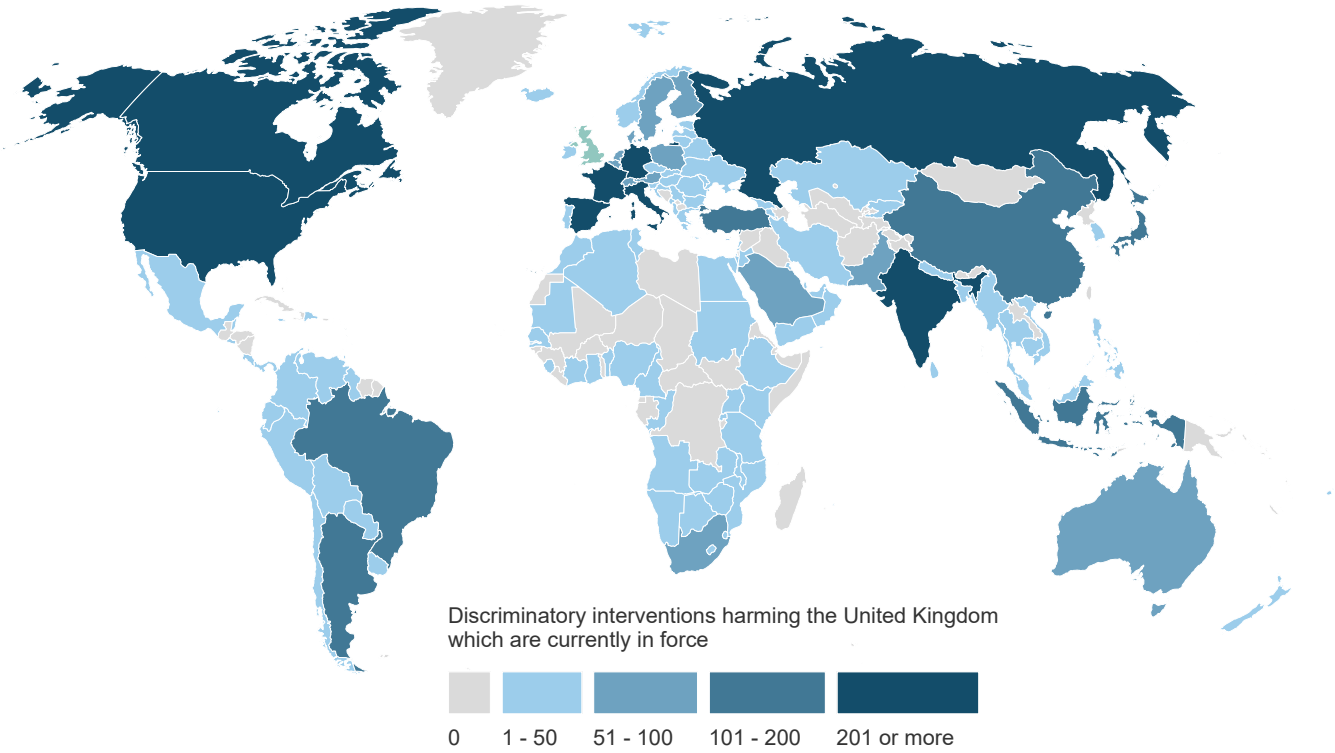
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	38.96	50.70	55.71	61.16	64.68	67.38	69.71	71.74	75.24	76.19	78.82	79.49	79.39	79.57
D	Contingent trade-protective measures	0.01	0.02	0.07	0.12	0.14	0.15	0.16	0.21	0.23	0.28	0.32	0.37	0.41	0.43
E	Non-automatic licensing, quotas etc.	0.09	0.17	0.48	0.56	0.66	0.68	0.85	0.82	1.48	2.37	2.40	3.39	3.81	5.04
F	Price-control measures, including additional taxes and charges	0.01	0.04	0.06	0.08	0.07	0.09	0.16	0.21	0.33	1.10	1.18	1.28	1.23	1.18
G	Finance measures	0.40	0.46	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.48	0.49	0.49	0.48	0.49
I	Trade-related investment measures	0.33	1.17	1.29	1.31	1.31	1.33	1.42	1.49	1.51	1.50	1.53	1.68	2.00	2.12
L	Subsidies (excl. export subsidies)	8.86	17.78	20.44	22.39	24.06	28.98	31.58	33.60	37.56	38.87	40.61	43.80	42.29	42.38
M	Government procurement restrictions	0.36	0.70	0.78	0.99	1.06	1.27	1.67	1.71	1.73	1.77	1.91	2.61	2.84	3.60
P	Export-related measures (incl. subsidies)	30.63	39.76	46.32	53.85	57.17	55.33	57.68	60.32	61.80	62.64	65.15	65.77	67.43	69.05
	Tariff measures	1.32	1.61	1.72	2.59	3.21	3.17	3.36	3.73	4.38	4.65	5.13	5.89	6.34	6.58
	Instrument unclear	0.02	0.29	0.41	0.42	0.50	1.79	2.06	2.14	2.25	2.39	2.39	2.39	2.42	2.44

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY THE UK'S DISCRIMINATORY INTERVENTIONS

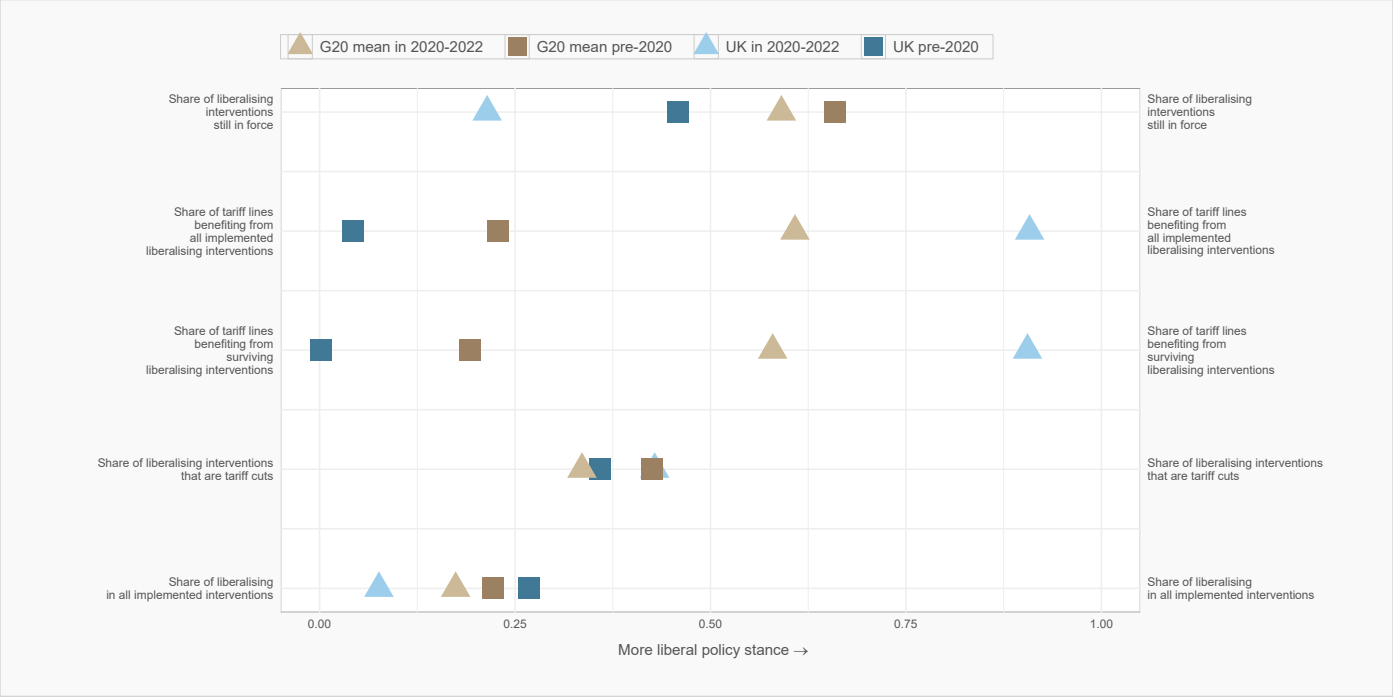


DISCRIMINATORY INTERVENTIONS HARMING THE UK'S INTERESTS



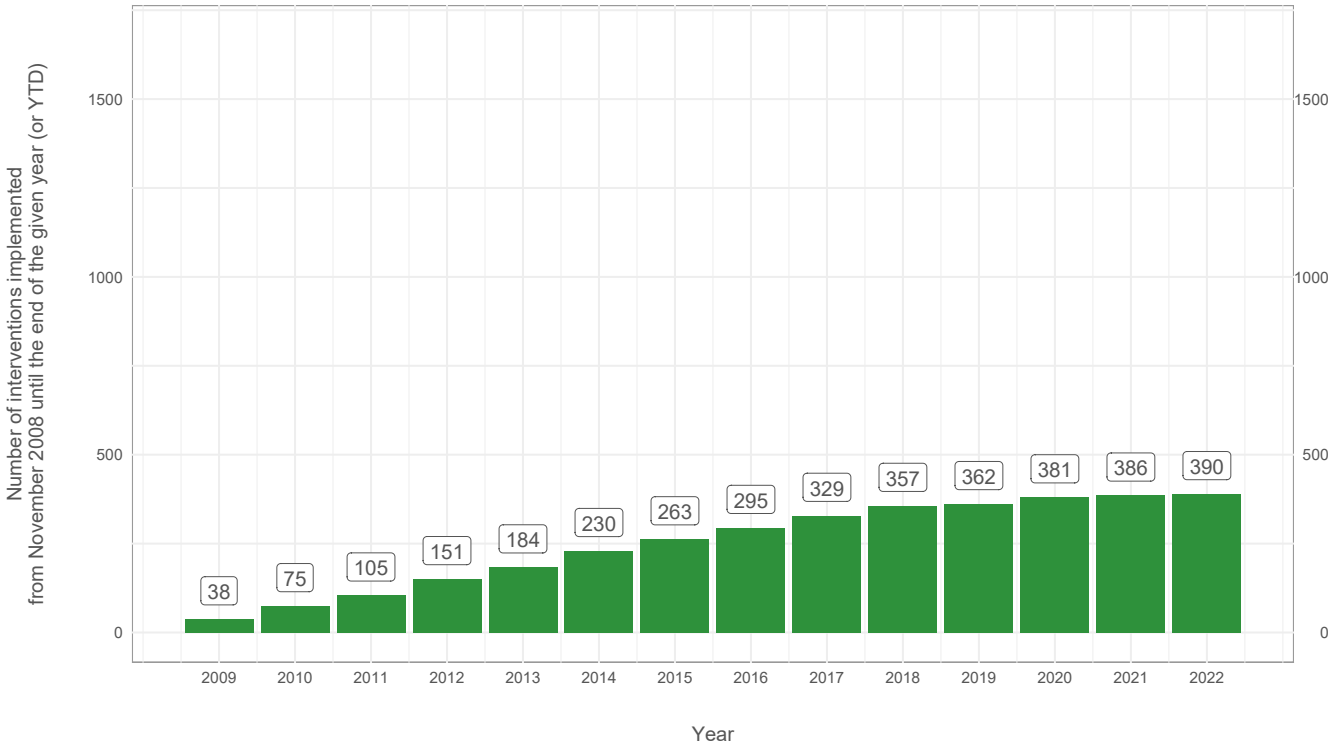
UNITED KINGDOM

Track record of liberalisation



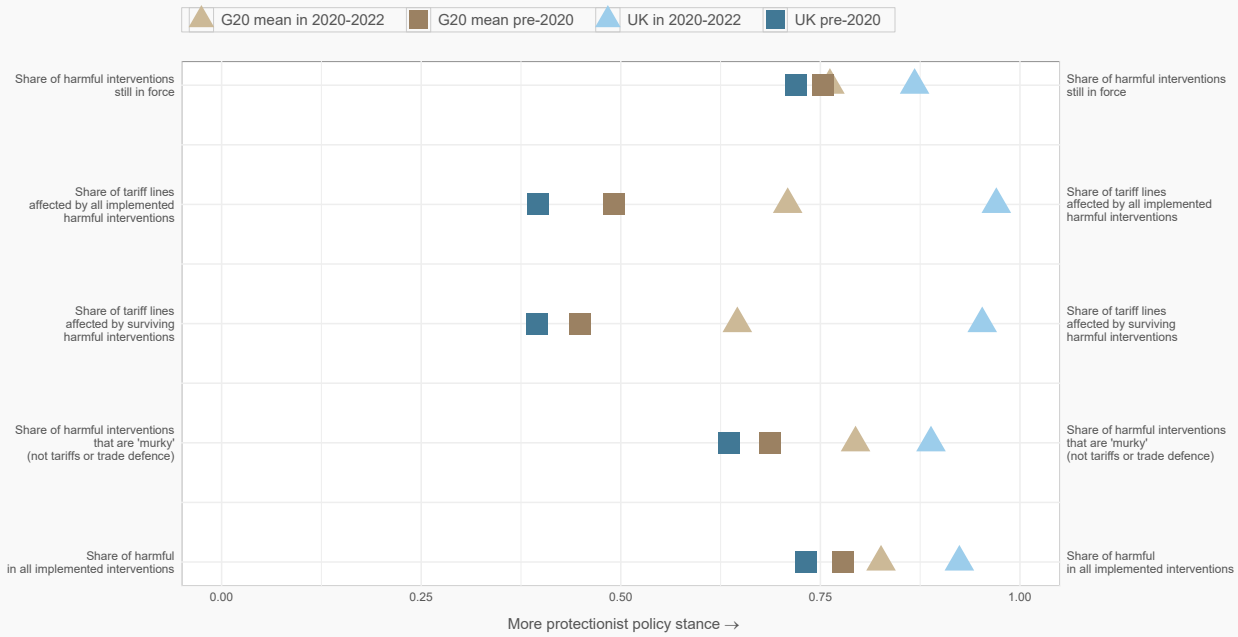
UNITED KINGDOM

Number of liberalising interventions imposed since November 2008



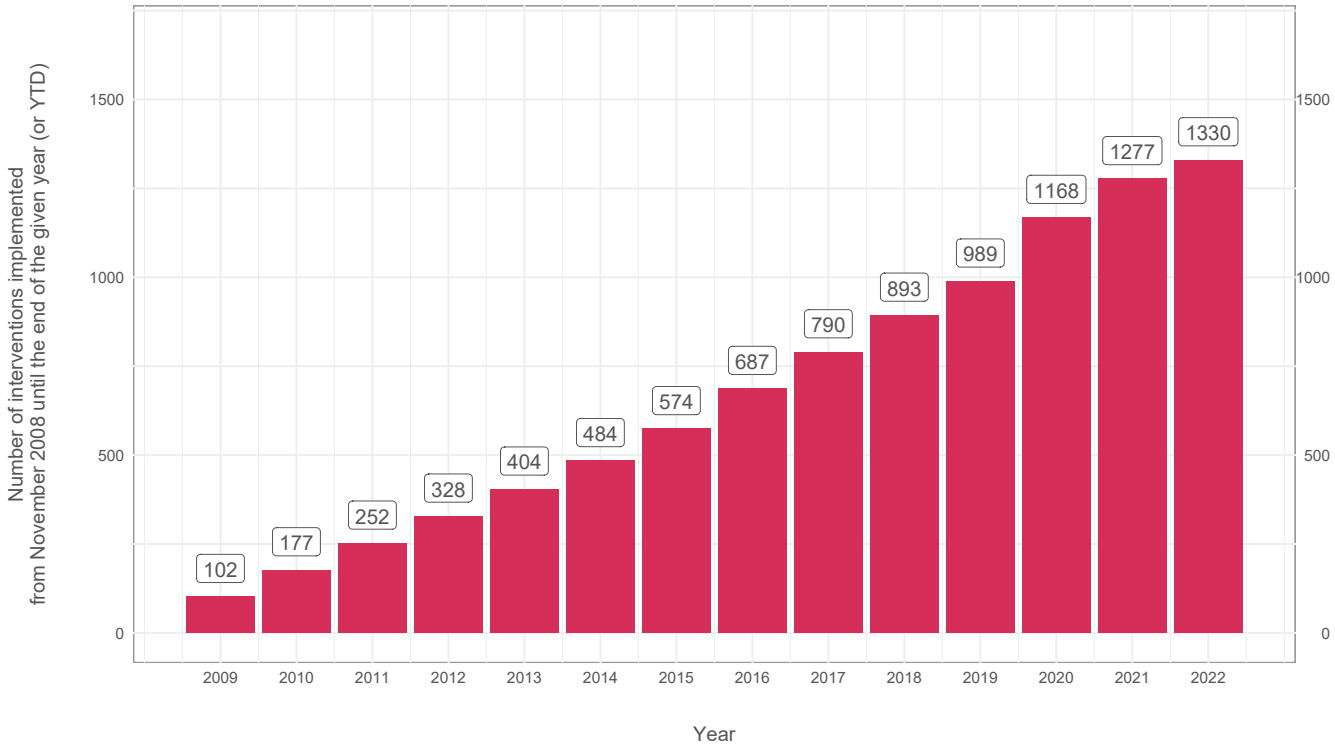
UNITED KINGDOM

Track record of protectionism



UNITED KINGDOM

Number of discriminatory interventions imposed since November 2008



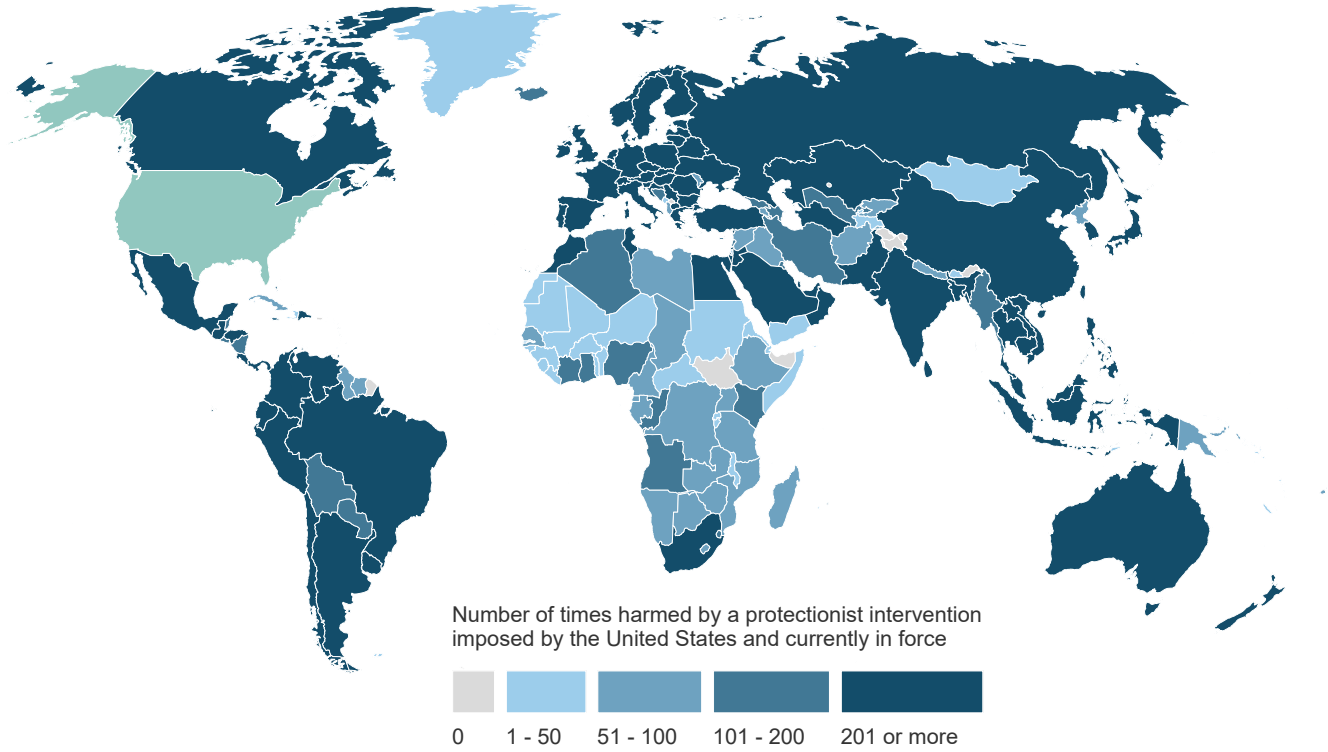
UNITED STATES

What is at stake for the United States' goods exporters?

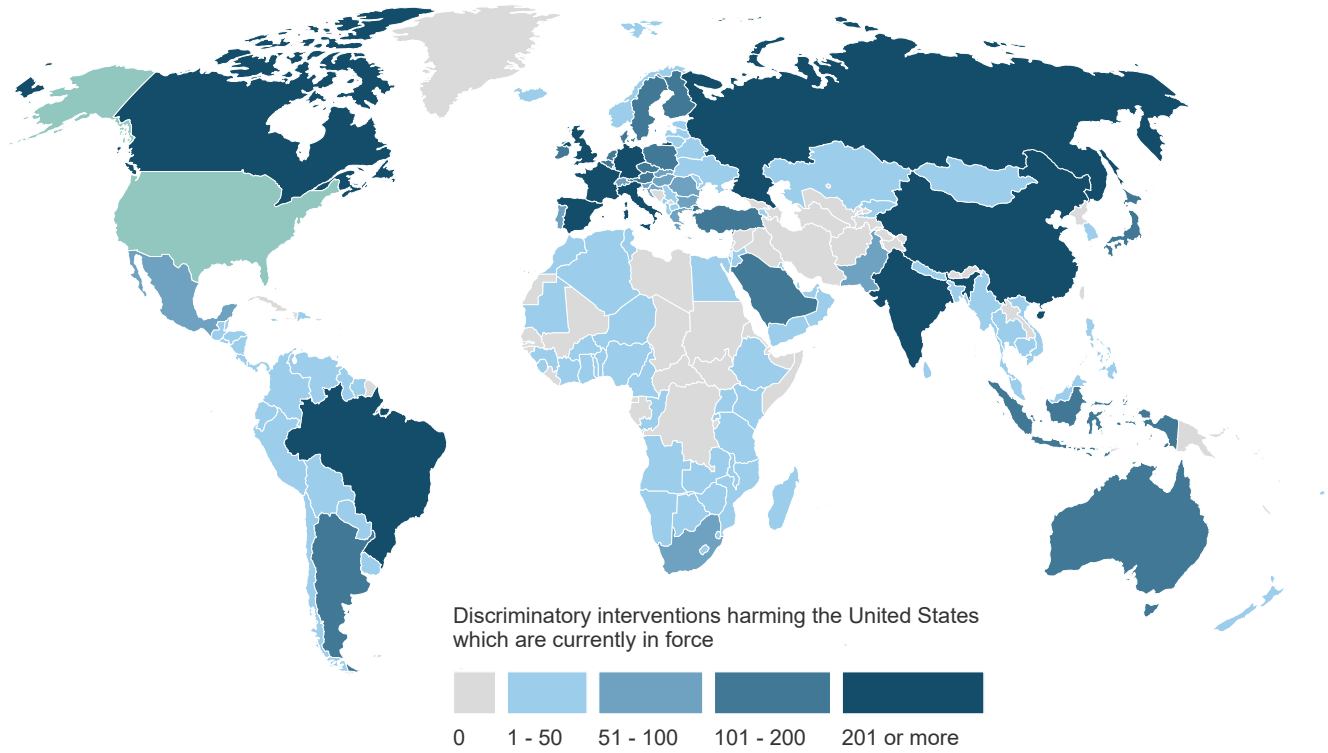
UN MAST chapter	Foreign discriminatory policy instrument	Percentage of this G20 member's exports at risk due to ...												
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	All instruments	44.09	54.02	60.23	65.99	73.32	75.96	77.18	78.22	80.27	82.01	83.60	83.95	82.06	82.78
D	Contingent trade-protective measures	0.30	0.43	0.49	0.60	0.66	0.63	0.64	0.69	0.80	1.35	1.55	1.76	1.75	1.78
E	Non-automatic licensing, quotas etc.	0.41	0.84	1.86	2.48	3.67	3.45	5.06	5.20	5.35	5.49	5.49	5.84	5.97	6.27
F	Price-control measures, including additional taxes and charges	0.08	0.10	0.14	0.20	0.33	0.66	0.89	1.03	1.11	1.53	1.59	2.11	2.12	1.77
G	Finance measures	0.34	1.03	1.10	1.10	1.10	1.10	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.12
I	Trade-related investment measures	0.36	0.77	0.46	0.49	0.50	0.57	1.26	1.61	1.17	1.09	1.09	1.11	1.17	1.21
L	Subsidies (excl. export subsidies)	7.36	10.95	10.93	12.10	29.84	31.07	34.00	34.74	35.95	36.86	38.88	39.68	32.12	32.68
M	Government procurement restrictions	0.08	0.35	0.35	0.57	0.85	1.37	1.94	1.82	1.83	1.97	2.00	2.10	2.23	2.24
P	Export-related measures (incl. subsidies)	36.53	44.29	51.25	57.50	60.46	62.13	61.92	64.12	66.88	68.03	70.07	70.66	69.23	70.27
	Tariff measures	3.15	4.17	4.90	6.52	8.36	8.10	9.88	11.59	16.68	18.82	20.43	21.38	22.89	23.30
	Instrument unclear	0.10	0.24	0.32	0.42	0.57	1.53	1.88	1.94	1.95	2.40	2.75	2.75	2.83	2.90

Note: This table presents estimates of the percentage of a nation's exports that face different harmful policy interventions in their export markets. Only those harmful interventions implemented after November 2008 count towards these totals--therefore, the estimates indicate the exposure of national exports to crisis-era policy intervention that favours domestic commercial interests. The trade data used in the estimation is taken from UN Comtrade and at the six-digit level of the Harmonised System product classification. For each product exported by a nation, the foreign markets accounted for in this estimate are those where bilateral exports exceeded $1 million for the given product. De minimis trade flows are therefore excluded. To limit endogeneity problems (that is, the harmful policy interventions affecting the total value of exports observed) pre-crisis shares of world trade are employed in these calculations. The pre-crisis shares are computed as the mean weight for the years 2005-7. The calculations also take into account when a harmful policy intervention comes into force and, where relevant, lapses. When an intervention lasts for only part of a year, the trade flow is discounted by the fraction of the year the harmful measure is not in force.

COUNTRIES HARMED BY THE US' DISCRIMINATORY INTERVENTIONS

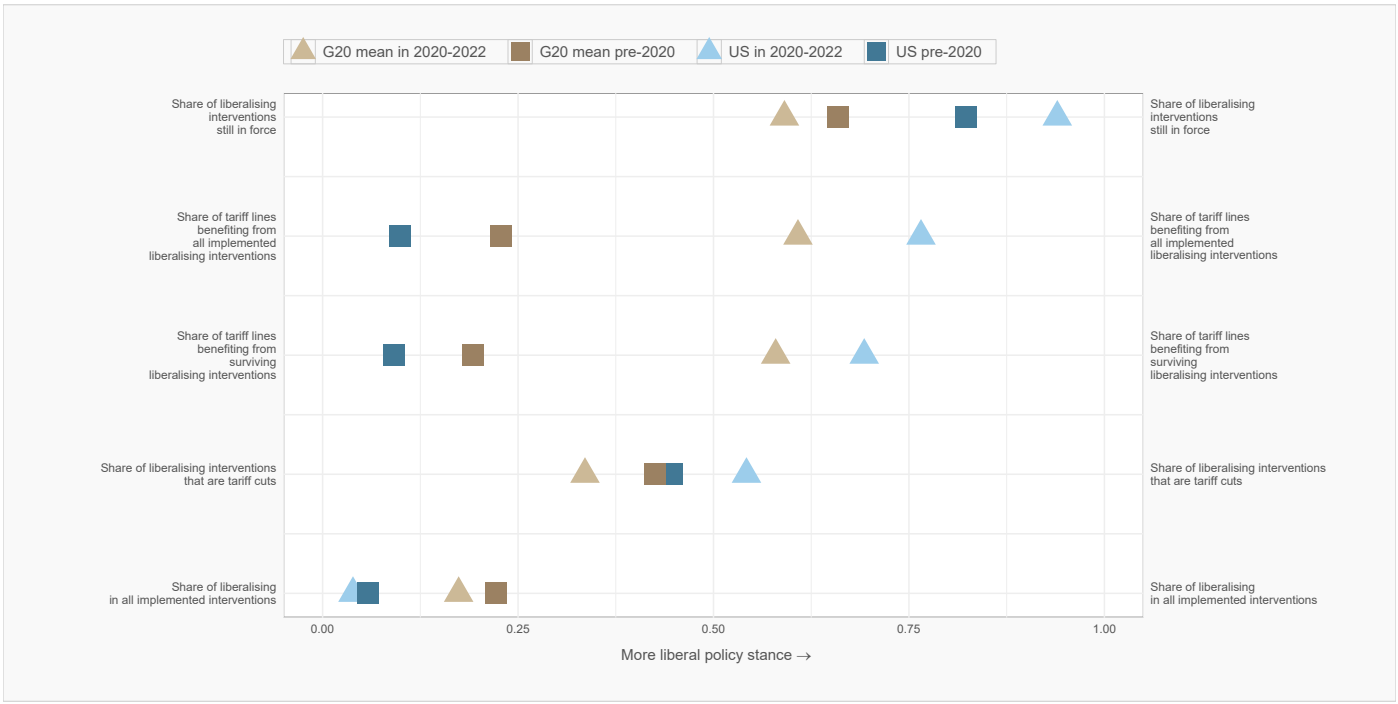


DISCRIMINATORY INTERVENTIONS HARMING THE US' INTERESTS



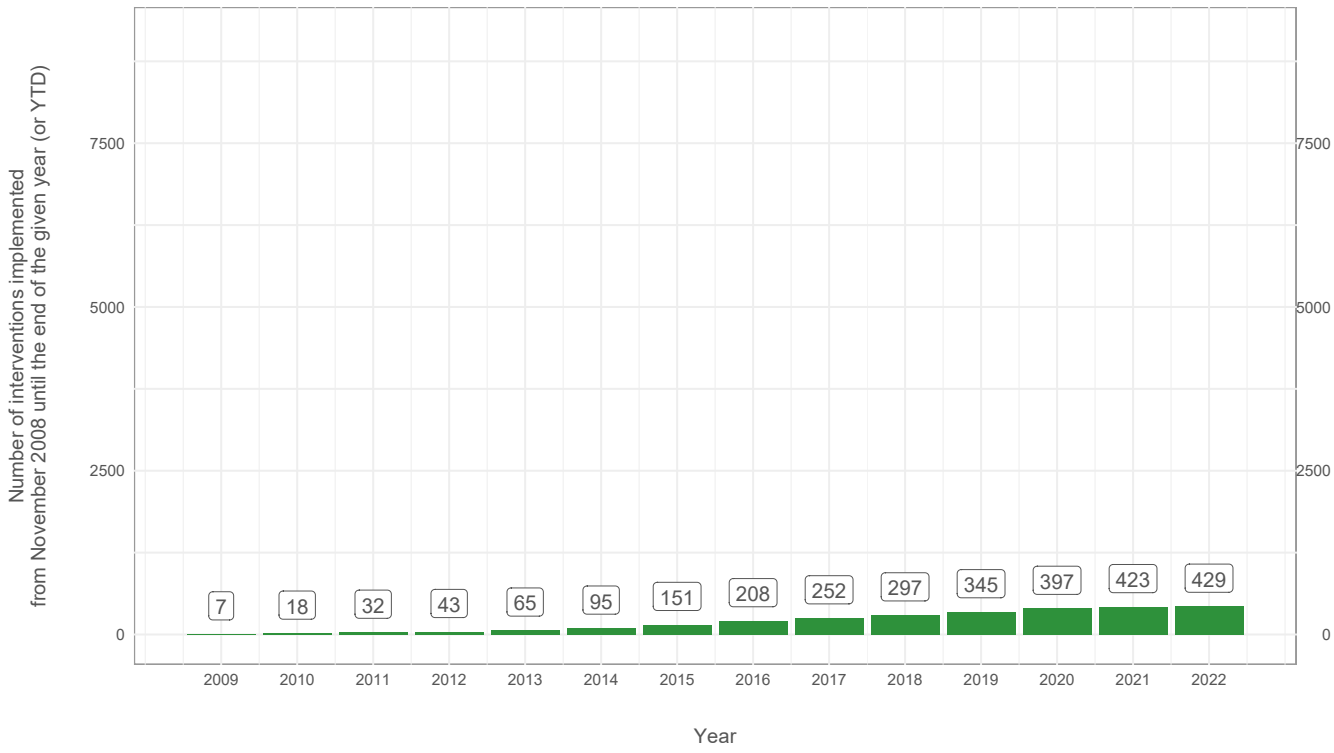
UNITED STATES

Track record of liberalisation



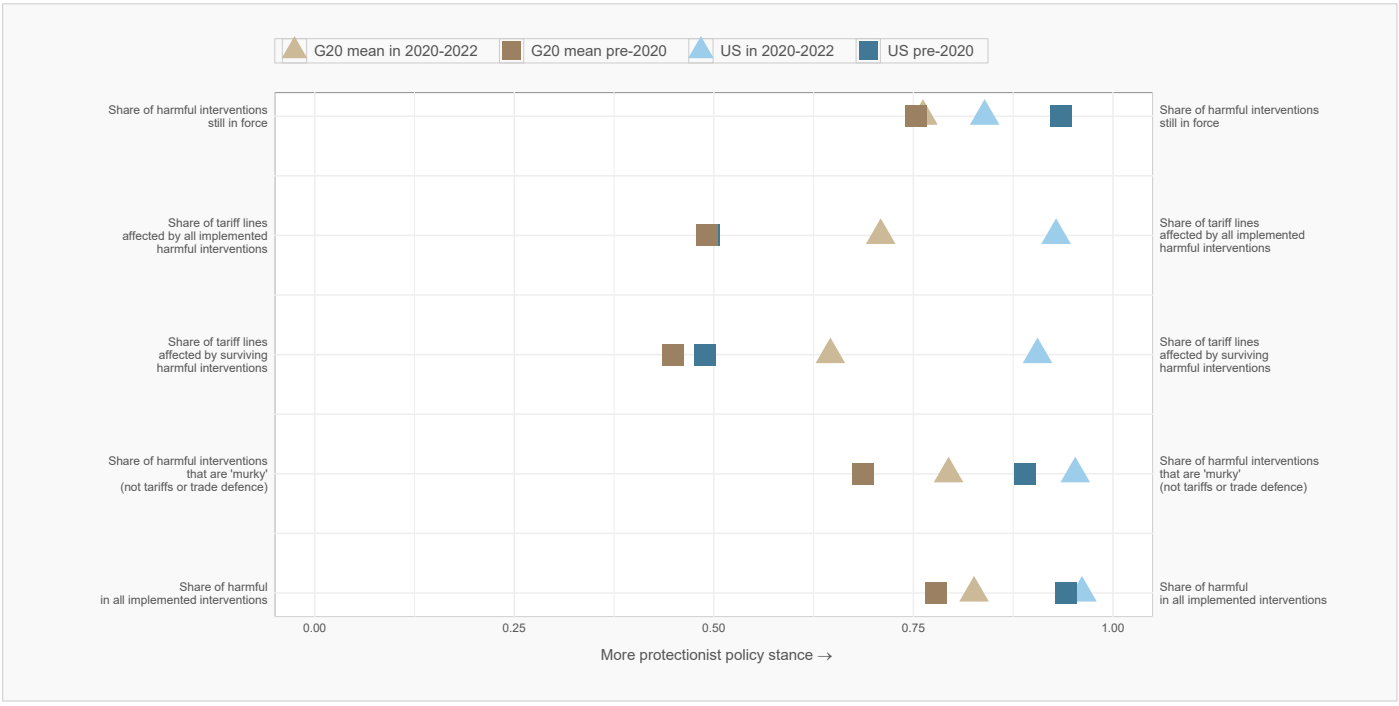
UNITED STATES

Number of liberalising interventions imposed since November 2008



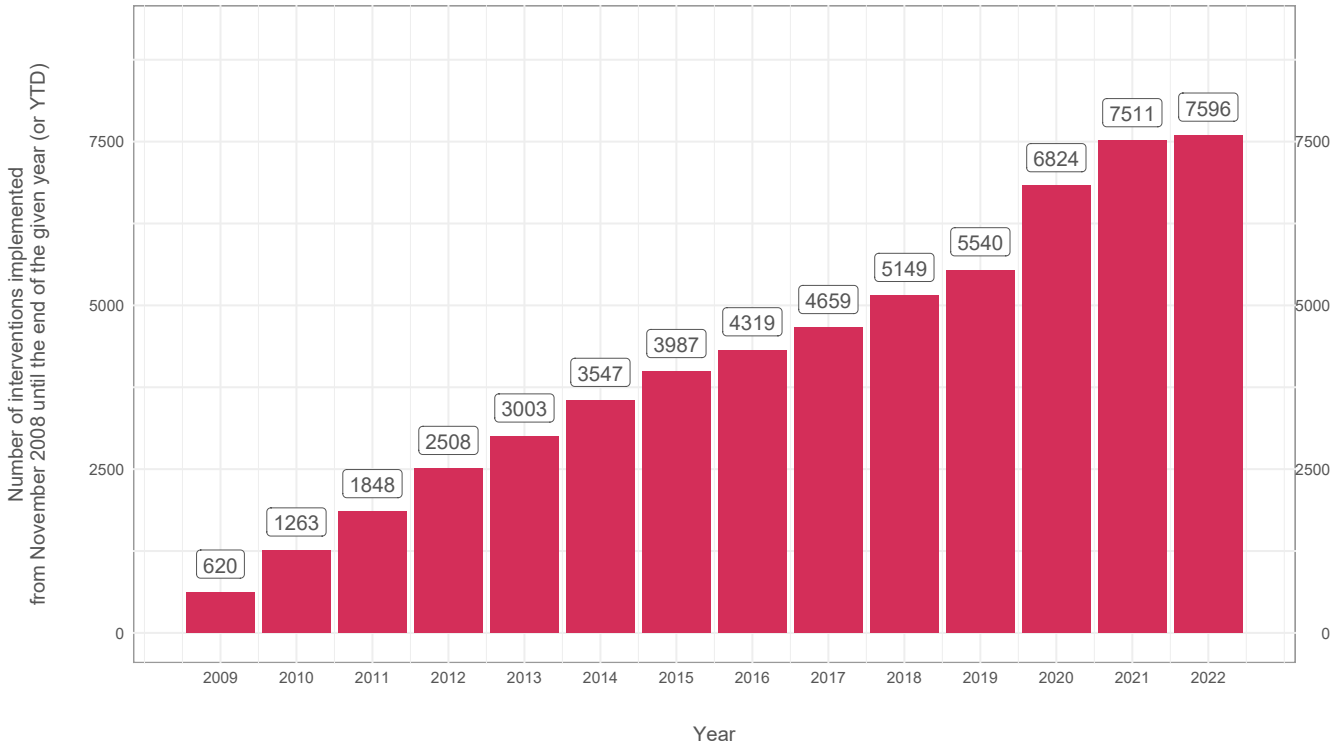
UNITED STATES

Track record of protectionism



UNITED STATES

Number of discriminatory interventions imposed since November 2008



Policymakers are flying blind as they shape and nurture the digital domain. The last inventory of government intervention affecting this critical vehicle for opportunity and growth was published four years ago. Much has happened since. No official institution has a global mandate to track policy intervention in the digital domain.

Nothing good comes of this evidence gap. Officials learn less from the prior choices of peers. Patchy information reinforces the tendency of officials to retreat into silos, resulting in state initiatives that don't take into account the complexities of an evolving, multi-faceted digital domain which exists in a world with extensive cross-border ties. Accountability is diminished too.

This report fills in the evidence gap. It adopts a comprehensive view of both the economic activities associated with the digital domain and the policies affecting the digital domain and their cross-border repercussions. Drawing upon two extensive inventories of public policy intervention, the Digital Policy Alert and the Global Trade Alert, this report delineates the global policy landscape towards the digital domain with a focus on the G20 nations and members of the European Union.

Evidence on legal and regulatory developments—such as those relating to the governance of data, content moderation, and differential taxation—is presented along with information on resort to trade and investment policy changes and subsidy policies so as to provide a comprehensive perspective. Information on over 15,000 policy and regulatory developments was used to compile this report.

The perils of unilateral governance action are becoming clearer. Officials around the globe must intensify efforts to develop shared understandings on sound principles to regulate and nurture their economies' digital sectors. Worthwhile efforts to negotiate a plurilateral accord on e-commerce need to be wrapped up and a more ambitious work programme launched at the WTO. Bilateral and regional initiatives to align policy and regulation (such as the Indo-Pacific Economic Framework), as well as the negotiation of more digital trade chapters in regional trade agreements, are useful stepping stones to counter emergent digital fragmentation.

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