4

What role for the WTO?

The WTO has an important role to play in AI governance. As seen in Chapters 2 and 3, AI can have a significant impact on trade and can open up many opportunities, but it also creates various trade-related policy challenges. An increasing number of initiatives has emerged at the domestic, bilateral, regional and international levels to address risks associated with AI and to harness its benefits, but these are creating a fragmented policy landscape. The WTO, as the only rules-based global body dealing with trade policy, can play an important role in supporting governments to foster the growth of AI. In this respect, WTO rules may be crucial in facilitating trade in AI-related goods and services, promoting global convergence, fostering access to and innovation in AI, avoiding discrimination, minimizing international negative spillovers, helping to address and prevent trade tensions, and building capacity in AI. However, the rise of AI could also have implications for international trade rules.

(a) Promoting global convergence

Addressing the challenges raised by AI requires global coordination and cooperation to promote regulatory convergence. If widely different, or even conflicting, domestic regulatory approaches on AI are developed, unnecessary regulatory fragmentation may ensue, and this could hamper opportunities and benefits associated with AI and undermine public trust in this transformative technology. As seen in Chapter 3, discussions on the global governance of AI have accelerated significantly over the past few years. However, the different approaches are raising growing concerns about regulatory fragmentation and its potentially damaging impact on cross-border economic activities. For example, the risk of regulatory fragmentation dominated discussions at the OECD Global Forum on Trade on 3 October 2023. Similarly, WTO members recently expressed concern with regulatory fragmentation in this area, which they considered could block opportunities and benefits associated with such novel products, as well as undermining public trust and leading to an enlargement of the digital divide. Among other issues, they stressed the role of closer international cooperation in building inclusive global digital governance.[1] As governments recognized in the 2023 Bletchley Declaration: "[m]any risks arising from AI are inherently international in nature, and so are best addressed through international cooperation".[2] This was echoed again in the recent 2024 Final Report of the UN AI Advisory Body. Indeed, when it comes to trade, regulatory cooperation at a global level can help build trust, avoid unproductive trade frictions, and prevent unnecessary negative trade impacts without compromising legitimate public policy objectives (OECD and WTO, 2019).

The rise of AI increases the importance of the WTO, and its transparency and deliberative functions, as a forum for cooperation and regulatory alignment to avoid regulatory fragmentation. WTO rules and processes promote global convergence through transparency, discussion and exchange of good practices, regulatory harmonization and non-mandatory policy guidance, as well as through the negotiation and implementation of new trade rules.

(i) Promoting transparency

Transparency, a key function of the WTO, provides WTO members with the opportunity to be kept abreast of the latest regulatory developments. All WTO agreements integrate transparency provisions, including in some cases requirements that WTO members publish and promptly notify new, or any changes to existing, laws, regulations or administrative guidelines that significantly affect trade in the areas covered by WTO agreements. Members are also required to establish enquiry points responsible for responding to questions that stakeholders from any WTO member may have on rules and regulations related, for example, to services, TBT or intellectual property (IP), all of which play an important role in AI governance.

The transparency mechanism of the TBT Agreement[3] goes further in promoting global convergence and coherence by requiring that members notify regulatory measures at a draft stage to the TBT Committee.[4] Early notifications can help governments and other stakeholders to be kept abreast of proposed AI-related regulations more quickly, and give members the opportunity to voice questions and concerns regarding upcoming regulatory measures in a timely manner. It also helps to ensure that comments can be taken into account well before measures are finalized, which can lead to better quality regulations and lower trade costs, and it fosters understanding of members' regulatory approaches and promotes more effective and globally coordinated, coherent regulatory outcomes. For example, in 2021, a developed member notified a proposal for AI regulation to the TBT Committee (the EU AI Act)[5], which was later also discussed in the Committee in the context of a "specific trade concern" (STC).[6] In April 2024, for the first time, a developing member notified an AI-specific regulation, ("KS 3007:2024 Information technology – Artificial Intelligence – Code of Practice for AI Application"), to the Committee.[7] More broadly, the TBT Committee has been receiving an increasing number of notifications of a wide range of digital-technology-related regulatory measures, including concerning the Internet of Things, 5G, 3D printing, drones and autonomous vehicles.[8] Transparency may also help members to "emulate more efficient regulatory examples" made widely available in WTO notifications (Mavroidis, 2016).

An important transparency tool is the ePing SPS and TBT Platform.[9] This publicly and freely available tool includes an email alert service on notifications covering products and markets of interest, including AI-related notifications. All interested stakeholders, including

businesses of any size, can register on the platform and track regulatory developments about products and markets of interest to them, and communicate with other stakeholders.

The WTO Trade Policy Review Mechanism (TPRM) also contributes to enhancing the transparency of members' trade policies. All WTO members are subject to periodic reviews of their domestic trade policies. The TPRM aims to improve members' adherence to WTO rules, disciplines and commitments, through greater transparency in, and understanding of, WTO trade policies and practices.[10] In fact, the subject of AI has been raised in the context of various recently concluded trade policy reviews (TPRs).[11]

(ii) Promoting dialogue and exchange of good practices

The WTO provides a global forum for constructive discussions, exchange of good practices and cooperation. In this context, governments can discuss how best to design nuanced, flexible and adaptable regulatory solutions to address the goods, services and IP-related aspects of AI in a coordinated manner. Global alignment starts with dialogue, and WTO bodies provide fora to which members can bring trade-related issues they wish to explore and discuss. Given AI's fast-changing and complex nature, nurturing dialogue and an exchange of good practices on an open, inclusive and ongoing basis is critical.

Various WTO bodies have organized thematic discussions on AI trade-related topics to exchange experiences and identify good practices. Among them are the Council for Trade-Related Aspects of Intellectual Property Rights (TRIPS Council) and the TBT Committee. For instance, in 2023, South Africa called for a revitalization of discussions on e-commerce-related IP matters in the TRIPS Council and proposed a structured dialogue based on specific questions, including what measures members are adopting to improve access to AI technologies.[12] In the same year, a group of "Friends of IP and Innovation", including Australia, Canada, the European Union, Japan, Singapore, Switzerland, Chinese Taipei and the United States, proposed that, due to the immense benefits of cross-border cooperation among IP offices and the unclear application of existing IP systems to advanced technologies, such as AI and the metaverse, it would be useful for IP offices to engage in global discussions on suitable IP protection in these technology fields, and to share domestic experiences and best practices. The TBT Committee, on its side, recently held five thematic sessions on digital issues and related regulatory measures with the aim of improving global regulatory cooperation between members in these areas. The thematic sessions covered intangible digital products (including AI), cybersecurity, conformity assessment issues with respect to products sold via e-commerce, digital solutions for performing conformity assessment, and the use of digital technologies and tools in members' regulatory processes.[13] In addition, under the

currently ongoing "Tenth Triennial Review of the operation and implementation of the TBT Agreement", proposals have been made to discuss AI specifically, or at least certain AI-related issues, in the TBT Committee.[14]

Since 1998, multilateral discussions under the WTO Work Programme on e-commerce have considered how WTO rules apply to e-commerce. These discussions intensified following the Ministerial Decision on the E-commerce Moratorium and Work Programme,[15] which was adopted at the 12th Ministerial Conference (MC) in 2022 and provides a platform for experience-sharing and mutual learning. Issues relevant to AI discussed under the work programme include consumer protection, legal and regulatory frameworks, and digital industrialization. Discussions also covered the important issue of the digital divide.

Experience-sharing on AI is also slowly emerging in other WTO bodies. For instance, the Committee on Sanitary and Phytosanitary Measures (SPS Committee) recently held a thematic session to explore the utilization of technological solutions, including AI and machine learning, in the field of SPS.[16] In addition, Australia recently submitted a proposal that the future agenda of discussions and experience-sharing of the SPS Committee put a "strong focus" on the potential application of AI technologies in regulatory frameworks that govern agri-food trade.[17]

The WTO can provide a platform for governments to brainstorm on how best to design nuanced, flexible, coordinated regulatory solutions to address the trade-related aspects of AI. Issues flagged by scholars that could be discussed include: how to ensure that possible regulatory solutions do not become obsolete as AI rapidly evolves; how to ensure a lifecycle compliance of AI and AI-embedded products with relevant requirements under standards and technical regulations; how to ensure post-market surveillance of AI and AI-enabled products; and how to improve the WTO's engagement with other relevant bodies and organizations that are currently discussing and elaborating policies, guidance and international standards relevant for AI regulation and global governance.[18] Such discussions would help members to become aware of each other's different systems and to understand better the similarities and divergences in their regulatory approaches. This, in turn, could provide a solid basis for further considering, in a multilateral setting, how to ensure better regulatory coherence in the area of AI. A notable example of this positive role of the WTO is the recently adopted 2024 TBT "Guidelines on Conformity Assessment Procedures" (CAP Guidelines) (WTO, 2024b). The CAP Guidelines not only recognize the importance of digital technologies to improve the way governments certify products in terms of safety and quality, but also stress the importance of ensuring "flexibility and agility in the face of uncertainty", including due to "rapidly changing technological, societal, geopolitical and economic trends", by ensuring conformity assessment procedures are "adaptive, responsive, and remain relevant".

WTO committees also serve as fora for information-sharing and discussions between WTO members

and standard-setting organizations. Standard-setting organizations have observer status in various WTO committees, including the TBT and SPS Committees. WTO committees can therefore provide a valuable opportunity for constructive dialogue between members and standard-setting organizations to identify needs and gaps in standards development from an international trade perspective. For example, in the June 2024 TBT Committee meeting, the ISO noted that, together with the International Electrotechnical Commission (IEC), it had published the joint international standard ISO/IEC 42001, which it claimed to be "the world's first AI management system standard", laying down "the foundation for ethical, safe, and innovative use of AI across its many applications and promoted trust by effectively managing AI-related risks."[19] At that same meeting, the United Nations Economic Commission for Europe (UNECE) informed members about the work being undertaken by its Working Party on Regulatory Cooperation and Standardization Policies on adopting relevant guidance on "technical regulations of products/services with embedded artificial intelligence".[20] In addition, during a recent Thematic Session held by the SPS Committee, relevant work on the use of digital technologies, including AI, was presented by various international standard-setting bodies including the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO) Codex Alimentarius, the World Organization for Animal Health (WOAH) and the International Plant Protection Convention (IPPC).[21]

(iii) Promoting regulatory harmonization and coherence through international standards, mutual recognition and equivalence

International standards play an important role in promoting global regulatory alignment and coherence. The development and use of international standards in the area of AI can provide a common benchmark when governments design and adopt standards or regulations on AI systems and AI-embedded products. This can help to reduce unnecessary differences across economies. Addressing such fragmentation is also trade facilitating, as it avoids unnecessary compliance costs for companies, in particular micro, small and medium-sized enterprises (MSMEs), when engaging in international trade. International standards can be beneficial in other ways. For instance, they can facilitate the free flow of digital solutions, ensure interoperability, foster innovation by codifying and disseminating best practices in technology (see also Section 4(b)(v) on technology transfer in WTO agreements), shorten the regulatory cycle – as each regulator does not have to start its own process again from scratch, but can benefit from the experience of other regulators – and help small companies improve their regulatory compliance.

While the WTO does not itself develop international standards, some of its agreements explicitly encourage their use. The TBT Agreement is a particular case in point, as it encourages members to engage in regulatory harmonization by requiring them to use relevant international standards as a basis of their domestic standards, technical regulations and certification procedures. This requirement is strengthened by a presumption that a regulation does not create an unnecessary obstacle to international trade – which must be avoided – if it is prepared "in accordance with" such standards. At the same time, the TBT Agreement recognizes that there may be legitimate reasons for an international standard not to be used as a basis for a given regulation. Members, in particular developing-economy members, are thus allowed to deviate from these standards under certain conditions.[22]

To harmonize technical regulations on as wide a basis as possible, the TBT Agreement strongly encourages members to "take a full part" in the elaboration and development of international standards.[23] Active participation in international standard-setting work increases the chances that a member will be a standard-maker rather than merely a standard-taker. This can make international standards more inclusive, legitimate and useful as benchmarks for the promotion of regulatory harmonization and coherence, including in AI regulation and standardization. However, it should be noted that active engagement in the development of numerous – and usually simultaneous – international standards could be particularly problematic for developing-economy members in light of their scarce resources and lack of relevant expertise; this is especially the case when the standardization process involves new technological fields that are complex and fast evolving. In this context, the TBT Agreement requires members to advise developing-economy members, upon request, and to grant them technical assistance regarding participation in international standardizing bodies[24] (see also Chapter 4(e)).

However, certain aspects of international standardization in the area of AI may be challenging. Indeed, it might be difficult, or, to some, even inappropriate (Pouget, 2023), to agree on a common international denominator with respect to certain AI-related societal values and concerns such as ethical or moral values, the relative importance of which may vary across economies and societies. Some argue that in certain circumstances these so called "socio-technical" standards may be even implausible, if not impossible (Lin, 2021; Smuha, 2024).[25] However, others consider that such difficulties are not necessarily or always insurmountable and, depending on the specific context and purpose, can be overcome (Ebers, 2024; Kerry, 2024; Meltzer 2023). They argue, for instance, that "foundational" international standards (i.e., those addressing topics such as terminology, definitions and concepts) may be less challenging to discuss and adopt than those addressing substantive or "normative" topics. Indeed, some foundational AI international standards have already been adopted.[26] Some also note that it may also be possible for AI standards to address substantive socio-technical issues (such as certain ethical values that an AI system needs to respect),

but only to an extent, that is, not by prescribing in detail specifically what ethical AI specifications should be in all cases, but instead by reflecting only general principles that are widely shared across nations (e.g., those reflected in certain international conventions and declarations, such as the UN Universal Declaration of Human Rights).[27]

In addition to international standards, some WTO agreements, such as the TBT Agreement, also promote other regulatory coherence tools, such as "mutual recognition agreements" (MRAs) and "equivalence". These tools can be useful in facilitating international trade even when standards, regulations and certification procedures between trading partners are different or not fully harmonized. Mutual recognition agreements can streamline conformity assessment procedures, allowing economies to acknowledge each other's testing and certification results, thereby reducing redundancy, cutting marketing costs and accelerating product dissemination. These agreements can help enhance competition and regulatory efficiency, particularly by opening new markets to foreign access. Such gains can be significant – a recent study (Cernat 2023) indicates that "the existence of an MRA tends to increase the value of exports by 15-40% and the probability of firms to export new products to new markets by up to 50%", and states that recent surveys indicate increasing interest in economies in tools such as mutual recognition agreements "in areas where domestic developments across the globe lead to new regulatory requirements", including in "digital standards, cybersecurity, 5G, interoperability of electronic invoices and other topics related to the digital transformation". The TBT Agreement, for instance, encourages members to rely on equivalence and mutual recognition agreements (Articles 2.7 and 6). Mutual recognition agreements have been described as important instruments to ensure that unnecessary duplication of certification procedures does not become itself a barrier to trade on AI-related products (Meltzer, 2023).[28]

(iv) Providing voluntary committee guidance

The WTO also promotes regulatory coherence not only through the rules of agreements but also through "soft law". An important example is the TBT Committee's guidance with respect to international standards. Bearing in mind the fact that the manner in which international standards are set can have a decisive impact on the extent to which those standards are actually used as a basis for convergence, in 2000, the TBT Committee agreed on a set of Principles for the Development of International Standards, Guides and Recommendations (the "Six Principles").[29] The Six Principles provide guidance in the areas of transparency, openness, impartiality and consensus, effectiveness and relevance, coherence, and development dimension.[30] Principle 5, on coherence, for example, stresses the importance of avoiding duplication and overlap between the work of international standardizing bodies and calls for

cooperation and coordination. Such "soft law" instruments can help ensure international standards are better and more appropriately prepared so that they can be a basis for designing regulations that can fully attain their policy goals, while at the same time not causing unnecessary obstacles to trade. In addition, such decisions and recommendations support deeper cooperation. The Six Principles are widely followed by standard-setting bodies seeking international relevance, and are also recognized in various international and regional fora, as well as in many regional trade agreements (RTAs) (McDaniels et al., 2018).[31]

Another example that may be particularly relevant for AI regulation concerns committee guidance on conformity assessment (certification). As noted above, AI trustworthiness depends on its ability to meet stakeholders' expectations in a "verifiable way", for example via certification against technical specifications in a regulation or standard. Conformity assessment procedures are, therefore, likely to be key elements in AI regulatory frameworks.[32] In this respect, the TBT Committee's 2024 CAP Guidelines (WTO, 2024b) stress the need to ensure that conformity assessment procedures are "adaptative, responsive, and remain relevant", which will be instrumental in ensuring safe and trustworthy international trade in ever changing AI-enabled products. Mutual recognition agreements, which as discussed above can help to avoid creating unnecessary trade barriers from duplicative testing and other certification procedures, have also increasingly been the focus of TBT Committee debates and guidance, including in the CAP Guidelines. The CAP Guidelines build on the guidance that the TBT Committee has developed over the years on "a range of approaches that governments might choose to apply across different sectors to ease the burdens associated with duplicative testing and certification", mutual recognition agreements and equivalence being among such approaches.[33] In addition, under the Tenth Triennial Review on the operation and implementation of the TBT Agreement, a proposal was made for members to discuss and exchange experiences on the importance and benefits of mutual recognition agreements, including on how they "may contribute to addressing future global challenges".[34]

(v) A global forum for negotiating new rules

The WTO also promotes global alignment through the negotiation of new binding rules on trade. New trade rules are negotiated and agreed to by all WTO members and approved domestically. The goal is to ensure that the rules-based international trade system is kept fit-for-purpose, and that it provides a level playing field for all, thus contributing to economic growth and development.

Various issues negotiated under the so called "Joint Statement Initiative on E-commerce" matter for AI. The Joint Statement Initiative was launched in January 2017 to respond to the changing nature of trade and create a

modern set of rules to facilitate digital trade and address challenges within the digital economy. Topics discussed over the years have included several issues of key importance for AI, including personal data protection, open government data, access to and use of the internet, cybersecurity, telecommunications, consumer protection, customs duties on electronic transmissions, data flows, data localization and source code. The negotiations also cover the important issue of capacity-building and technical assistance for developing economies. As of June 2024, 91 WTO members, including many developing economies and several least-developed countries (LDCs), were involved in these negotiations.[35]

(b) Facilitating trade in AI-related goods and services for AI growth and development

The WTO is the cornerstone of global efforts to facilitate trade in services and in goods that enable or are enabled by AI. The expansion and development of AI, and its increasing use by firms and individuals around the world require a facilitating trade and investment environment. WTO agreements encourage policies contributing to a sound environment for investment and cross-border trade in AI-related products and technologies. Various aspects of the WTO rulebook can contribute to promoting the development of and access to AI.

(i) Obligations and specific commitments on trade in services

The obligations of the General Agreement on Trade in Services (GATS) play an important role in shaping a policy environment that facilitates the development and uptake of AI. AI is relevant for trade in services – including trade in services for AI – in three key ways. First, while AI has many different applications, the development and implementation of AI is, at its core, a computer service. In the sectoral classification system used under the GATS, computer services comprise a wide range of services relating to the design and development of computer systems and software.[36] Computer services under the GATS also include data processing and database services, which are key functions associated with AI, given its high level of reliance on access to, and treatment of, data. Second, telecommunications services play a fundamental role in enabling and promoting AI. AI relies on efficient communications infrastructures to provide the levels of connectivity it requires to function, including by facilitating the transmission of data within and across borders. Third, AI is used as an input in the supply of an increasingly wide range of services, including translation,

education, financial and health services. Services that use or rely on AI are often, at least in part, supplied through electronic means. As a result of technological advancements, a wide range of services can more easily than previously be traded across borders as digitized information flows, and AI has further increased the tradability of services under mode 1 of the GATS, which refers to the cross-border supply of services.[37] The use of AI by services suppliers may expand supply capacity and reduce costs. Trade in services also stimulates the development and uptake of AI, as access to international markets is a key channel to expand AI-enabled services, monetize the technology and drive investment.

Rules of the GATS carry relevance for AI in these three key ways. The GATS applies to all services sectors with the exception of governmental services (referred to as services supplied in the exercise of governmental authority) and most of the air transport sector. Measures affecting services supplied through different technological means – e.g., electronically or with the assistance of AI – are all covered by the GATS.[38] While certain obligations of the GATS apply to all services within its scope (e.g., the obligation to publish measures of general application), some of the principal obligations do not apply to all services covered. For example, market access (Article XVI) and national treatment (Article XVII), the two obligations that aim to guarantee a level of openness to international competition, only apply to those services sectors that are listed in the schedule of specific commitments of each WTO member, and in accordance with limitations listed for particular modes of supply.

Most WTO members have made specific commitments on market access and national treatment for computer services. Out of the WTO's (counting the European Union as 1) 141 schedules of commitments, 84 (or 60 per cent) contain commitments on computer services, but only 53 contain specific commitments covering the totality of the sector as defined in the GATS classification system.[39] In addition, the level of treatment bound for each mode of supply varies. Of specific commitments in the different sub-sectors of computer services, 67 per cent were unrestricted (i.e., without sector-specific limitations) for cross-border supply (GATS mode 1), in comparison with 74 per cent for consumption abroad (GATS mode 2), and 64 per cent for commercial presence (GATS mode 3).[40] For their part, commitments on GATS mode 4 are typically limited to certain categories of natural persons, notwithstanding the sector.

Subsectors of telecommunication services have a higher number of commitments. A total of 100 schedules contain commitments in the sector (including 43 that include commitments across all subsectors),[41] but those tend to be subject to a higher number of limitations for both modes 1 and 3. For example, 67 per cent of commitments on data transmission are subject to limitations or are "unbound" with respect to mode 1, and the proportion of commitments with limitations reaches 79 per cent for mode 3.

However, commitments in other sectors remain limited, making for a less predictable and transparent trade environment in these sectors. As noted above, AI

is used as an input in the supply of a wide range of services, where commitments have relevance, including under mode 1. Overall, commitments under the GATS are limited, as most sectors attract fewer commitments than the computer and telecommunications sectors. Indeed, a majority of WTO members have not scheduled commitments in most of the sectors covered by the GATS. On average, WTO members' schedules have specific commitments in roughly a third of all services subsectors. In addition, even when commitments are undertaken, many services subsectors have been left unbound (i.e., free to limit both market access and national treatment) for mode 1. This is illustrated in Figure 4.1, which

shows the proportion of schedules with specific commitments under mode 1 for a sample of subsectors. The absence of specific commitments means that no guarantees of access are provided, and this makes for a less predictable and transparent trade environment for the relevant sectors, as new trade-restrictive measures may be imposed at any time. The limited multilateral commitments in different sectors also represent a lost opportunity to encourage lower levels of services trade restrictiveness. Indeed, some of the services sectors of greatest relevance for AI remain subject to significant trade restrictions, applied by different governments around the world.

Figure 4.1: Proportion of GATS schedules with specific commitments in modes 1 (cross-border supply) and 3 (commercial presence) in selected sectors

Source: WTO using I-TIP Services (https://itip-services-worldbank.wto.org/).
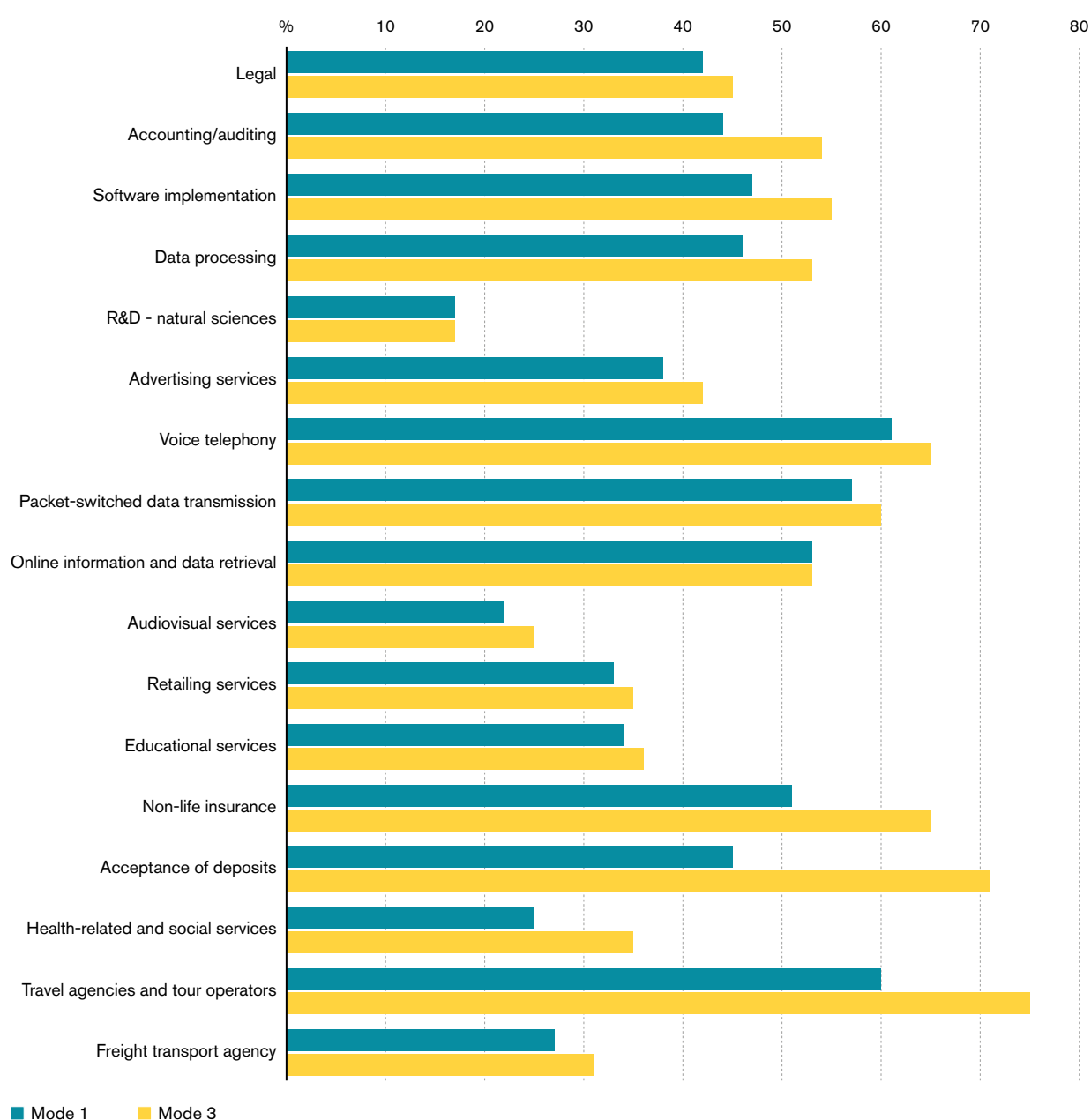
Figure 4.2: Services trade restrictiveness in selected sectors

Source: WTO using I-TIP Services (https://itip-services-worldbank.wto.org/).
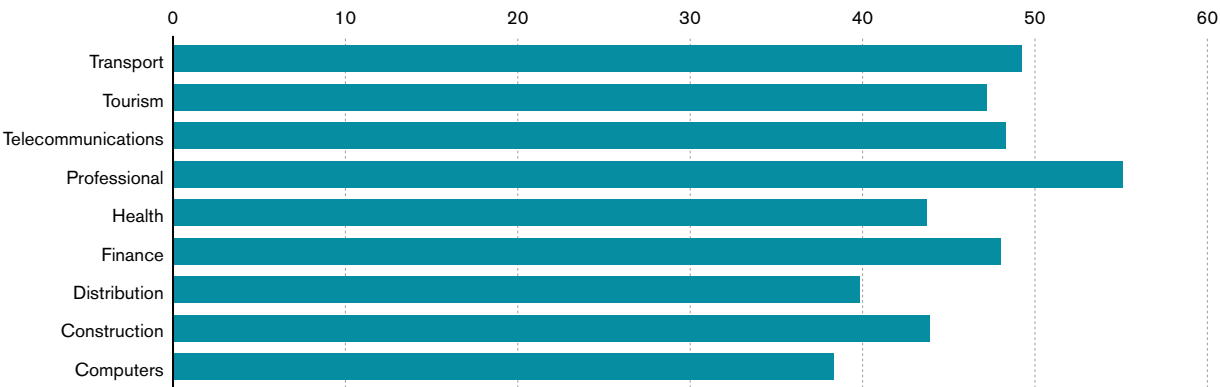
Note: This chart depicts the average level of restrictiveness in the applied regimes of 133 economies in nine broad sectors. The index quantifies applied services trade policies on a scale from 0 (fully open) to 100 (most trade-restrictive).

Aside from the level of treatment guaranteed by commitments, barriers to services trade actually applied by governments remain high in overall terms. However, these barriers display significant variations across sectors, modes of supply, regions and levels of development (see Figure 4.2). Sectors such as professional and transport services, for example, tend to be more restricted than telecommunications, computer or distribution services.

Services sectors particularly crucial to AI, such as computer services and telecommunications services, still face significant trade restrictions in a large number of economies. With respect to computer services, 24 economies (out of a sample of 133) have services trade restrictiveness scores of 50 or above on a scale from 0 (fully open) to 100 (most trade-restrictive).

In addition, 58 economies have Services Trade Restrictiveness Index (STRI) scores of 50 or above for either mobile or fixed-line telecommunications. Restrictions are also important in a number of services sectors that use AI, including financial services, which thereby limits capacity to supply AI-intensive services and impacts growth opportunities.

Restrictions in computer and telecommunications services are highest for mode 1 (cross-border supply) and significant for modes 3 (commercial presence) and 4 (movement of natural persons) (see Figure 4.3). Restrictions in mode 1 may affect the cross-border supply of consultation services relating to computer systems and software, which are important for the development of AI and its implementation and use in companies. Mode 1 restrictions on computer and telecommunications services can limit

Figure 4.3: Services trade restrictiveness by mode of supply
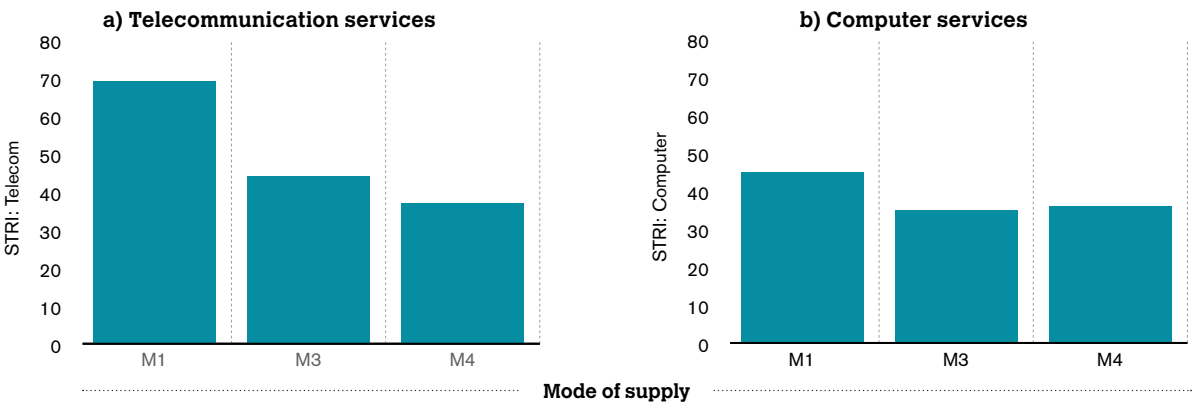
Source: World Bank and World Trade Organization (2023).

Note: Figure 4.3(a) and (b) depict average Services Trade Restrictiveness Index (STRI) scores by mode of supply for 133 economies. The STRI quantifies applied services trade policies on a scale from 0 (fully open) to 100 (most trade-restrictive). M1: GATS mode 1 – cross-border supply; M3: GATS mode 3 – commercial presence; M4: GATS mode 4 – movement of natural persons.

the transmission of data and cross-border data processing and storage activities. Mode 3 restrictions have particular significance, as they include measures that affect the capacity of foreign suppliers to establish a commercial presence abroad, and to supply services through such commercial presence. When applied to computer services, restrictions to mode 3 impede foreign companies from investing and being active in the local market for AI and related services. Restrictions to mode 3 in telecommunications services limit investment in the digital infrastructure that is critical to enable the movement of data and the electronic supply of a wide range of services, including those relying on AI. As for limitations to mode 4, these encompass measures that affect the capacity of experts who work on the development of AI systems and software to temporarily go abroad to supply these computer services.

Overall, services trade restrictions raise trade costs and limit trade and investment. They carry negative economy-wide consequences and worsen the performance of the specific sectors targeted (World Bank and WTO, 2023). In the case of telecommunications services, for example, trade restrictions have been associated with lower penetration, higher prices and lower-quality services (Borchert et al., 2017; ITU and UNESCO, 2013; Nordås and Rouzet, 2017). Meanwhile, trade restrictions in relation to digitally supplied services limit an economy's capacity to take advantage of trade opportunities created by AI and technological developments, and can also reduce companies' incentives to invest in digital technologies and in information and communications technology (ICT).

In addition to the market access and national treatment obligations, the GATS contains other obligations which generally aim to facilitate services trade. These obligations can affect the trade policy environment for AI and the propensity of AI to increase services trade. In addition to the most-favoured-nation obligation (Article II) and transparency requirements (Article III), Article VI contains obligations on domestic regulation that require, among other things, the reasonable, objective and impartial administration of measures in sectors in which specific commitments are undertaken. Several WTO members have also included additional commitments on domestic regulation in their schedules by means of a reference paper containing disciplines that seek to mitigate the unintended trade-restrictive effects of measures relating to licensing requirements and procedures, qualification requirements and procedures, and technical standards.

The telecommunications sector – a key enabler of AI, data flows and digitally delivered services using AI – is also the focus of two additional sets of competition-related rules under the GATS. These rules are the Annex on Telecommunications, which applies to all WTO members, and the Reference Paper on Regulatory Principles on Basic Telecommunications, which has been incorporated into the Schedules of Commitments of 103 WTO members. By promoting competitive conditions and good regulatory practices in the sector, the two instruments help to foster the extension of affordable and efficient infrastructure for services contributing to, or using, AI. For example, the Annex provides for access to public basic telecommunications services on reasonable and non-discriminatory terms and conditions for the supply of services in all committed sectors. It also mandates that suppliers from other members should be able to use public basic telecommunications services to enable the flow of information within and across borders.

Newly agreed disciplines on services domestic regulations and investment facilitation, which aim to improve the business environment, can also help to facilitate the development and use of AI. The disciplines on services domestic regulation, which entered into force in February 2024, facilitate authorization procedures that businesses engaged in AI-related or AI-enabled services may have to comply with before supplying their services in various jurisdictions (WTO, 2024). A total of 72 governments, representing 92.5 per cent of global services trade, have committed to implementing these new disciplines, which will be applied on a "most-favoured-nation" basis, meaning they will benefit all WTO members. WTO members that have adopted the disciplines on services domestic regulation have embraced good regulatory practices on stakeholder involvement: these practices foresee the advance publication of draft laws and regulations relating to licensing, qualifications and technical standards. They also foresee that interested persons are given reasonable opportunity to comment on such draft regulations, and the consideration of such comments by the regulators. In addition, the recently completed Agreement on Investment Facilitation for Development, concluded by close to 130 members, aims to improve the investment and business climate and make it easier for investors to conduct their day-to-day business and expand their operations. Although this is a plurilateral agreement, its benefits would extend to all members. With incorporation into the WTO architecture, this agreement will also help to attract more and higher-quality investment in digital connectivity infrastructure. Such infrastructure forms the backbone for deploying digital technologies, including AI.

(ii) Customs duties on ICT equipment and electronic transmissions

Tariffs, especially on ICT equipment, can limit access to and increase the cost of hardware essential to develop and power AI applications. They can thereby constitute an obstacle for the deployment and adoption of AI technologies. Acknowledging the growing importance of ICT products to promote competitiveness in the digital economy, a subset of WTO members negotiated an agreement – the Information Technology Agreement (ITA) – to eliminate tariffs on such products. Beyond tariffs, WTO rules also provide a vehicle to determine the value for AI-enabled goods (see Box 4.1).

Box 4.1:
AI and customs valuation

The incorporation of advanced digital technologies, including AI, into products creates challenges for governments seeking to determine the value of those products for tariff and other purposes. For decades now, customs agencies have grappled with how to determine value for imported goods that bundle hardware and software elements. Customs valuation is primarily concerned with the transaction value of physical goods, from which accompanying services or elements may be excluded. While there is some scope for determining the value of certain intangibles associated with imported products, determining whether declared value accounts, or should account, for these intangibles can entail complex considerations and can lead to exchanges between customs agencies and importers to verify certain elements of the transaction. This has been a persistent challenge for government officials and traders alike in valuing goods, and growth in AI-enabled products could potentially add to the uncertainty relating to national valuation practices and the extent of revenue collection at the border.

Customs valuation rules can be a vehicle to capture the value of the AI-enabled features of imported goods. The WTO Customs Valuation Agreement allows WTO members, under specified circumstances, to value certain intangibles embedded in imported products. The transaction value of goods can be augmented with such elements in certain instances, for example, where there are IP royalties or licence fees (e.g., patents, copyrights and trademarks) related to the goods and tied to their sale (Article 8.1(c) of the Customs Valuation Agreement), or where the production of imported goods has been dependent on such items such as the cost of engineering, development and design work, if supplied by the buyer and not undertaken in the importing country (Article 8.1(b)). These provisions could be relevant when determining the value of AI-enabled products. Moreover, WTO members may elect whether to include the value of software in certain "carrier media" (i.e., physical devices bearing the software), although this discretion is limited to devices that exclude integrated circuits or semiconductors and therefore may not extend to certain advanced digital technologies that feature AI.[42] The challenge of mapping existing rules onto new market developments could be particularly acute when dealing with the fast-changing developments in AI-enabled products (see Chapter 4(f)).

At the same time, the use of AI, including predictive AI models, has significant potential to change the work of customs officials when valuing imported products (see Chapter 2(b)).

The ITA aims to increase worldwide access to high-tech goods, such as semiconductors, which are essential to AI, by eliminating tariffs on ICT products covered by this Agreement. Participation in the original ITA has increased from 43 WTO members in 1996 to 84 today, representing about 97 per cent of world trade in IT products. In 2015, over 50 WTO members, including China and the United States, concluded the expansion of the original agreement (ITA II), which covers an additional 201 products. ITA commitments to provide duty-free access to ICT products are applied on a most-favoured-nation (MFN) basis, that is, to all WTO members, including non-ITA participants. The value of products covered by the ITA II reached US$ 2.1 trillion in 2021. The elimination of tariffs on products such as semiconductors promotes access to hardware that is essential to power AI systems. As noted in Chapter 2, demand for AI hardware components, such as CPUs, GPUs and specialized AI chips, has been rising sharply. The ITA II also contains a commitment to keep the list of covered products under review to determine whether further expansion may be needed to reflect future technological developments.

Tariff rates on ICT products by non-ITA participants are highest for low-income and lower middle-income economies. This limits the capacity of these economies to leverage AI for development. Tariffs rates vary significantly across levels of development. While they average 6 per cent in high-income and upper middle-income economies, they reach almost 8 per cent in lower middle-income economies and 9 per cent in low-income economies (see Figure 4.4).

Beyond the ITA, the WTO moratorium on customs duties on electronic transmissions can contribute to promoting access to AI. The moratorium, which ensures that no tariffs are imposed on electronic transmissions, and has been periodically renewed since 1998, ensures that additional costs are not imposed on electronic transmissions in the form of customs duties. The last extension of the moratorium was agreed in March 2024 at the WTO's 13th Ministerial Conference (MC13). WTO members agreed to renew the moratorium until the 14th Session of the Ministerial Conference or 31 March 2026, whichever is earlier. The Ministerial Decision notes that "the moratorium and the

Figure 4.4: Tariffs on ICT products by non-ITA participants (2023)*
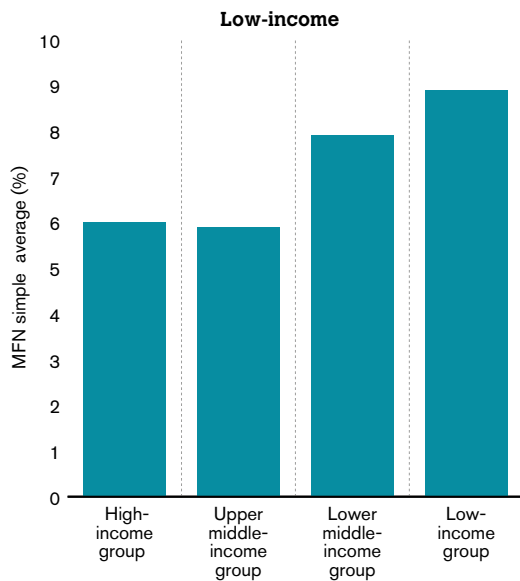
*2022 for Saint Kitts and Nevis, Democratic Republic of the Congo, and Haiti; 2019 for Yemen; and 2016 for Djibouti (latest year available).

Source: WTO Analytical Database.

Note: Product codes S04, T03, T04 and T05 of the multilateral trade negotiations product categories.

Work Programme will expire on that date".[43] Members have expressed differing views concerning the renewal of this temporary moratorium.[44] The non-imposition of customs duties on electronic transmissions is part of the Joint Statement Initiative on E-commerce text (see above).

(iii) Technical Barriers to Trade (TBT) Agreement

Governments, civil society and economic operators broadly agree on the pivotal role of mandatory technical regulations, voluntary standards and conformity assessment procedures in ensuring that AI systems are trustworthy.[45] This is essential to promote the deployment of AI. Technical regulations and standards are used to set out specifications and requirements on the production, importation and sale of products. As such, when adopted and applied appropriately, they can provide an essential regulatory framework for the development and use of trustworthy AI systems, and can ensure that risks associated with AI are addressed and that its benefits are harnessed. To ensure that the policy goals pursued by such measures are fully attained in practice, economies also need to subject AI systems, including AI-enabled products, to conformity assessment procedures in order to assess whether relevant requirements for ensuring trustworthiness have been fulfilled.

Technical regulations, standards and conformity assessment procedures are subject to the WTO TBT Agreement. This agreement supports better regulatory systems, which are essential for ensuring AI trustworthiness, and, through this, the deployment of AI. The TBT Agreement provides a framework of disciplines related both to procedural (transparency) and to substantive (product specifications and certification) dimensions of regulatory processes, which are aimed at eliminating unnecessary or discriminatory technical barriers to trade, while safeguarding the right to regulate to address legitimate policy objectives (see also chapters 4(a), 4(c), 4(d), and 4(e)). TBT-compliant regulatory measures are important for the conduct of international trade, including trade in AI systems and AI-enabled products, because they can increase consumers', importers', and other stakeholders' trust in the safety and quality of the traded products. This can help to ensure that trade flows smoothly, while respecting the right of governments to regulate for legitimate policy reasons. This trust does not however arise spontaneously. Instead, "behind the scenes", trust is supported by an "invisible chain" of institutions working together to deliver what is referred to as the National Quality Infrastructure (NQI), a normative and institutional framework composed of a combination of regulations, standards and certifications, as well as agencies, laboratories and other facilities that are responsible for applying these measures (WTO, 2021; 2024b). As trust increasingly underpins AI deployment and use, the role of the NQI will also increase in this area.[46]

(iv) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement)

The WTO TRIPS Agreement, the most comprehensive multilateral agreement on IP, directly impacts the development, deployment and commercialization of AI technologies. Established in 1994, the TRIPS Agreement sets down minimum standards of protection and enforcement for IP rights across WTO members. It outlines the obligations of members to protect IP, including with regard to copyrights, patents, trademarks, industrial designs and trade secrets, all of which are relevant to AI technologies and AI-generated creations and innovation.

The TRIPS Agreement envisages a balanced IP system that not only incentivizes innovation but also promotes access to and dissemination of technology. By means of this system, the enforcement and protection of IP rights contribute positively to technological innovation and to the mutual benefit of both producers and users of technological knowledge, thereby supporting social and economic welfare. This objective is fundamental for the development and application of AI in the future.

The minimum requirements for IP protection required by the TRIPS Agreement can serve to address certain IP challenges arising from the development and applications of AI, albeit with some limitations and challenges. As set out in Chapter 2(b), IP rights are relevant to the development of AI, including the use of its inputs and the protection of its outputs. Disclosure requirements under international patent rules can result in a positive contribution to transparency in the development of AI technology. Under the TRIPS Agreement, patent applications require the applicant to disclose the invention in a manner sufficient to enable a person with the relevant skills to replicate the invention.[47] Where jurisdictions provide patent protection for software or computer-implemented inventions, this disclosure requirement yields significant expert information on patented technologies generally and can be used to address the "black box" problem that may arise with AI (see Chapter 2(a)), at least to a certain extent.

Under Article 10 of the TRIPS Agreement, computer programmes, whether in source or object code, are protected as literary works under the Berne Convention (1971). This robust protection for software under copyright may provide a further incentive for transparency and to publish AI algorithms rather than keeping them protected as trade secrets. Nevertheless, the TRIPS Agreement also requires WTO members to protect undisclosed information, including trade secrets, under legislation against unfair competition (Article 39 of the TRIPS Agreement). Ultimately, the attribution of IP rights in principle does not determine whether their exercise is restrictive or permissive, and open-source solutions may be encouraged by regulation if deemed desirable by policymakers.

IP rights also provide the legal framework to determine the rights of creators whose works and/or databases are used as input to train AI. Regarding exceptions to IP rights, including "fair use", the TRIPS Agreement introduces a three-step test[48] that establishes the criteria for members to follow when they establish exceptions and limitations to IP protection, such as text and data mining for training and developing AI models.

Finally, with regard to the issues of AI output, the TRIPS Agreement establishes minimum standards. While it is based on the traditional, human-centric approach to IP, it does not preclude members from addressing issues arising from new technologies in their domestic legislation. In addition, the flexibilities included in the TRIPS Agreement allow WTO members to implement their obligations in a manner consistent with their own legal system and developmental needs. The TRIPS Agreement can, therefore, be used to address AI-related IP issues in tailored approaches.[49]

(v) Technology transfer in WTO agreements

Various WTO agreements include provisions to promote technology transfer, which can play an important role in promoting the development of AI. The TRIPS Agreement as a whole pursues the objective that the protection and enforcement of IP rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology (Article 7), as a balanced and reliable IP system can provide the legal infrastructure through which intangible assets and knowledge can be traded. In addition, Article 8 of the TRIPS Agreement underscores the principle that such IP protection is not inconsistent with members pursuing public interest considerations. Article 8 also acknowledges that members may need to take appropriate measures to prevent the abuse of IP rights by right-holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology. The TRIPS Agreement also mandates developed members to provide incentives to their enterprises and institutions for the purpose of promoting and encouraging technology transfer to LDCs.[50] The TBT Agreement, which encourages the use of international standards as a basis of regulations, expressly recognizes "the contribution which international standardization can make to the transfer of technology from developed to developing countries."[51] Article IV of the GATS encourages the increasing participation of developing economies in world trade through the negotiation of specific commitments to build domestic capacity, efficiency and competitiveness, including through access to technology on a commercial basis. And a Working Group on Trade and Transfer of Technology was established at the Doha Ministerial Conference in 2001 with the aim of examining the relationship between trade and transfer of technology from developed to developing economies and ways to increase this flow of technologies.[52]

Several technology transfer programmes relevant for AI have been reported in recent years. Since 2019, in the context of the TRIPS Council, a few developed economies, including Canada, the European Union, Switzerland and the United States, have reported that they adopted several relevant AI technology transfer programmes in order to fulfil their commitments to incentivize local enterprises to promote and facilitate technology transfer to LDCs, with the aim of helping these LDCs establish a sound and viable technological base.[53]

However, the extent to which technology transfer provisions have been used is a subject of debate. Research indicates that the implementation of Article 66.2 of the TRIPS Agreement has been uneven and that the reporting by developed economies on their obligations has often been inadequate or lacking in detail (Moon, 2008). Developed economies argue that, in most cases, IP is in the hands of the private sector, which makes it difficult to transfer technology. Developing WTO members, on their side, question the extent to which these provisions have effectively encouraged technology transfer and benefited developing economies.[54] It has also been noted that the best-endeavour formulation of these provisions, which do not set any clear mechanisms or tools for technology transfer, hinders the implementation of the disciplines (Mishra, 2024).[55]

(vi) Agreement on Government Procurement (GPA)

The rules of the WTO GPA 2012 promote access to internationally available new AI technologies. The GPA 2012 aims to open up, to the extent agreed by parties to the Agreement, government procurement markets to suppliers from other GPA parties, and to make government procurement more transparent and predictable. It provides legal guarantees of non-discrimination for the goods, services and suppliers of GPA parties with regard to government procurement covered by the Agreement, including of AI tools, as the case may be. The Agreement does not contain any direct references to AI. However, it does require that GPA parties, where appropriate, set out technical specifications in terms of performance, and functional requirements and base technical specifications on international standards, where such standards exist, or otherwise on domestic technical regulations or recognized domestic standards. Moreover, AI technologies can be used to implement the GPA, such as by identifying red flags that might point to corrupt practices or conflicts of interest or collusion, and by collecting the relevant statistical data. Reflecting the growing importance of AI tools procurement, some GPA parties, including the European Union, have published standard contractual clauses to be used by its procuring entities when purchasing AI tools.

(c) Minimizing negative international spillovers

The WTO rulebook includes various principles, provisions and guidelines that can support the deployment of AI, as well as trade in AI systems and AI-enabled products, by minimizing negative international spillovers. For example, non-discrimination, a key principle of the WTO, is meant to prevent discriminatory treatment of foreigners and trading partners.[56] Another example is the Agreement on Trade-Related Investment Measures, which recognizes that certain investment measures can restrict and distort trade and states that WTO members may not apply any investment measure that discriminates against foreign products or that leads to quantitative restrictions.

The TBT Agreement provides that regulatory intervention shall not be discriminatory, nor more trade-restrictive than necessary to achieve the intended policy objectives. When it comes to technical regulations, voluntary standards and certification procedures, which play a critical role in ensuring AI systems are trustworthy, the TBT Agreement aims to ensure that regulatory measures are prepared, adopted and applied in such a way that they can both fully attain their legitimate policy objectives – related, for example, to health, environment or safety – without creating unnecessary or discriminatory technical barriers to trade. The TBT Agreement therefore provides ample policy space to regulate AI, while preferring interventions that are non-discriminatory and are the least trade-restrictive possible to fully achieve the stated legitimate policy objectives. Attaining this regulatory balance can help to ensure that trade flows smoothly, while respecting governments' right to regulate for legitimate policy reasons. This can also be important in ensuring that discriminatory or unnecessarily burdensome standards and regulations do not hamper interoperability of AI systems and products (Lim, 2021).[57]

The principle of a periodic review of standards, regulations and certification procedures enshrined in the TBT Agreement is particularly suitable for fast-evolving technologies such as AI. The TBT Agreement requires that regulations shall no longer be maintained, or that they shall be updated, in light of changes in the circumstances that gave rise to their adoption.[58] Members are encouraged to evaluate their regulations periodically so as to ensure that they are fit-for-purpose as technological and other circumstances evolve over time. For instance, new scientific or technical evidence on the risks and challenges of AI, or other circumstances that led to the adoption of an AI standard or regulation may become available after their adoption. Depending on the nature and extent of such new developments, this may require updating and recalibrating the measure accordingly. Regulations may also need to be revised to take account of any a new or revised relevant international standards.[59] As already noted, the TBT Agreement requires standards and regulations to be based on relevant international standards. The importance of periodically evaluating and revising international standards in light of relevant changes, such as new scientific and technological developments, to prevent them from becoming obsolete, is expressly mentioned in the TBT Committee's Six Principles (Principle 4). The principle of periodic review is also underscored in the TBT 2024 conformity assessment procedures (CAP) guidelines (WTO, 2024b). Building on TBT Agreement provisions on this issue,[60] the CAP guidelines expressly note that "the choice of the conformity assessment procedures should not be seen as permanent. It should benefit from regular review as the elements that influenced the original choice of conformity assessment procedure may change over time."

Such approaches are important from both a policy and trade perspective. Regularly updating standards, regulations and certification procedures helps to maintain their effectiveness in addressing their intended policy goals (such as health or safety) even when the features, characteristics and risks of what they regulate, including AI, evolve over time. But this can also be beneficial from a trade perspective when changes in the circumstances giving rise to the adoption of a regulation open new alternatives for redesigning it so that it can still fully attain its policy objectives, but in a less burdensome, trade restrictive way (Lim, 2021).[61]

Work has also been carried out on how "undue trade distorting effects" of non-tariff measures (NTMs) in ICT products could be reduced or eliminated to prevent such measures potentially offsetting ICT tariff market access gains. Such NTMs include technical regulations, certification procedures and labelling requirements. In November 2000, the ITA Committee approved a work programme on this topic that resulted in the adoption, in February 2005, of the Guidelines for Electromagnetic Compatibility (EMC) and Electromagnetic Interference (EMI) Conformity Assessment Procedures ("EMC/EMI CAP Guidelines").[62] Following adoption of these guidelines, the WTO Secretariat was asked to compile information on the different types of conformity assessment on EMC/EMI. This information has since then been updated regularly (WTO, 2017).[63]

WTO disciplines on subsidies in the Agreement on Subsidies and Countervailing Measures (SCM Agreement) can also play a crucial role in navigating the dual aspects of AI development: promoting technological innovation while preventing negative spillovers in international trade resulting from government financial support. As outlined in Chapter 3(b), an increasing number of governments is implementing AI strategies with significant financial components and putting in place strategies to promote access to data. The relevance and applicability of the WTO subsidies disciplines to prevent negative spillovers relating to government financial support for AI or to the provision of data by government as an input depend on numerous elements. First is the nature of the traded product and whether it is considered a good or a service. The SCM Agreement does not apply to services or IP as such, but instead exclusively applies to goods. Consequently, it is essential to distinguish hardware components and AI-enabled products that are classified as goods (to which the SCM Agreement would apply) from AI software itself. To the extent that the AI component in any given good – for example, the AI in an autonomous vehicle or in advanced robotics – benefits from subsidies coveredby the SCM Agreement (the SCM Agreement defines a subsidy as a financial contribution by a government or public body or any form of income or price support that "confers a benefit" on the recipient), further analysis may be required to determine whether these subsidies could be attributed to those goods, and thereby could become the subject of counteractions under the SCM Agreement.

Subsidies may be challenged in WTO dispute settlement under the SCM Agreement. If the subsidy in question is a prohibited subsidy (such as an export subsidy, or a subsidy for the use of domestic goods rather than imported goods), or if it causes serious prejudice or other specified adverse effects to another member's trade interests, a multilateral remedy to offset the harm can be authorized through the WTO. In cases of prohibited subsidies, the remedy requires the withdrawal of the subsidy. For actionable subsidies, the remedy involves either the withdrawal of the subsidy or the removal of its adverse effects. Subsidized products can also be the subject of countervailing measures applied by an importing member, if the subsidized imported goods are found to cause injury to the importing member's domestic industry producing the same or similar goods.

Where the product incorporating AI is a good, the SCM Agreement and the actions and remedies described above apply only to subsidies that are specific. A subsidy may be considered "specific" if access to it is explicitly limited to a particular enterprise, industry, group of enterprises, group of industries, or a specific region. This fact could be pertinent for broad AI initiatives that, at least to some extent, involve goods. In particular, it is important to consider whether a government financial support programme for AI is available to a wide range of economic activities or is more narrowly targeted at particular sectors or enterprises. For instance, it could be challenging to identify specificity in a government subsidy intended for general AI development and which could be utilized in diverse sectors, such as healthcare diagnostics and autonomous driving systems.[64] Such a subsidy might appear to support broad technological advancement (thus, potentially non-specific), while in practice it disproportionately benefits certain industries or companies engaged in specific commercial activities involving goods that incorporate AI (thus, potentially specific). The specificity analysis also may be complicated by the rapid evolution and dual-use nature of AI technologies. Such ambiguities make it difficult to generalize; any assessment of specificity necessarily depends on the particular facts of a given situation. The ambiguities regarding specificity can lead to differing views among trading partners as to the actionability of certain subsidies, where some trading partners may be concerned that subsidies provided by others are unfairly distorting international competition.

Subsidies directed toward the production of AI integrated hardware or AI-enabled goods may present less ambiguity regarding their specificity. For example, a subsidy might be provided for the production of advanced sensors that are explicitly used in both commercial drones and military surveillance equipment. The targeted nature of such a subsidy to the production of a certain limited set of goods could make it easier to identify the subsidy as specific under the SCM Agreement. A further aspect of specificity, as mentioned above, is that the SCM Agreement deems as specific the two categories of prohibited subsidies: those contingent on export performance, and those contingent on the use of domestic goods over imported ones, commonly referred to as import substitution subsidies. It should be noted here that while import substitution subsidies are prohibited, subsidies supporting exclusively domestic production are not prohibited. Nevertheless, to the extent that a subsidy of the latter type is specific, it could be the subject of counter actions provided for in the SCM Agreement, i.e., through WTO dispute settlement or the application of countervailing measures. These points highlight the need for awareness of the rules of the SCM Agreement when designing subsidy programmes for AI.

(d) Helping to address and prevent trade tensions and frictions

The practice of raising specific trade concerns (STCs) and the requirement to notify technical regulations at a draft stage can help to defuse potential trade tensions. Members commonly use WTO bodies to raise specific trade concerns with respect to laws, regulations, or practices by their trading partners which may affect their trade (see Box 4.2). Since 1995, members have devoted an increasing amount of time and attention to discussing STCs. These discussions can help to ease trade tensions by providing members with further information and clarification on the rationale behind other members' regulations, enabling them to work towards mutually satisfactory solutions and helping to build trust (see the opinion piece by Dan Trefler). As noted in Chapter 4(a)(ii), the TBT Agreement also requires members to notify draft regulatory measures. This requirement can help to defuse tensions at an early stage, before a measure is adopted (Lim, 2021; Possada et al., 2022).

Members have been using the STC practice in the TBT Committee to discuss regulations and conformity assessment procedures on various digital technologies, including AI. For instance, cybersecurity, an increasingly important consideration in AI regulations and policies (see Box 4.3), is a common theme of various STCs. More directly on AI, from March 2022 to June 2023, the TBT Committee discussed a concern raised with respect to the EU AI Act (AIA), the first broad regulatory measures on AI systems (be they standalone or embedded into physical products, e.g., a toy). Among other matters, this concern entailed issues related to the scope and meaning of the definition of "AI system" and the possibility that regulatory authorities could be granted access, as part of the certification process, to source code of AI systems.[65] Beyond AI, STCs have also been raised in relation to other technologies, such as IoT and robotics, which are often used in tandem with, or may embed, AI (see Box 4.3).

The WTO also serves as a global forum to settle trade-related disputes. One of the key functions of the WTO is to ensure the integrity and respect of trade rules by providing a formal system for handling the settlement of trade disputes among WTO members. A member may bring a dispute to the WTO's Dispute Settlement System to seek the redress of a violation of obligations or other nullification or impairment of benefits under the WTO agreements or an impediment to the attainment of any objective of the WTO agreements.[66] Reports by adjudicators specifically selected for a given dispute (called "panels") are considered for adoption by the Dispute Settlement Body (DSB), that is, all WTO members. These reports are limited to the specific legal and factual issues raised in the dispute. Many disputes are settled through consultations even before any decision is rendered.[67]

Box 4.2:
The practice of specific trade concerns

STCs, which drive the detailed, technical deliberations on specific measures that have, mostly, not yet entered into force and are therefore not yet entrenched in domestic law, can contribute to an improved understanding by members of the rationale underlying other members' regulations. They can also present an opportunity to question the appropriateness or effectiveness of trade measures, including in terms of their scientific or technical basis or the evidence for them, use of international standards, transparency, and possible regulatory alternatives.

Raising concerns via an open, multilateral platform can help members to reduce potential trade tensions effectively, and in a cooperative, non-litigious manner. This practice thus creates opportunities for regulatory cooperation centred on a "peer to peer learning" process, in which critiques are presented, suggestions are posited, technical, legal and policy arguments are made, and regulatory experiences are exchanged on specific regulations addressing real life issues. This provides a collaborative "space for learning from differences" (OECD/WTO, 2019), which can ultimately lead to more effective regulatory outcomes (Horn et al., 2013;

Karttunen, 2020; Lim, 2021; World Trade Organization, 2020b).

Evidence suggests this model works. While, since 1995, around 56,000 regulatory measures have been notified to the TBT Committee, only around 830 STCs been raised and discussed, with even fewer formal disputes (11) involving TBT measures having been adjudicated.[68] Even if it is not perfect, and there is room for further improvement (Holzer, 2019), the practice of raising and discussing TBT STCs is generally accepted to be a success (Karttunen, 2020) – one that could be expanded into other WTO committees (Possada et al., 2022).

Box 4.3:
TBT, AI, the Internet of Things and robotics

In view of the significant benefits and challenges that the Internet of Things (IoT) and robotics can engender, in particular when enabled by AI systems (Suleyman and Bhaskar, 2023), they have increasingly become the object of governmental regulatory interventions and policies. In this respect, a growing number of IoT and robotics-related measures have been notified to the TBT Committee.

These notifications are part of a broader context, in which WTO members are increasingly notifying a wide range of regulations on digital technologies to the TBT Committee (Lim, 2021). To date, at least 71 TBT notifications concern this broader group of digital technologies, i.e., measures addressing IoT and "smart functionality" (19),[69] autonomous vehicles (18),[70] robotics (16)[71] and industrial automation (18).[72] In addition, under this broader group, five STCs have been raised concerning IoT/robotics-related measures.[73]

Interoperability, which is key for connecting infrastructures and systems and deploying IoT and robotics (WTO, 2018), is among the issues addressed in some of these notifications and STCs. As it is the case with most digital technologies, including AI, there is general consensus around the pivotal role that international standards can play in ensuring interoperability.[74] Specific discussions on IoT and robotics-related standards and policies are taking place in international bodies and organizations, such as ASTM International, the International Electrotechnical Commission (IEC), the International Organization for Standardization (ISO), the International Telecommunication Union (ITU), the Organisation for Economic Co-operation and Development (OECD) and the United Nations Economic Commission for Europe (UNECE), most of which are observers to the TBT Committee.

The importance of enforcing legally binding rules on AI at a global level has been highlighted in international initiatives. For example, ensuring compliance and accountability based on norms is one of the seven institutional functions identified in the UN AI Advisory Board final report (UN, 2024). This report stresses the need for a dispute resolution system that could be facilitated by global forums and explicitly refers to the WTO Dispute Settlement System as an example of dispute resolution "facilitated through global forums".

While, to date, no disputes on AI measures have been brought before the WTO Dispute Settlement System, there have been various disputes related to aspects of the digital economy. For example, disputes have arisen in relation to the tariff treatment of new technologies and multifunctional products,[75] digitally delivered services methods of transmission or delivery,[76] and whether existing commitments of WTO members cover new products (e.g., whether terms in specific commitments under the GATS should be interpreted solely according to the meaning they had at the time of entry into force – i.e., sound recording distribution services).[77] Of particular interest is a WTO dispute which raised issues related to the so-called "digital divide", which, as noted above, is a concern mentioned in various international initiatives on AI governance. The dispute involved a governmental programme which was arguably aimed at "bridging the digital divide" within that economy. Adjudicators confirmed that, as a general proposition, "the objective of bridging the digital divide and social inclusion and access to information is a reasonably important policy objective" and found that the measure at issue was at least "designed" to protect "public morals" within the meaning of the general exception under Article XX(a) of the General Agreement on Tariffs and Trade (GATT).[78] Ultimately, however, adjudicators concluded that the measure was not justified because it had not been demonstrated that the aspects of the measure found to be inconsistent with provisions of the GATT were "necessary" to achieve social inclusion and access to information (digital divide) within the meaning of Article XX(a).[79]

(e) Promoting inclusiveness through special and differential treatment and technical assistance

WTO agreements recognize the constraints faced by developing economies. They therefore include various special and differential treatment (S&D) provisions to help them implement WTO rules and participate more effectively in international trade. These provisions aim to increase trade opportunities for developing economies and require members to safeguard the interests of developing

Opinion piece

Building global chains of trust

During the Industrial Revolution, living standards in a small group of economies broke free of past growth trends. Driven on by innovations that systematically mobilized science, incomes and public health rapidly improved. It was the epoch of the "invention of innovation".

That epoch is about to be repeated: AI represents a major re-invention of innovation, positioning humanity to revolutionize fields such as healthcare, agriculture and material efficiency. However, AI also introduces unprecedented levels of distrust in the goods and services it creates and powers. Addressing this distrust is where the WTO can play a crucial role, by developing and enforcing international AI regulations.

Trust is fundamental in both national and international contexts. Consider the chain of trust involved in treating a child's fever with antibiotics: from the doctor's certification to the drug's approval by government agencies to enforcement through malpractice litigation. This trust ensures the safety and efficacy of the treatment.

In international trade, the chain of trust is also fragile. Historically, trade has involved one-sided trust e.g., China exported blue jeans and imported US aircraft. Now, with AI-enabled, data-generating products, trust must be mutual, not one-sided.

To address this, we must build an international chain of trust. The WTO is well-positioned to contribute to this project. The links of the chain separate into two broad areas, technical standards and social values. Social values include views on things like privacy and what constitutes harmful content. No single international regulatory body can rebuild the many technical and social dimensions of the chain of trust. Multiple approaches are needed.

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The WTO is uniquely suited to managing technical disputes. Specifically, the TBT and SPS committees provide a highly effective forum for technical disputes. Since 1995, around 56,000 regulatory measures have been notified to the TBT Committee, with only around 830 STCs raised and only 11 disputes resulting in a panel report. This track record of soft-law mediation highlights the WTO's effectiveness in technical dispute resolution.

What makes WTO committees such as TBT and SPS committees even more unique is that they bring technical experts together with government officials who understand the social dimensions of disputes. Thus, technical and social issues are explored simultaneously. In contrast, other standards-setters, such as the 3rd Generation Partnership Project (3GPP) collaborative project of telecommunications associations, which sets 5G and 6G standards, are poorly suited to discussing social values disputes because the discussion can be dominated by certain firms or governments. This does not happen in the TBT and SPS committees.

Policymakers are closely focused on global value chains. They must now become equally attentive to the problem of deteriorating global chains of trust. The WTO has a unique role to play in this.

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economies when adopting trade measures. These provisions also grant developing economies flexibilities and longer implementation periods with respect to their WTO obligations and commitments, or are concerned with the provision of technical assistance to developing economies. Some WTO S&D provisions apply exclusively to LDCs. Technical assistance and S&D have been stressed in various WTO "soft law" instruments, such as the TBT Conformity Assessment Procedures Guidelines (WTO, 2024b), the two TBT-related March 2024 Ministerial Declarations[80] and the

TBT Committee's Six Principles,[81] in particular Principle 6 on "Development Dimension". These WTO instruments play an important part in promoting regulatory alignment and stress the importance of technical assistance to help developing economies overcome their constraints, including in the area of national quality infrastructure (see Chapter 4(b)(iii)). As seen in Chapter 2, investment in AI is unequal across the globe, and policy action is largely dominated by developed economies. Given the unprecedented opportunities that AI offers to improve productivity and stimulate growth, a lack

of investment in and policy action with regard to AI is likely to exacerbate further the already significant digital divide. Additional international financial and technical support is needed to build the capacity of developing economies in AI and enable them to benefit from this technology.

Technical assistance and capacity-building are key pillars of the WTO's work and play a fundamental role in furthering understanding of the WTO rules and agreements and of other trade-related topics. Training on AI and trade are being integrated into some WTO technical assistance activities; for example, the WTO has incorporated the topic of AI and IP into its technical cooperation activities, including two flagship technical assistance events (the WIPO-WTO annual colloquium for IP researchers and teachers and the WIPO-WTO annual advanced course on topical IP policy issues for government officials). However, the WTO alone cannot address all of the challenges related to trade, including digital trade and new technologies such as AI. Capacity-building, more broadly, is also frequently provided through various multi-agency and multi-stakeholder programmes.

Multi-stakeholder programmes like Aid for Trade and the Enhanced Integrated Framework could be further leveraged to help developing economies seize the benefits of AI for trade. Enhancing international cooperation is critical for making digital trade more inclusive (IMF-OECD-UN-WBG-WTO, 2023). The Aid for Trade initiative is a WTO-led multi-stakeholder programme launched in 2005 to help developing economies, and in particular LDCs, to build the trade capacity and infrastructure they need to benefit from trade opening. The initiative can play an important role, for instance, in supporting the governments of developing economies in their efforts to enhance connectivity and leverage technologies like AI for trade by adapting their policies to provide an enabling environment for investment, competition and innovation. Some recent Aid for Trade projects have focused on sectors such as transport, soft and hard infrastructure, and agriculture, which already integrate an AI dimension. Such projects aim to help beneficiary economies use AI to optimize transportation or manufacturing processes, or to promote sustainable agriculture. Beyond direct support for using AI, Aid for Trade contributes to bolster digital connectivity by fostering physical and digital infrastructure, both of which are essential to foster AI deployment. Aid for Trade commitments to the ICT sector stood at around US$ 2 billion in 2022. Launched in 2008, the Enhanced Integrated Framework's institutional and productive capacity-building projects also help participating LDCs to develop digital strategies and skills. In addition to these initiatives, the WTO Secretariat and the World Bank are working together on the "Digital Trade for Africa" project. The aim of this project is to support efforts by African economies to develop the hard and soft infrastructure necessary to harness the opportunities of digital trade. Capacity-building and the digital divide have also been addressed under the Work Programme on E-commerce (see section 4(a)(ii)). Members have shared their own experience with regard to the challenges that they face in building their digital capacity, but also examples of projects and programmes designed to create a conducive e-commerce environment.

(f) Scholars' views on the possible implications of AI for international trade rules

The WTO provides a framework that can help address the trade-related aspects of AI governance but the rise of AI could also have implications for international trade rules. To explore these implications, academics working at the intersection of AI and trade were asked to respond to a survey (see Annex 4).[82] This section presents their views based on their responses to the survey and related literature. Relaying questions raised by academics and experts is important to help better understand the dynamically evolving context in which the WTO agreements operate. However, the views expressed do not reflect the positions or opinions of WTO members or the Secretariat and are without prejudice to members' rights and obligations under the WTO agreements. The academics' opinions expressed herein are the sole responsibility of the respective authors.

AI gives renewed emphasis to some well-known issues raised by the increasing digitalization of our economies. These include issues related to cross-border data flows, data localization, source code, and the blurring of the lines between goods and services (see also Box 4.4).[83]

AI has prompted some academics to wonder about the implications of the technology for international trade rules. The unique characteristics of AI, and in particular the technology's capacity to learn, evolve and generate outputs autonomously (see Chapter 1), and the greater interactivity that this implies, could, these academics argue, pose new challenges for regulators, with ramifications for trade. For example, some academics wonder whether automated legal advice tools, which are increasingly used for a range of tasks by a number of law firms, may comply with qualification requirements and how this may relate to the General Agreement on Trade in Services (GATS).[84] Other authors also wonder whether generative AI's ability to produce output autonomously might not make the classification or the determination of the origin of certain services more complex.[85]

Some scholars have stressed the benefits of basing services measures on international standards and notifying regulations and standards on such services. As already noted, experts have pointed to the fact that widely differing domestic regulatory approaches may lead to fragmentation and hamper the opportunities and benefits associated with AI. International standards play an important role in promoting regulatory coherence. The GATS, however, contains limited provisions on standards. In addition, the lack of TBT-like disciplines related to technical regulations, standards and conformity assessment procedures in the GATS may lead members not to notify measures that only apply to AI-enabled services.[86]

Scholars also note that recent AI developments may lead members to take a fresh look at the WTO reference paper on telecommunications. An expert has stressed the importance of assessing how the digital transition has impacted competition, for example by making some markets harder to define, and market dominance more difficult to identify. This expert has suggested that disciplines on anti-competitive behaviour in telecommunications, such as those covered by the reference paper,[87] should take account of AI developments, in particular the shift to programmable software defined networks and network function virtualization – both of which are increasingly AI-enabled – which allow traffic on telecommunications networks to be automatically optimized, and thereby affect the nature of competition.[88]

Academics have also suggested that, given the pervasive nature of AI and the complexities and sensitivities of the issues it raises, regulators and businesses could benefit from notifications of draft measures addressing AI, similar to what is done in the TBT Committee. Regulations related to services are particularly relevant for AI. According to one expert, one option could be to introduce a mechanism allowing WTO members to notify draft measures related to AI in the context of the GATS Council. Such a mechanism could enhance transparency and help to address concerns related to AI-enabled services.[89]

On the goods side, some academics are of the view that customs valuation issues and expanding the scope of the Information Technology Agreement (ITA) could warrant attention. As noted in Box 4.4, while the Customs Valuation Agreement and the 1995 Decision on Valuation of Carrier Media Bearing Software for Data Processing Equipment can be useful vehicles to capture the value of AI-enabled features of imported goods, the evolutionary nature of AI raises new issues. For example, some experts indicate that the software embedded in automated vehicles or other AI-enabled devices does not fit squarely with the 1995 Decision. If such software were to fall outside the scope of the Decision, then the question would be how an electric vehicle embedded with free AI software that provides for basic self-driving features should be valued, if it integrated the possibility to upgrade the software for a significant price later on to achieve a much higher degree of autonomy. Given the rapid pace of innovation and the potential for upgrading hardware that supports AI, as well as for AI's extensive application in new ICT products, an expert suggested that consideration could also be given to expanding the scope of the ITA to further support AI development and deployment.[90]

A key question raised by academics concerns the role of private parties and non-governmental bodies in the development of AI-related standards, which are key to trustworthy AI. The TBT Agreement contains various provisions concerning standards. Some provisions require WTO members, when appropriate and when possible, to base their TBT measures on existing international standards adopted by international bodies. The TBT

Agreement's Annex 3 ("Code of Good Practice for the Preparation, Adoption and Application of Standards") also contains disciplines on domestic standards, which include not only those adopted by members' governmental bodies, but also those adopted by non-governmental bodies located within a member's territory. There is an ongoing discussion in the TBT Committee on whether "non-governmental" standards relate more broadly to "private standards", as this is a term not used in the TBT Agreement (WTO, 2021). Given that purely "private" standards (e.g., standards created by industry consortia) may play an important role in AI governance and regulation, an expert suggested that consideration could be given to clarifying the meaning of "non-governmental" standards under the TBT Agreement, including whether or not, and to what extent, this term may encompass more broadly the concept of "private" standards. This expert suggested that it could be useful to discuss how the mechanisms and tools that already exist in the TBT Agreement (i.e., Annex 3: Code of Good Practice for the Preparation, Adoption and Application of Standards) can be best utilized to ensure that AI standards adopted by non-governmental bodies do not result in unnecessary trade restrictions.[91] Other experts have suggested that dialogue with private parties, in particular non-governmental standard-setting bodies that develop AI standards and guidelines, could be strengthened.[92]

According to some experts, current WTO exceptions may not be sufficient to address the challenges raised by AI. These academics note that a fresh look at the current language used in current WTO exceptions, which is based on a pre-digital age, may be needed to take AI developments into account.[93]

AI also challenges current approaches to IP rights. As noted in Chapter 3(a)(iv), AI poses challenges to the human-centric approach to IP rights. In addition, algorithmic secrecy can prove problematic where there is a need to ensure AI's trustworthiness by investigating how it has arrived at results (see Section 3(b)(iii)).[94] An expert has noted that balanced IP rights policies need to be put in place worldwide in order to preserve the scope for "freedom to operate" for new entrants. Governments and companies trying to join the global knowledge-based economy in a world driven by increasingly faster innovation cycles powered by a technology and AI, need access to large datasets. This access could be rendered more difficult where large stocks of data are protected by IP rights. This expert has suggested that certain choices made decades ago, when members joined the TRIPS Agreement, may no longer be up to date and could be reviewed against the backdrop of new technologies.[95] Meanwhile, some academics have suggested that consideration could be given to fostering dialogue in the TRIPS Council to address IP issues raised by AI. Issues that merit particular attention, in their view, are those related to the use of copyrighted material to train AI systems, the legal status of AI systems as creators or inventors, whether AI-generated works are eligible for copyright protection, the transparency of algorithms, and the balance between IP protection and competition, with adequate IP protection terms.[96]

Another issue raised in survey responses relates to economic rent and competition issues arising from AI's scalability and network effects. As seen in Chapter 2, AI generates significant economic rents due its scalability and network effects, leading to market concentration. An expert has noted that the multilateral rules-based system emerged in a context of low economic rent in a mature, globalized industrial economy.[97] According to some survey respondents, reviving discussions on competition and technology transfer to address the issues raised by an AI-driven rent-rich world would be worth considering.[98]

Some academics have suggested that AI's expected disruptive impact on employment may call for new trade approaches to mitigating disruptions to labour markets. An expert has noted that the WTO Safeguards Agreement, which aims to remedy serious injury, caused by a surge of imports of a specific product, to the domestic industry producing "like products", may not capture AI's potentially significant impact on tasks performed by humans across all economic sectors and industries. This expert argues for the development of a conceptually appropriate approach to manage the trade-related impacts of AI adoption that threaten harm to "tasks across industries, without the pre-condition that there be a competing 'industry' in the importing country".[99]

Some respondents argue that the current rush to regulate AI is creating a risk of regulatory fragmentation, and it is therefore urgent to find a common ground. In their view, however, AI may not yet be "treaty-ready" although it may be "discussions-ready".[100] The emerging fragmented regulatory landscape is raising significant concerns, leading to calls for greater international coherence and multilateral commitments.[101] One expert noted that it seemed more likely that a more harmonized multilateral approach could be achieved if economies take a balanced and progressive view of regulation, covering potential regulatory gaps and adopting high-level governance mechanisms rather than overly prescriptive

models.[102] Given AI's fast-evolving and cross-cutting nature and the significant challenges it is raising, some experts have suggested the need for a "WTO AI and Trade" task force or working group, or even a dedicated committee.[103] Such an approach, they reason, would help to overcome "the siloed nature of WTO rules that does not permit addressing AI-related issues adequately", not least because of the goods-service classification issues,[104] and this would, in their view, make it possible to discuss trade-related issues in one single place in a coordinated manner;[105] (ii) facilitate cooperation and coordination; and (iii) enable more stakeholders to be informed, get involved and share best practices.[106] A recent report by the World Economic Forum (WEF, 2024a) outlines various possible areas of work for the WTO, including hosting educational sessions, conducting a comprehensive assessment of how the current trading system applies to AI and identifying gaps in current rules, encouraging members to present and notify their AI legislation and regulations, reviewing the implications of AI for IP rules, developing rules or best practices around transparency and disclosure with reference to AI use, developing guidance on how to facilitate the transparency and verification of AI systems across borders, and discussing the development of AI technical standards.

The above-mentioned views suggest that more research is necessary. Reflections on the implications of AI for trade rules are still in their early stages. Despite a growing body of literature, more work is needed to fully explore the possible implications of AI for regulatory frameworks and trade rules. Given the speed of AI developments, it is too early to fully grasp these issues in a definitive manner. It is important to underline that discussions on the implications of AI for trade rules do not detract from the rights of WTO members to regulate AI in line with the existing WTO rules. For example, under the GATS, members have the capacity to set non-discriminatory qualification requirements for the supply of services. Rather, this report is an invitation to explore the potential implications of AI for international trade, including its rules, with a view to ensuring that we are prepared for the challenges to come.

Box 4.4:
Classification of some digital products: a long-debated issue in the WTO

Debates about the impact of digitalization on how certain products might be treated under WTO rules are not new. Members have long discussed the classification of certain digital products in the context of the WTO Work Programme on Electronic Commerce, adopted in 1998.[107] Classification discussions have, over the years, focused on

electronically delivered software. At issue is whether, or under what circumstances, certain products transmitted via electronic means should be covered under GATS rules (as services) or GATT rules (as goods).[108] This question, which remains open in the WTO context, may be pertinent in the case of AI, on the basis that AI

systems and models are software algorithms, although this has not been discussed in that specific context in the WTO.[109]

As AI becomes more and more ubiquitous and permeates all economic sectors in different and complex ways, classification issues may resurface. As already discussed, AI also raises issues of IP rights, which are covered by the WTO TRIPS Agreement. All of this may thus present challenges in terms of which or how WTO rules apply in different contexts.[110]

Endnotes

1 Thematic Session on regulatory cooperation on "intangible digital products" organized in the context of the WTO Technical Barriers to Trade (TBT) Committee. See WTO official document number G/TBT/GEN/356 (20 July 2023), available at https://docs.wto.org/.

2 See https://www.gov.uk/government/publications/ai-safety-summit-2023-the-bletchley-declaration/the-bletchley-declaration-by-countries-attending-the-ai-safety-summit-1-2-november-2023.

3 The fundamental role of regulatory transparency was recently recognised by the panel in EU and certain Member States – Palm Oil (Malaysia), Panel Report, para. 7.719.

4 Composed of all WTO members, the WTO Technical Barriers to Trade (TBT) Committee is the body responsible for the implementation of the TBT Agreement. For more details on the functions and work of the Committee, see WTO (2021).

5 European Union. See WTO official document number G/TBT/N/EU/850, available at https://docs.wto.org/.

6 https://www.epingalert.org/en/TradeConcerns/Details?imsId=736&domainId=TBT European Union. See WTO official document number G/TBT/N/EU/850, available at https://docs.wto.org/.

7 Kenya. See WTO official document number G/TBT/N/KEN/1604, available at https://docs.wto.org/.

8 See Lim (2021).

9 See https://www.epingalert.org/.

10 See Annex 3 of the TPRM (https://www.wto.org/english/tratop_e/tpr_e/annex3_e.htm).

11 See, e.g., China TPR (2024), Report by the Secretariat (WT/TPR/S/458), paragraphs 21, 34, 3.92, 3.119 and 3.140; Canada TPR (2024), Report by the Secretariat (WT/TPR/S/455), paragraphs 3.154, 3.227; 3.272, 3.294, and 3.329 3.330; Japan TPR (2023), Report by the Secretariat (WT/TPR/S/438/Rev.1), paragraphs 2.40; 3.134, 3.168; 3.173 and 3.227; and European Union TPR (2023), Report by the Secretariat (WT/TPR/S/442), paragraphs 2.51, 3.168 and 3.282.

12 WTO official document number IP/C/W/698. Some members expressed their willingness and interest to engage (WTO official document number IP/C/M/108/Add.1).

13 For more information see WTO (2022; 2023b; 2023a; 2023d; 2023c).

14 See WTO official document numbers G/TBT/W/788 (16 February 2024); G/TBT/W/780/Rev.1 (1 March 2024) and G/TBT/W/789/Rev.1 (23 May 2024).

15 See WT/MIN(22)/32, available at https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/MIN22/32.pdf&Open=True.

16 For more information see: https://www.wto.org/english/tratop_e/sps_e/sps_2506202410_e/sps_2506202410_e.htm.

17 See WTO official document number G/SPS/W/361 (22 April 2024). Proposal from Australia under the 6th Review of the SPS Agreement. Australia observes that digitally enabled solutions are "increasingly used within the regulatory frameworks that govern agri food trade". With respect to AI, specifically, Australia notes that "AI platforms also have the potential for assessing compliance and conformance and implementing real-time follow up and checking of goods and accompanying documentation." Australia thus proposed that the SPS Committee put "a strong focus on the application of digital technologies [...] as well as the potential application of artificial intelligence" so as to "ensure that the benefits and challenges of these technologies can be considered by all Members".

18 For more information on these issues, see for example National Board of Trade Sweden (2023), Kerry (2024) and Meltzer (2023).

19 See WTO official document G/TBT/M/93 for the minutes of the meeting of 6-7 June 2024, paras. 7.1-7.2.

20 See WTO official document G/TBT/GEN/385 for the UNECE documents and a brief explanation on the draft guidance being discussed.

21 See https://www.wto.org/english/tratop_e/sps_e/sps_2506202410_e/sps_2506202410_e.htm.

22 TBT Agreement, Articles 2.4, 2.5 (second sentence), 5.4 and Annex 3.F. On the presumption under Article 2.5 (second sentence) see Panel Report, Australia – Tobacco Plain Packaging, paragraphs 7.254 7.417. The TBT Agreement states that when an international standard is not an "effective" or "appropriate" means for the fulfilment of the legitimate objectives pursued by a given regulation, a member is not required to use it as a basis. In addition, the TBT Agreement recognizes that developing-economy members should not be expected to use international standards when these standards are not appropriate in light of their development, financial and trade needs (Article 12.4).

23 See Articles 2.6 and 5.5 and Annex 3.G of the TBT Agreement.

24 See Article 11.2 of the TBT Agreement. See also the 2024 WTO Ministerial Declaration on "Strengthening Regulatory Cooperation to Reduce Technical Barriers to Trade" (WT/MIN(24)/35), paragraph 5(h) and the 2024 Ministerial Declaration on the "precise, effective and operational implementation of special and differential treatment provisions of the Agreement on the Application of Sanitary and Phytosanitary Measures and the Agreement on Technical Barriers to Trade" (WT/MIN(24)/36) (available at https://www.wto.org/english/thewto_e/minist_e/mc13_e/documents_e.htm). See also Principle 6 ("development dimension"), of the TBT Committee's "Six Principles" (https://www.wto.org/english/tratop_e/tbt_e/principles_standards_tbt_e.htm).

25 See also section 3(c) for a discussion on socio-technical risks.

26 See references to ISO/IEC foundational AI standards in Annex 3.II.A. As described by Callegari et al. (2022)."Standards have the potential to clarify ambiguities and build common understanding around AI risk concepts and terminologies … foundational standards … are important building blocks in the trustworthy AI domain as they lay the groundwork for future assurance mechanisms like conformity assessments and certification … Given the multistakeholder nature of AI committees, SDOs were seen to be particularly well placed to achieve consensus around key concepts such as bias or human oversight. … Nevertheless, some interviewees urged caution around the role of standards in AI ethics. A government official stressed that 'quite a lot of things that people are worried about in AI risk is a genuine question of ethics or values, where people could completely disagree about the right answer' and that SDOs are not the right institutions to set these values … Instead, standards should enable implementation of agreed-upon values proposed by governments or multilateral organisations …. Consequently, for AI risk areas where fundamental ethical dilemmas persist, standardisation work may face additional complexities and delays."

27 See ISO/IEC Technical Report 24368 (2022): AI – Overview of Ethical and Societal Concerns. See also NIST "A Plan for Global Engagement on AI Standards" (available at: https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-5.pdf). However, others, while considering that AI standards can address "fundamental rights", caution that – in this area at least – this role should be strictly limited to non-normative issues, e.g., disseminating information and encouraging best practices in processes and measurement techniques; standards however "can never attempt to decide on a trade off or on a level of acceptability of a given fundamental right risk" (Gornet and Maxwell, 2024).

28 The EU AIA, for instance, refers to the relevance of mutual recognition agreements, that are in line with the WTO TBT Agreement, for facilitating certification procedures of AI systems covered by that regulation. AIA, Preamble, Recital (127).

29 Decision of the Committee on Principles for the Development of International Standards, Guides and recommendations with Relation to Articles 2, 5 and Annex 3 of the Agreement, WTO official document number G/TBT/9, 13 November 2000, para. 20 and Annex 4.

30 See TBT Handbook, pp. 32-33; OECD and WTO (2019, p. 41-43, 61, 80 & 95-96); and McDaniels et al. (2018, p. 819-821).

31 For instance, the G7 Trade Ministers' Digital Trade Principles make specific reference to the Six Principles as the basis for developing international standards for information and communication technology (ICT). See also https://www.gov.uk/government/news/g7-trade-ministers-digital-trade-principles.

32 See, for example, references in UNESCO (2021) to conformity assessment measures and related instruments.

33 See WTO official document G/TBT/54, Section 2.5 ("Acceptance of results").

34 See WTO official document G/TBT/W/792 (26 February 2024). More broadly on mutual recognition agreements, see WTO Secretariat Note G/TBT/W/42 (28 April 1997).

35 Provisions related to data flows, data localization and source code are not included in the stabilized text that was issued on 26 July 2024 (WTO official document INF/ECOM/87).

36 "Services Sectoral Classification List", WTO official document MTN.GNS/W/120. The list includes the sector of "computer and related services", which refers to category 84 under the Central Production Classification (Provisional).

37 For the four modes of supply distinguished under the GATS, see https://www.wto.org/english/tratop_e/serv_e/gatsqa_e.htm#4.

38 The 1999 Progress Report on E-commerce adopted by the Council for Trade in Services characterized the electronic delivery of services as generally considered to fall within the scope of the GATS. Dispute settlement cases involving services have, to date, echoed this line of reasoning. See the Progress Report to the General Council, adopted by the Council for Trade in Services on 19 July 1999 (WTO official document number S/L/74, 27 July 1999).

39 In the Services Sectoral Classification List (see https://www.wto.org/english/tratop_e/serv_e/serv_sectors_e.htm), "computer and related services" are composed of five subsectors covering different elements of the CPC 84 category: consultancy services related to the installation of computer hardware (CPC 841); software implementation services (CPC 842); data processing services (CPC 843); data base services (CPC 844); other (CPC 845+849).

40 This does not take into account horizontal limitations that may affect all sectors within the schedule. GATS mode 4 (movement of natural persons) commitments tend to refer to horizontal commitments, which are typically "unbound" except for specified categories of natural persons.

41 In the GATS classification system, the telecommunication services sector is composed of 15 subsectors.

42 See the Decision on the Valuation of Carrier Media Bearing Software in WTO document G/VAL/5, paragraphs B.2(i) and (ii).

43 See WTO document WT/MIN(24)/38.

44 Proponents note that the standstill on customs duties has supported a stable and predictable environment for digital trade, allowing it to thrive. Because it signals that WTO members aim to keep current customs duties practices on electronic transmissions unchanged, businesses gain the necessary confidence to invest and create jobs. However, some WTO members have expressed concerns about the lack of clarity in the scope of the moratorium and in the definition of electronic transmissions, and the potential lost customs revenue. These members have expressed the desire to maintain policy space in light of the uncertainty associated with rapid technological change (IMF-OECD-UN-WBG-WTO, 2023).

45 As noted above, AI trustworthiness depends on its ability to meet stakeholders' expectations in a "verifiable way", for example via certification against technical specifications in a regulation or standard.

46 "As AI technologies increasingly underpin the digital services we use every day, the importance of the National Quality Infrastructure in assuring those AI technologies will be brought into even sharper focus" (TIC, 2024). As WTO Deputy-Director General Jean Marie Paugam said in his opening remarks at the 5th China Quality Conference, "it is clear that digitalisation and decarbonation have a potential to revolutionize trading patterns and have implications for Quality Infrastructure. Artificial intelligence and other digital products have an immense potential to facilitate trade while pushing the frontiers of regulatory cooperation on cybersecurity and intangible digital products." (1 September 2023, https://www.wto.org/english/news_e/news23_e/ddgjp_01sep23a_e.pdf). See https://www.tic-council.org/news-and-events/news/press-release-accredited-tic-sector-key-providing-confidence-ethical-ai-development.

47 See TRIPS Agreement, Article 29.1 (https://www.wto.org/english/docs_e/legal_e/27-trips_01_e.htm).

48 Under Article 13 of the TRIPS Agreement, the three-step test stipulates that exceptions to copyright protection must only cover special cases, must not conflict with a normal exploitation of the work, and must not be unreasonably prejudicial to the legitimate interests of the copyright-holder. Similar tests are found in Article 17 for exceptions to trademark rights, and in Article 30 for exceptions to patent rights.

49 See TRIPS Agreement, Article 1.1 (https://www.wto.org/english/docs_e/legal_e/27-trips_01_e.htm).

50 TRIPS Agreement, Article 66.2 (https://www.wto.org/english/docs_e/legal_e/27-trips_01_e.htm).

51 TBT Agreement, Preamble, 8th recital.

52 See https://www.wto.org/english/tratop_e/devel_e/dev_wkgp_trade_transfer_technology_e.htm.

53 WTO official documents IP/C/R/TTI/CAN/2, 3 and 4; IP/C/R/TTI/EU/2 and 4; IP/C/R/TTI/CHE/2, 3, and 4. IP/C/R/TTI/USA/2, 3, and 4, available via https://docs.wto.org/.

54 WTO official document WT/GC/W/443, which requests that a Working Group on Trade and Technology Transfer be established, notes that "the lack of full and faithful implementation of these provisions by developed countries have not allowed developing countries to fully benefit from the growth in international trade", and in document WT/WGTTT/3, members note that "in most cases, however, such provisions contain only 'best-endeavours' commitments, and are not mandatory rules. The question that arises is to what extent developing countries benefit from these instruments". More recently, the African Group noted that, "A core concern of LDCs has been that while some Members have made efforts, [...] some of the policies and programmes reported by developed countries either barely target or do not at all target LDCs" (document JOB/TN/CTD/8, JOB/TNC/121). Noting that "Article 66.2 of the TRIPS Agreement places a positive obligation on developed countries to provide incentives to enterprises and institutions in their territories for the purpose of promoting and

encouraging technology transfer to least developed country Members in order to enable them to create a sound and viable technological base", LDCs have also "expressed reservations about the extent to this obligation has been fulfilled" (documents WT/GC/W/868, G/C/W/825, WT/COMTD/W/270, IP/C/W/695 and WT/WGTTT/W/33).

55 See also WTO official document WT/WGTTT/3.

56 Under the most-favoured-nation (MFN) principle, WTO members cannot discriminate between their trading partners. This principle is enshrined in several provisions of the WTO Agreements, such as Article I of the GATT, Article II of the GATS, Articles 2.1 and 5.1.1 of the TBT Agreement and Article 4 of the TRIPS Agreement. Meanwhile, the national treatment principle provides that imported and locally produced goods shall be treated equally, at least after the foreign goods have entered the market (e.g., Article III of the GATT and Articles 2.1 and 5.1.1 of the TBT Agreement). The same principle applies to foreign and domestic services (Article XVII of the GATS), and to foreign and local trademarks, copyrights and patents (Article 3 of TRIPS).

57 See WTO official number G/TBT/GEN/356.

58 See Article 2.3 of the TBT Agreement.

59 Panel Report, EC – Sardines, paras. 7.79-7.82. See also EU and certain Member States – Palm Oil (Malaysia), paragraphs 7.189 (and its footnote 374); 7.567 (and its footnote 875); and 7.676 (and its footnote 997). See also WTO (2020a).

60 Article 5.2.7 of the TBT Agreement states that when product specifications in the technical regulations change, the procedures for assessing conformity with them may also need to change accordingly.

61 See also WTO official document G/TBT/GEN/356.

62 WTO official document G/IT/25. For a more detailed overview of all elements of the ITA Committee's NTM Work Programme, see WTO (2017).

63 See WTO official document G/IT/W/17 and its subsequent revisions, "Draft List of the Types of Conformity Assessment Procedures for EMC/EMI used by ITA Participants".

64 For example, general-purposes AI models are general by nature. AI systems, on the other hand, are usually meant to apply to specific domains and applications.

65 See https://www.epingalert.org/en/TradeConcerns/Details?imsId=736&domainId=TBT.

66 The WTO agreements covered by the Dispute Settlement Understanding (DSU) are those set out in Appendix 1 to the DSU.

67 For more information, see https://www.wto.org/english/tratop_e/dispu_e/dispu_e.htm.

68 While a total of 54 disputes lodged since 1995 have included claims of violation of the TBT Agreement, only 11 of these proceeded into actual adjudication by panellists and resulted in panel and/or Appellate Body reports. The vast majority of these disputes never proceeded beyond consultations, with some ending by virtue of mutually agreed solutions reached by the parties involved. See WTO (2024a).

69 There are 35 notifications if the addenda are considered. See, e.g., WTO official documents G/TBT/N/USA/1597, G/TBT/N/TPKM/399, G/TBT/N/TPKM/400, G/TBT/N/JPN/610, G/TBT/N/KOR/776, G/TBT/N/EU/567, G/TBT/N/GBR/36, G/TBT/N/TPKM/265, G/TBT/N/USA/2041 and G/TBT/N/GBR/62.

70 There are 30 notifications if the addenda are considered. See, e.g., WTO official documents G/TBT/N/KOR/827, G/TBT/N/USA/1283, G/TBT/N/JPN/752 and G/TBT/N/ARE/550.

71 There are 18 notifications if the addenda are considered. See, e.g., WTO official documents G/TBT/N/KOR/1164, G/TBT/N/FRA/219, G/TBT/N/DNK/108, G/TBT/N/FRA/203, G/TBT/N/USA/1497, G/TBT/N/TPKM/378 and G/TBT/N/JPN/527. There were no STCs raised on robotics at the time period.

72 See, e.g., WTO official documents G/TBT/N/CHN/1742 and G/TBT/N/CHN/880. The legitimate public policy objectives pursued by these measures (as indicated in their notification forms) included the prevention of deceptive practices, consumer protection and information, quality requirements, harmonization, protection of human health or safety, and protection of the environment. The specific problems or challenges they purport to address included interoperability, cybersecurity, privacy and data regulation, and consumer protection.

73 These are: (i) requirements needed for the type approval of the Automated Driving System of fully automated vehicle (STC ID 766); (ii) "On the safety of wheeled vehicles", including as it concerns various advanced autonomous functions (STC ID 687); (iii) the repairability index of various electronic products, including robot electric lawnmowers (STC ID 657); (iv) criteria and test procedures for the approval of motor vehicles with respect to their emergency lane keeping system, including with respect to automated and fully automated vehicles (STC ID 700); and (v) Internet of Vehicles Cybersecurity Protection Guideline Rules (STC ID 537).

74 See Lim (2021) and WTO (2020).

75 EC – Computer Equipment https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds62_e.htm and EC – IT Products https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds375_e.htm, respectively.

76 US – Gambling https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds285_e.htm.

77 China – Publications and Audiovisual Products https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds363_e.htm.

78 Brazil – Taxation: https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds472_e.htm, paragraph 7.583.

79 Brazil – Taxation: https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds472_e.htm, paragraph 7.622.

80 i.e., the Ministerial Declaration on "Strengthening regulatory cooperation to reduce technical barriers to trade" (WT/MIN(24)/35), paragraph 5(h), and the Ministerial Declaration on the "precise, effective and operational implementation of special and differential treatment provisions of the Agreement on the Application of Sanitary and Phytosanitary Measures and the Agreement on Technical Barriers to Trade" (WT/MIN(24)/36).

81 See https://www.wto.org/english/tratop_e/tbt_e/principles_standards_tbt_e.htm.

82 Responses were received from Susan Aaronson (George Washington University), Dan Ciuriak (Centre for International Governance Innovation), Johannes Fritz (Digital Policy Alert), Olia Kanevskaia (Utrecht University), Kholofelo Kugler (University of Lucerne), Heidi Lund (National Board of Trade Sweden), Petros Mavroidis (Columbia Law School), Hildegunn Kyvik Nordås (Council on Economic Policies (CEP), Örebro University), Eduardo Paranhos (Associação Brasileira das Empresas de Software) and Shin-Yi Peng (National Tsing Hua University).

83 Survey responses by Dan Ciuriak, Johannes Fritz, Kholofelo Kugler, and Shin-Yi Peng. One expert suggested looking into the classification issue in terms of "durable" products, e.g., music downloadables, versus "non-durable" products, e.g., streamed music (survey response by Dan Ciuriak; see also Ciuriak, 2022).

84 See Liu and Lin (2020).

85 See WEF (2024) and survey responses by Hildegunn Kyvik Nordås, Kholofelo Kugler and Petros Mavroidis.

86 Survey response by Kholofelo Kugler.

87 See https://www.wto.org/english/tratop_e/serv_e/telecom_e/tel23_e.htm.

88 Survey response by Hildegunn Kyvik Nordås.

89 Survey response by Kholofelo Kugler.

90 Survey response by Johannes Fritz.

91 Survey response by Olia Kanevskaia.

92 Survey response by Dan Ciuriak and Shin-Yi Peng.

93 Survey response by Dan Ciuriak and Shin-Yi Peng.

94 See also survey response by Dan Ciuriak.

95 Survey response by Dan Ciuriak.

96 Survey response by Dan Ciuriak, Johannes Fritz.

97 Survey response by Dan Ciuriak.

98 Survey response by Susan Aaronson and Dan Ciuriak. See also Ciuriak (2024).

99 Survey response by Dan Ciuriak.

100 Survey response by Dan Ciuriak.

101 Survey response by Susan Aaronson, Olia Kanevskaia, Heidi Lund and Eduardo Paranhos.

102 Survey response by Eduardo Paranhos.

103 Survey responses by Kholofelo Kugler. See also Liu and Lin (2020).

104 Survey response by Kholofelo Kugler. Johannes Fritz also notes that "Many AI applications cut across multiple sectors, and core issues like data governance and cybersecurity are horizontal in nature. Relying solely on GATS schedules could lead to fragmentation rather than coherence".

105 Survey response by Kholofelo Kugler.

106 See Liu and Lin (2020).

107 Services that are clearly identified as such – e.g., legal services or accounting services – and are traded digitally do not pose classification issues.

108 Classification matters because rules for goods (according to the GATT, or other specialized WTO agreements addressing trade in goods) and services (according to the GATS) differ.

109 Outside of the WTO, the ISO International Classification System of standards, which applies to goods, has an entry for software, and the WIPO Nice Agreement, which provides a classification system for goods and services for the registration of trademarks, distinguishes between software that can be downloaded – which is classified as a good under class 9 – and software that remains on a company's computer server – which is classified as a service under class 42 (software as a service). In the UN Provisional Central Product Classification (CPC), from 1991, which is commonly used by WTO members to define the scope of commitments under the GATS, computer services comprise various software and computer systems services. The more recent version of the CPC (version 2.1) provides more detail on computer (or information technology services), and classifies "software originals" as a distinct sub-category of IT services. The draft CPC version 3, from 2023, clarifies that AI is covered under relevant existing categories, such as subclasses 83152 "application software provision" and 84392 "on-line software" (https://unstats.un.org/unsd/classifications/CPC/Documents/4-Accompanying-note-Overview-of-the-proposed-main-changes-introduced-in-the-revised-CPC.pdf).

110 For example, in June 2023, members of the WTO TBT Committee, on the basis of a proposal by Canada (WTO official document G/TBT/W/745), held a thematic session on regulatory cooperation on "intangible digital products" (including as they relate to AI) under the TBT Agreement which, like the GATT, is an agreement on trade in goods. See https://www.wto.org/english/tratop_e/tbt_e/tbt_2006202310_e/tbt_2006202310_e.htm.