

Not Trading With the Enemy: The Case of Computer Chips

Olga HRYNKIV^{*} & Saskia LAVRIJSSEN^{**}

Drawing on the analysis of international trade law and the research on the regulation of the semiconductor industry in key players, the United States of America (US), the Netherlands, and Japan, this paper explores under which conditions export controls are compatible with the international trade law framework. To this end, it focuses on the scope of national security exceptions under the agreements of the World Trade Organization (WTO) and examines to which extent export controls on the semiconductor industry can be justified under such exceptions. It discusses the direction in which the current practice and jurisprudence of WTO panels are heading and the possible effects of governments' 'decoupling' strategies toward China on shaping international trade law. This paper suggests that governments might have difficulties justifying their imminent cybersecurity and geo-economic concerns under existing security exceptions and that they should consider either clarifying the scope of such exceptions or changing the approach to dealing with national security issues under the WTO framework.

Keywords: Export controls, computer chips, semiconductors, WTO law, decoupling with China, security exception, geopolitical rivalry

1 INTRODUCTION

Advanced technology, from machine learning to missile systems, from smartphones to weapons of mass destruction, requires cutting-edge computer chips, also known as semiconductors or integrated circuits (ICs).¹ Semiconductor devices, including computer chips, are crucial not only for trade, commercial technology developments, and the energy transition² but also for the advancement of cutting-edge

^{*} A postdoctoral researcher at the Tilburg Institute for Law, Technology and Society (TILT), Tilburg Law School, Tilburg University, The Netherlands. E-mail: o.hrynkiv@tilburguniversity.edu.

^{**} A Prof. of economic regulation and market governance at TILT. E-mail: s.a.c.m.lavrijssen@tilburguniversity.edu. All errors are of the authors' alone.

¹ See more Chris Miller, *Chip War: The Fight for the World's Most Critical Technology* (Simon & Schuster 2022).

² Caterina Favino, *The Role of Semiconductors in the Renewable Energy Transition* (Earth Org 6 Oct. 2022), <https://earth.org/semiconductors/> (accessed 15 May 2023).

technologies that can give countries a military advantage.³ The supply chain for computer chips is global. The chip design, fabrication, testing, packaging, end-use assembly, and production of semiconductor manufacturing equipment (SME) might all happen in different countries.⁴ For example, a few companies in the United States of America (US) and East Asia control chip production.⁵ The most advanced chips are manufactured with current extreme ultraviolet (EUV) lithography machines produced by Advanced Semiconductor Materials Lithography (ASML), a Dutch multinational corporation.⁶ Because of their potential military use, their importance for economic development, and their vulnerability to supply chain interruptions, computer chips, like oil and gas, have gained immense strategic importance.⁷

The US export control policy embraced a complex semiconductor supply chain as a tool in the US-China technology war which led to the substantially reduced flow of advanced chips, chip design software, and SMEs to and from China or ‘technological decoupling’.⁸ While the US unilateral measures impact technology-related trade with China, their long-term effect largely depends on whether the US allies ensuring critical semiconductor supply chain nodes will adopt their own parallel restrictions to prevent China from filling the gap in trade with the US from other sources. In January 2023, the US reached a deal with the Netherlands and Japan to tighten export controls on the semiconductor industry (the Semiconductor Arrangement).⁹ The Semiconductor Arrangement is an ‘understanding’ rather than a formal agreement.¹⁰ Yet, the Chinese government has already expressed concerns that the export barriers targeting trade with China violate the principles of fairness and transparency in international trade and has

³ Sujai Shivakumar & Charles Wessner, *Semiconductors and National Defense: What Are the Stakes?* (CSIS 8 Jun. 2022), <https://www.csis.org/analysis/semiconductors-and-national-defense-what-are-stakes> (accessed 1 Jun. 2023).

⁴ Jacob Katz Cogan, *Contemporary Practice of the United States Relating to International Law*, 117 AJIL 144–150 (2023).

⁵ See more Miller, *supra* n. 1.

⁶ Antonia Hmaidi & Rebecca Arcesati, *Why Europe Struggles With US Export Controls on China* The Diplomat (27 Dec. 2022), <https://thediplomat.com/2022/12/why-europe-struggles-with-us-export-controls-on-china/> (accessed 15 May 2023).

⁷ Cogan, *supra* n. 4, at 144, 146.

⁸ See more Jon Bateman, *US-China Technological ‘Decoupling’: A Strategy and Policy Framework* (Carnegie Endowment for International Peace 2022).

⁹ The Netherlands and Japan lead the global market in lithography machines, allowing the manufacture of chips at an even greater scale ‘with lower costs and higher precision’. See *Dutch Semiconductor Interests in Asia* 61 (Jonas Lammertink et al. eds, Leiden Asia Centre Feb. 2022).

¹⁰ Alexandra Alper & David Shepardson, *U.S. Official Acknowledges Japan, Netherlands Deal to Curb Chipmaking Exports to China* Reuters (1 Feb. 2023), <https://www.reuters.com/technology/us-official-acknowledges-japan-netherlands-deal-curb-chipmaking-exports-china-2023-02-01/> (accessed 16 May 2023).

requested the Netherlands, Japan, and the US to explain their Semiconductor Arrangement in the World Trade Organization (WTO).¹¹

Export controls over commercial goods may represent a violation of international trade commitments.¹² With certain exceptions, WTO law provides for a broad prohibition of export restraints other than tariffs, including export licenses.¹³ Further, the issues would arise under the WTO fundamentals – the most favoured nation treatment obligation – in cases where a state determines to treat certain exporters or exports to different countries differently.¹⁴ Export control measures might also be found in violation of the prohibition of fees and formalities connected with exportation¹⁵ and of the requirement to administer domestic trade regulations regarding exportation ‘in a uniform, impartial and reasonable manner’.¹⁶

WTO law allows its members to restrict trade for security reasons, for example, with respect to military and defence-related goods.¹⁷ Article XXI(b) of the General Agreement on Tariffs and Trade (GATT), which regulates trade in goods, allows each member a broad margin of appreciation in deciding whether such restrictions are necessary.¹⁸ Whereas the concept of national security can be deemed to encompass many areas of domestic interest, Article XXI(b) GATT further narrows down the scope of permissible policies aimed at protecting such security interests.¹⁹ A WTO member can justify trade restrictions under security exceptions only if such restrictions are: (1) ‘relating to fissionable materials’; or (2) ‘relating to the traffic in arms, ammunition and implements of war’ or other similar goods; or (3) adopted ‘in time of war or other emergency in international relations’. The WTO panel in *US – Origin Marking (Hong Kong, China)* confirmed that ‘the subject matters covered in subparagraphs (i) and (ii) are clearly related to the defense and military sector’.²⁰ In contrast to subparagraphs (i) and (ii),

¹¹ Reuters, *China Urges Stronger WTO Monitoring of US-Led Chip Export Curbs* Reuters (5 Apr. 2023), <https://www.reuters.com/technology/china-urges-wto-sift-us-led-chip-export-curbs-2023-04-05/> (accessed 16 May 2023).

¹² See e.g., *Japan – Trade In Semi-Conductors*, GATT Panel Report L/6309 – 35S/116 adopted on 4 May 1988.

¹³ Article XI(1) of the General Agreement on Tariffs and Trade (Geneva 30 Oct. 1947) 55 UNTS 187, provisionally entered into force on 1 Jan. 1948 (hereafter GATT (1947)), superseded by Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations (Marrakesh, Morocco 15 Apr. 1994) 1867 UNTS 14, 33 ILM 1143, entered into force on 1 Jan. 1995 (hereafter GATT).

¹⁴ Article I(1) GATT.

¹⁵ Article VIII(1) GATT.

¹⁶ Article X(3) GATT.

¹⁷ Apart from security exceptions, trade restrictive measures can be claimed justified under other WTO exceptions, e.g., Art. XI(2) or Art. XX GATT.

¹⁸ Other WTO agreements include an almost identical text of security exception, e.g., Art. XIVbis of the General Agreement on Trade in Services and Art. 73 of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs).

¹⁹ Willard L. Thorp, *Trade Barriers and National Security*, 50 Am. Econ. Rev. 433, 434 (1960).

²⁰ *US – Origin Marking Requirements* (21 Dec. 2022) WTO Panel Report WT/DS597/R, at 7.301.

subparagraph (iii) referring to the measures ‘in time of war or other emergency in international relations’ is not defined by reference to a particular type of product but instead by reference to events of certain gravity that have implications for international relations. As a result, Article XXI(b)(iii) and similarly drafted exceptions are the most likely to be pushed to cover other goods, materials, services, and technologies that have no connection to the state’s military and defence capacities or where the existence of such a connection remains disputable.

Drawing on the analysis of international trade law, this paper explores under which conditions export restrictions on the semiconductor industry can be justified under the WTO national security exceptions. Instead of taking a reform-oriented position, it aims to clarify and elucidate the lessons that governments and future panels can learn from the existing WTO jurisprudence on security exceptions. The paper proceeds as follows. *Part 2* reflects on the role of computer chips in the global supply chain and the attempts of the US to contain the technological development of its security competitor, China, by imposing export controls on its semiconductor industry. It also discusses the efforts of the US to convince other countries to restrict China’s access to chip design software and SMEs, focusing on the measures that are or will be introduced in the Netherlands and Japan. *Part 3* analyses the potential outcomes of the ongoing and future trade disputes over export restrictions. It identifies the national security arguments that can be raised in such disputes and analyses how the WTO panels may approach the interpretation of security exceptions under WTO law with respect to export controls. *Part 4* concludes this paper by suggesting that governments might have difficulties justifying their imminent cybersecurity and geo-economic concerns under existing security exceptions.

2 UNILATERAL ATTEMPTS TO CONTAIN CHINA’S AMBITIONS FOR TECHNOLOGY

Many countries adopt export controls to prevent hostile states or terrorist organizations from acquiring sensitive items that can be used for military purposes, thereby ensuring the protection of their national security. The Wassenaar Arrangement (a multilateral export-control regime) signifies the agreement among the participating states on control lists of conventional arms and dual-use items.²¹ Reaching such an agreement and ensuring its implementation has never been easy.²² The variations in participating countries’ export control criteria, lists

²¹ Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies, Guidelines & Procedures, including the Initial Elements. Founding Documents as amended and updated in 2001, 2003, 2004, 2007 and 2011, <https://archive.ph/zPhMr#selection-223.0-223.57> (accessed 15 May 2023).

²² See e.g., Jamil Jaffer, *Strengthening the Wassenaar Export Control Regime*, 3 Chi J. Int’l L. 519 (2002).

of restricted items and destinations have started to grow partly because of the differences between countries' foreign and economic policies and domestic political support for export restrictions.²³ Furthermore, as technology has advanced and the concept of national security has broadened, states are becoming even keener to strengthen their domestic export control regimes instead of working together on updating multilateral regulations.²⁴

While regulating emerging dual-use technologies, governments must consider competing demands: the protection of national security and the prospects of free trade. As states' military power increasingly depends on the incorporation of artificial intelligence (AI) and other advanced technologies, states that compete in the security arena might be wary of their competitors having access to these technologies, including computer chips that make such technologies possible. The US-China relationship is a good illustration of such security competition. Both countries raise espionage, sabotage, and cybersecurity as key concerns about technological interdependence with each other.²⁵ Notably, the US-China conflict differs from the Cold War conflict between the US and the Soviet Union when the two hegemons barely had any economic connections. On the contrary, the economies of China and the US are highly integrated, making 'technological decoupling' mutually economically destructive for both countries.²⁶ Given the complex semiconductor supply chain and the interdependence among key players in the industry, a sound export control policy of the US, the Netherlands, and Japan should reflect a general national strategy that not only addresses cybersecurity threats and the prevention of excessive technological empowerment of China but also accounts for other national priorities, including trade in computer chips and the technological developments such trade makes possible.²⁷

2.1 THE US APPROACH

The US started its assault on China's chip industry in 2018 by restricting most US suppliers from shipping goods and technology to Chinese telecommunications giants Zhong Xing Telecommunication Equipment Company Limited (ZTE

²³ Belay Seyoum, *Export Controls and International Business: A Study With Special Emphasis on Dual-Use Export Controls and Their Impact on Firms in the US*, 51(1) J. Econ. Issues 45 (2017), doi: 10.1080/00213624.2017.1287483.

²⁴ Olga Hrynkiv, *Export Controls and Securitization of Economic Policy: Comparative Analysis of the Practice of the United States, the European Union, China, and Russia*, 56(4) JWT 633, 642–656 (2022), doi: 10.54648/TRAD2022026.

²⁵ *The China Questions: Critical Insights into US-China Relations* 304 (Maria Adele Carrai, Jennifer M Rudolph & Michael Szonyi eds, HUP 2022).

²⁶ Bateman, *supra* n. 8, at 13.

²⁷ *Ibid.*, at 3.

Corporation) and Huawei.²⁸ Even before, the US raised objections over Huawei's proposed investment in US network security company 3Com (Computer Communication Compatibility) and the investment in mobile communications companies Wire and Motorola, citing suspected ongoing ties between Huawei's founder and CEO Ren Zhengfei and Chinese military and intelligence agencies, charges that Huawei vehemently denies.²⁹ A congressional panel warned that Chinese telecommunication equipment makers Huawei and ZTE Corporation posed a security threat to the US and recommended that these two companies be barred from US mergers and acquisitions.³⁰ The US started to portray the 5G equipment of such companies as a threat to critical network infrastructure based on allegations of cyber espionage, intellectual property theft, violations of international sanctions, complicated ownership structures, and the influence of the Chinese Communist Party over Chinese companies.³¹ The restrictions affected China only until it started purchasing semiconductors from companies in Taiwan and South Korea and could develop its own cutting-edge chips.³²

The restrictions introduced in 2019–20 increased the US control over the export of advanced chips, semiconductor design software, and SMEs.³³ They prohibit US companies, but also foreign companies that use US technology, from exporting such items to China without a license. An export license can be obtained only if the end-use of the technology is not military. Thus the regulations aimed to target the export of chips and chip technologies to China if they were designed or likely to be used for military purposes, or otherwise might have military applications.³⁴ All advanced chips produced worldwide have some direct or indirect connection to the US.³⁵ Furthermore, SMEs are often extremely

²⁸ Chad P Bown, *Export Controls: America's Other National Security Threat*, 30 *Duke J. Comp. Int'l L.* 283 (2020), 289.

²⁹ Scott M Flicker & Dana M Parsons, *Huawei – CFIUS Redux: Now It Gets Interesting 1* (Paul Hastings 31 Mar. 2011), <https://webstorage.paulhastings.com/Documents/PDFs/1868.pdf> (accessed 12 Apr. 2022).

³⁰ Baban Hasnat, *US National Security and Foreign Direct Investment*, 57(3) *Thunderbird Int'l Bus. Rev.* 185, 188 (2015), doi: 10.1002/tie.21693.

³¹ Ming Du, *Huawei Strikes Back: Challenging National Security Decisions Before Investment Arbitral Tribunals*, 37 *Emory Int'l L. Rev.* 1, 35 (2022).

³² Chad P Bown, *How Trump's Export Curbs on Semiconductors and Equipment Hurt the US Technology Sector* (PIIE 28 Sep. 2020), <https://www.piie.com/blogs/trade-and-investment-policy-watch/how-trumps-export-curbs-semiconductors-and-equipment-hurt> (accessed 16 May 2023).

³³ *Addition of Huawei Non-US Affiliates to the Entity List, the Removal of Temporary General License, and Amendments to General Prohibition Three (Foreign-Produced Direct Product Rule)* 85 *Fed Reg* 51 596 (17 Aug. 2020), <https://www.federalregister.gov/documents/2020/08/20/2020-18213/addition-of-huawei-non-us-affiliates-to-the-entity-list-the-removal-of-temporary-general-license-and> (accessed 16 May 2023).

³⁴ Saif M. Khan, *U.S. Semiconductor Exports to China: Current Policies and Trends* 14–15 (CSET Issue Brief Oct. 2020), <https://cset.georgetown.edu/publication/u-s-semiconductor-exports-to-china-current-policies-and-trends/> (accessed 16 May 2023).

³⁵ See more Miller, *supra* n. 1.

specialized tools that require years of development and are not easy to replace.³⁶ This allowed US restrictions to affect China more significantly than before by restricting its ability to use, manufacture, and develop cutting-edge chips.³⁷

In October 2022, the US imposed licensing requirements on the export of advanced computing ICs, computer commodities that contain such ICs, and certain semiconductor manufacturing items that can facilitate AI capabilities.³⁸ Different from the previous regulations focusing on military end-use, the new regulations are driven by the US desire to ‘maintain as large of a lead as possible’ in the advanced chip production and supercomputing sectors, irrespective of the intents and purposes of such technologies, ie military or commercial.³⁹ The US justified new controls with China’s ‘military-civil fusion approach’⁴⁰ and the impact of advanced AI on enabling military modernization of China and human rights abuses.⁴¹ According to the US government, China ‘has mobilized vast resources to support its defense modernization, including the implementation of its military-civil fusion development strategy, in ways that are contrary to US national security and foreign policy interests’.⁴²

The US argues that its export measures are narrowly targeting to ensure ‘the least possible impact on commercial activity and not cause disruptions to global supply chains’.⁴³ The approach to reviewing license applications depends on the location of the end-user company headquarters. License applications for exports to company facilities in China that are owned by non-Chinese companies headquartered in ‘trusted’ countries (e.g., Taiwanese and South Korean companies

³⁶ Matt Sheehan, *Semiconductor Bet* (Carnegie Endowment for International Peace 27 Oct. 2022), <https://carnegieendowment.org/2022/10/27/biden-s-unprecedented-semiconductor-bet-pub-88270> (accessed 1 Jun. 2023).

³⁷ Bown, *supra* n. 28, at 283, 299.

³⁸ *Implementation of Additional Export Controls: Certain Advanced Computing and Semiconductor Manufacturing Items; Supercomputer and Semiconductor End Use; Entity List Modification*, 87 FR 62186 (13 Oct. 2022), <https://www.federalregister.gov/documents/2022/10/13/2022-21658/implementation-of-additional-export-controls-certain-advanced-computing-and-semiconductor> (accessed 16 May 2023).

³⁹ *Remarks by National Security Advisor Jake Sullivan at the Special Competitive Studies Project Global Emerging Technologies Summit* (The White House 16 Sep. 2022), <https://www.whitehouse.gov/briefing-room/speeches-remarks/2022/09/16/remarks-by-national-security-advisor-jake-sullivan-at-the-special-competitive-studies-project-global-emerging-technologies-summit/> (accessed 16 May 2023).

⁴⁰ Military-civil fusion shall be understood as the ‘elimination of barriers between China’s civilian research and commercial sectors, and its military and defense industrial sectors’. See US Department of States, *Military-Civil Fusion and the People’s Republic of China*, <https://www.state.gov/wp-content/uploads/2020/05/What-is-MCF-One-Pager.pdf> (accessed 16 May 2023).

⁴¹ Implementation of Additional Export Controls, *supra* n. 38.

⁴² *Ibid.*

⁴³ Written Presentation of Assistant Secretary Thea D Rozman Kendler Public Briefing on Bureau of Industry and Security’s (BIS) Rule: *Implementation of Additional Export Controls: Certain Advanced Computing and Semiconductor Manufacturing Items; Supercomputer and Semiconductor End Use; Entity List Modification* (BIS 28 Oct. 2022), <https://www.bis.doc.gov/index.php/documents/product-guidance/3182-2022-10-28-bis-written-presentation-public-briefing-on-advanced-computing-and-semiconductor-manufacturing-items-rule/file> (accessed 16 May 2023).

purchasing US advanced equipment for their advanced semiconductor manufacturing facilities in China) will be reviewed on a ‘case-by-case basis’.⁴⁴ The assessment will consider, among others, ‘technology level, customers and compliance plans’.⁴⁵ License applications to companies headquartered in China will be reviewed with a ‘presumption of denial’,⁴⁶ which is de facto a ban.

2.2 THE DUTCH APPROACH

Several export transactions from the Netherlands to China have already been affected by the US restrictions targeting the Chinese semiconductor industry. For example, the US had been pressuring the Dutch government to block the export of ASML’s most advanced EUV lithography equipment to Chinese companies.⁴⁷ Furthermore, the Dutch government has become more concerned about the possible leakage of sensitive technology from the Netherlands to China and more cautious in screening the takeover of its technology businesses by companies that have connections to China.⁴⁸

The Netherlands made its own deliberations on the national security implications of the developments in China’s semiconductor industry, separate from the EU.⁴⁹ EU Regulation (EU) 821/2021 on dual-use items (EU Dual-Use Regulation) allows the EU Member States to adopt additional national export controls apart from the EU controls to prevent the proliferation of weapons of mass destruction or a military end-use of certain items (Article 4)⁵⁰ or ‘for reasons of public security, including the prevention of acts of terrorism, or for human rights considerations’ (Article 9).⁵¹ To this end, the Strategic Goods Decree of the Netherlands authorizes the Minister of Foreign Affairs to impose a ban on or make a license compulsory for the export of dual-use goods, even if they are not subject to the EU export controls, for reasons of public security or human rights

⁴⁴ Implementation of Additional Export Controls, *supra* n. 38.

⁴⁵ *Ibid.*

⁴⁶ *Ibid.*

⁴⁷ Alexandra Alper, Toby Sterling & Stephen Nellis, *Trump Administration Pressed Dutch Hard to Cancel China Chip-Equipment Sale*; Sources Reuters (6 Jan. 2020), <https://www.reuters.com/article/us-asml-holding-usa-china-insight-idUSKBN1Z50HN> (accessed 16 May 2023).

⁴⁸ *Ministerie Neemt Overname Chipbedrijf Nowi onder de Loep*, FD (23 Jan. 2023) (in Dutch), <https://fd.nl/tech-en-innovatie/1463624/ministerie-laait-overname-chipbedrijf-nowi-niet-zomaar-passeren> (accessed 7 Feb. 2023).

⁴⁹ Alper & Shepardson, *supra* n. 10.

⁵⁰ Article 4(1) of Regulation (EU) No. 2021/821 of the European Parliament and of the Council of 20 May 2021 setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items (recast) PE/54/2020/REV/2 (11 Jun. 2021) OJ L 206 (hereafter EU Dual-Use Regulation).

⁵¹ Article 9(1) of the EU Dual-Use Regulation.

considerations, or when they have a military end-use, as specified in the EU Dual-Use Regulation.⁵²

On 30 June 2023, the Netherlands adopted additional export controls on the most advanced microchip manufacturing equipment, which includes deep ultra-violet (DUV) lithography systems produced by ASML.⁵³ The Dutch government emphasized three strategic goals of its restrictions: to prevent the goods from the Netherlands from contributing to military end-use, to prevent undesired long-term strategic dependence, and to maintain Dutch technological leadership.⁵⁴ The objective of preventing Dutch goods from contributing to undesired end-uses seems to align with Article 4 of the EU Dual-Use Regulation. The question remains whether the objectives of preventing long-term strategic dependence and maintaining Dutch technological leadership can be based upon public security exception under Article 9 of the EU Dual-Use Regulation.⁵⁵

Starting from 1 September 2023, Dutch companies have to obtain a license to export the items from the list which is argued to be ‘surgically precise’ and to target only ‘the most advanced’ technologies, including some DUV machines.⁵⁶ The Dutch government will assess any license application on a case-by-case basis, considering, among others, the characteristics of the item, its potential application, the end-user, and the country of destination.⁵⁷ Different from the US regulations, the Dutch government has not mentioned that any license applications will be reviewed with a ‘presumption of denial’.

The Netherlands has notified the European Commission of its desire to incorporate the additional controls into EU-wide export control regulations.⁵⁸ The Dutch government might attempt to convince the EU institutions to amend the EU-wide controls, both to reduce the risk of Chinese retaliation against

⁵² Articles 4 and 4a Besluit Strategische Goederen (9 Sep. 2021 – till now) (in Dutch), <https://wetten.overheid.nl/BWBR0024139/2021-09-09> (accessed 16 May 2023).

⁵³ Regeling van de Minister voor Buitenlandse Handel en Ontwikkelingssamenwerking van 23 juni 2023, nr. MinBuza.2023.15246-27 houdende invoering van een vergunningplicht voor de uitvoer van geavanceerde productieapparatuur voor halfgeleiders die niet zijn genoemd in bijlage I van Verordening 2021/821 (Regeling geavanceerde productieapparatuur voor halfgeleiders) Staatscourant 2023, 18212 (30 Jun. 2023) (in Dutch).

⁵⁴ *Brief van de minister voor Buitenlandse Handel en Ontwikkelingssamenwerking N384 aan de Voorzitter van de Tweede Kamer der Staten-Generaal* (in Dutch) (8 Mar. 2023), https://www.tweedekamer.nl/kamerstukken/brieven_regering/detail?id=2023Z04037&did=2023D09406 (accessed 16 May 2023).

⁵⁵ On multiple occasions, the Court of Justice of the European Union (CJEU) has ruled that the ground of public security under EU law must be interpreted strictly and that it should not be invoked unless there is a ‘genuine and sufficiently serious threat to a fundamental interest of society’. See e.g., *Case C-171/08 Commission v. Portugal* [2010] ECLI:EU:C:2010:412 [45].

⁵⁶ Brief van de minister, *supra* n. 54.

⁵⁷ *Ibid.*

⁵⁸ Gregory C. Allen, Emily Benson & Margot Putnam, *Japan and the Netherlands Announce Plans for New Export Controls on Semiconductor Equipment* (CSIS 10 Apr. 2023), <https://www.csis.org/analysis/japan-and-netherlands-announce-plans-new-export-controls-semiconductor-equipment> (accessed 16 May 2023).

the Netherlands and to build cohesion between the EU Member States' companies participating in the Dutch semiconductor supply chain.⁵⁹ The prospects of such reforms highly depend on whether EU Member States can reach a common understanding of what their 'public security' means in the current geopolitical context.⁶⁰

2.3 THE JAPANESE APPROACH

While being careful with advancing defensive strategies, such as export controls, Japan and Japanese companies started to adopt and enforce trade restrictions over the semiconductor industry more vigorously. For example, in 2019, Japan attempted to regulate its exports to contain Korea's semiconductor industry which was portrayed as an example of 'weaponized interdependence'.⁶¹ In January 2023, Tokyo Electron, a high-tech SME maker, decided not to export advanced chip-making machines to China.⁶²

Effective 23 July 2023, Japan also implements additional controls on six categories of equipment used in chip manufacturing, such as lithography.⁶³ The new list of controlled items has been criticized for being too wide-ranging, covering the items which are used for the production of consumer electronics, not military devices.⁶⁴ Japan is able to introduce export controls based on Article 1 of the Foreign Exchange and Foreign Trade Act, which aims 'to enable proper expansion of foreign transactions and the maintenance of peace and security in Japan and in the international community'.⁶⁵

Japan, like the Netherlands, requires case-by-case approval from the government to export listed products to different countries, including China. Yet, the

⁵⁹ *Ibid.*

⁶⁰ See more Tobias Gehrke & Julian Ringh, *The Power of Control: How the EU Can Shape the New Era of Strategic Export Restrictions* (ECFR May 2023), <https://ecfr.eu/publication/the-power-of-control-how-the-eu-can-shape-the-new-era-of-strategic-export-restrictions/> (accessed 1 Jun. 2023).

⁶¹ Yang-Hee Kim, *Interactions Between Japan's 'Weaponized Interdependence' and Korea's Responses: 'Decoupling from Japan' v. 'Decoupling from Japanese Firms'*, 5(1) *Int'l Trade Pol. & Dev.* 19, 19–20 (2021), doi: 10.1108/ITPD-11-2020-0082/full/pdf (accessed 16 May 2023).

⁶² Chang-Min Lee, *Decoupling from China Is Not So Easy for Japan and Korea* (9dashline 7 Mar. 2023), <https://www.9dashline.com/article/decoupling-from-china-is-not-so-easy-for-japan-and-korea> (accessed 16 May 2023).

⁶³ Ministerial Ordinance No 25 of 23 May 2023 (in Japanese), https://www.meti.go.jp/policy/anpo/law_document/shourei/20230523_gaiyo.pdf (accessed 1 Jun. 2023). See also Leo Lewis & Kana Inagaki, *Japan to Restrict Semiconductor Equipment Exports as China Chip War Intensifies* FT (31 Mar. 2023), <https://www.ft.com/content/768966d0-1082-4db4-b1bc-cca0c1982f9e?shareType=nongift> (accessed 16 May 2023).

⁶⁴ Zhang Wei, *Japan's Proposed Export Controls on Semiconductors to Disrupt Supply Chain, Undermine Economic Order*, *Global Times* (29 Apr. 2023), <https://www.globaltimes.cn/page/202304/1289973.shtml> (accessed 1 Jun. 2023).

⁶⁵ Foreign Exchange and Foreign Trade Act No 228 (1949) (unofficial translation).

Japanese government will allow a simplified process for exporting the equipment to forty-two countries and regions, including the US, a security ally of Japan.⁶⁶ The Minister of Economy, Trade and Industry of Japan emphasized that these export controls derive from the consensus with Japan's allies and that Japan would further make efforts to reflect these changes in the Wassenaar Arrangement.⁶⁷

3 COMPUTER CHIPS AS A THREAT TO NATIONAL SECURITY

The contracting parties to the GATT (1947), the predecessor of the GATT (1994), had a chance to discuss the possibility of justifying US restrictions on exports to Eastern Europe for security reasons. Czechoslovakia contested that security exceptions under Article XXI(b)(ii) GATT (1947), which mirror current Article XXI(b)(ii) GATT (1994), should be interpreted narrowly; otherwise, 'practically everything may be a possible element of war', an interpretation that would change the face of civilization and stretch the war power 'until it covers the whole nation'.⁶⁸ Yet, the majority of contracting parties rejected the Czechoslovakian claim.⁶⁹ Such a decision can be explained by political concerns during the first few years of the GATT (1947) when the contracting parties primarily focused on the policy reasons underlying the security exceptions rather than their legal interpretation.⁷⁰

Since the 1950s, the international trade order has faced many significant geopolitical and institutional changes and legal developments.⁷¹ With the formation of the WTO, and the creation of the new WTO dispute settlement process, a multilateral trading system gained a formal international organization.⁷² When seized with the question of national security, WTO panels found the authority to determine whether the national security defence was invoked legally. The first two panel reports interpreting Article XXI(b) GATT concerning the restrictions on transit and failure to provide adequate protection of intellectual property rights

⁶⁶ Hisashi Riko, *Export Control in Japan and CISTEC*, in *Theory and Practice of Export Control Balancing International Security and International Economic Relations* 46 (Dai Tamada et al. eds, Springer 2017).

⁶⁷ Press Conference by Minister Nishimura (31 Mar. 2023), https://www.meti.go.jp/english/speeches/press_conferences/2023/0331001.html (accessed 23 May 2023).

⁶⁸ Third Session – Statement by the Head of the Czechoslovak Delegation, Mr Zdeněk Augenthaler, to Item 14 of Agenda (CP3/2/Rev2) (30 May 1949) GATT/CP3/33 6, https://www.wto.org/Gatt_docs/English/SULPDF/90320183.pdf (accessed 22 Mar. 2022).

⁶⁹ Third Session – Summary Record of the Twenty-Second Meeting CP3/SR22 – II/28 (8 Jun. 1949), <http://www.sice.oas.org/dispute/gatt/49expres.asp> (accessed 22 Mar. 2022).

⁷⁰ Alan Alexandroff & Rajeev Sharma, *The National Security Provision – GATT Article XXI*, in *The World Trade Organization: Legal, Economic, and Political Analysis* 1574 (Patrick Macrory, Arthur Appleton, and Michael Plummer eds, Springer Science Business Media Inc 2005).

⁷¹ Johannes Hendrik Fahner, *Judicial Deference in International Adjudication: A Comparative Analysis* 217 (Hart 2020).

⁷² Gabrielle Marceau, *A History of Law and Lawyers in GATT/WTO: The Development of the Rule of Law in the Multilateral Trading System* 4 (CUP 2015).

found that responding states' measures fully or partially can be justified under the exception.⁷³ Five other panel reports examining the US tariffs on steel and aluminium imports and the US origin marking requirement 'Made in China' for the goods from Hong Kong (China) rejected the US security defence.⁷⁴

So far, no WTO panel or Appellate Body report has been issued regarding the justification of an export control measure under security exceptions. In 2020, Japan referred to Article XXI(b) GATT in the dispute with South Korea over the export ban on dual-use goods.⁷⁵ The dispute was eventually settled by the parties without the final decision of a panel. Probably no coincidence, but after the WTO panels ruled against the US national security justifications in the *US – Steel and Aluminium Products* disputes and in *US – Origin Marking (Hong Kong, China)*, China again requested consultations with the US in the WTO, challenging US export control and related measures targeting China.⁷⁶ Disregarding adverse rulings by the WTO panels, the US continues to emphasize that 'the WTO has no authority to second-guess the ability of a WTO Member to respond to a wide-range of threats to its security'.⁷⁷

While the case brought by China in the WTO is still in the consultations and the other cases over the export restrictions on dual-use items and technologies remain hypothetical, this paper discusses under which conditions Article XXI(b) GATT would allow the US or any other WTO member to deviate from its commitments in order to protect its cybersecurity or prevent the excessive technological empowerment of a security competitor. In particular, existing panel reports on security exceptions suggest that if the US or any other state decides to invoke a security defence, they would have to explain which specific security interests are involved and provide evidence that its export controls against China either are 'relating to fissionable materials', or 'to the traffic in arms, ammunition and implements of war' or other similar goods, or are adopted 'in time of war or other emergency in international relations'.

⁷³ *Russia – Measures Concerning Traffic in Transit* (5 Apr. 2019) WTO Panel Report WT/DS512/R; *Saudi Arabia – Measures Concerning the Protection of Intellectual Property Rights* (16 Jun. 2020) WTO Panel Report WT/DS567/R.

⁷⁴ *US – Origin Marking Requirement* (21 Dec. 2022) WTO Panel Report WT/DS597/R.

⁷⁵ DSB, Minutes of Meeting (14 Oct. 2020) WT/DSB/M/443 15. Regarding *Japan – Measures related to the Exportation of Products and Technology to Korea* (DS590).

⁷⁶ *US – Measures on Certain Semiconductor and Other Products, and Related Services and Technologies* (DS615) (pending).

⁷⁷ Office of the US Trade Representative, *Statement from USTR Spokesperson Adam Hodge* (Press Release 9 Dec. 2022), <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2022/december/statement-ustr-spokesperson-adam-hodge?s=03> (accessed 10 Dec. 2022). See also Office of the US Trade Representative, *Statement from USTR Spokesperson Adam Hodge* (Press Release 21 Dec. 2022), <https://mailchi.mp/394146669449/statement-from-ustr-spokesperson-adam-hodge?s=09> (accessed 22 Dec. 2022).

Export control of security-sensitive items can fall under subparagraphs (i) and (ii) of Article XXI(b) GATT as restrictions on the goods ‘relating to fissionable materials’ or ‘to the traffic in arms, ammunition and implements of war’ or other similar goods. In the absence of any previous discussion in the WTO, it is difficult to foresee the consistency of the export controls on the semiconductor industry with these subparagraphs. There is no scientific proof that computer chips can be considered fissionable material.⁷⁸ Even if certain chips can, in certain situations, have military applications and be used to develop weapons of mass destruction, they are, in principle, a general-purpose technology rather than arms or ammunition.⁷⁹ Yet, an invoking state might claim that semiconductors can be considered, in some cases, an implement of war. Further, Article XXI(b)(ii) GATT is broad enough to cover other goods and materials than arms, ammunition, and implements of war and to cover indirect transactions (ie, those of inputs used in final products or those via third parties). An invoking member needs to demonstrate that restricted export transactions in such goods are conducted ‘for the purpose of supplying the military establishment’, which narrows down the scope of the exception.

Alternatively, a responding state might claim that even though semiconductors and related goods and technologies are not military or defence-related goods, the restrictions on their trade can be justified under Article XXI(b)(iii) GATT if they are adopted ‘in time of war or another emergency in international relations’. The question arises, for example, whether the strained relations between the US and China could be qualified as an emergency in international relations, somewhat resembling the adjacent concept of war.

Even if the panel finds that the export controls satisfy the requirements of one of the subparagraphs of Article XXI(b) GATT, an invoking member would also have to demonstrate why the actions taken are considered necessary to protect its security interests. It is up to the discretion of WTO members to ‘consider’ what is ‘necessary for protection of [their] essential security interests’.⁸⁰ Yet, the panel could require an invoking state to articulate its essential security interests ‘sufficiently enough to demonstrate their veracity’ and to demonstrate that ‘the measures at issue meet a minimum requirement of plausibility in relation to the proffered essential security interests, ie that they are not implausible as measures protective of these interests’.⁸¹

⁷⁸ Fissionable material is ‘a nuclide that is capable of undergoing fission after capturing either high-energy (fast) neutrons or low-energy thermal (slow) neutrons’. See USNRS library, <https://www.nrc.gov/reading-rm/basic-ref/glossary/fissionable-material.html> (accessed 16 May 2023).

⁷⁹ EU Parliament, *The EU Chips Act Securing Europe’s Supply of Semiconductors* (EPRS Nov. 2022), <https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733596/EPRS-Briefing-733596-EU-chips-act-V2-FINAL.pdf> (accessed 16 May 2023).

⁸⁰ *Russia – Measures Concerning Traffic in Transit*, *supra* n. 73, at 7.146.

⁸¹ *Ibid.*, at 7.138.

All this considered, this section further discusses how the findings of the previous panels on the scope of security exceptions under WTO law might guide future panels in disputes over the restrictions on semiconductor goods and technologies.⁸²

3.1 IMPLEMENTS OF WAR OR OTHER GOODS AND MATERIALS DIRECTLY OR INDIRECTLY SUPPLYING A MILITARY ESTABLISHMENT?

Even though the WTO panel in *US – Origin Marking (Hong Kong, China)* confirmed that ‘the subject matters covered in subparagraphs (i) and (ii) are clearly related to the defense and military sector’,⁸³ the question of whether a specific transaction falls under subparagraph (ii) might be difficult to determine in practice. One might already see an interpretative problem concerning the meaning of the term ‘arms’ and ‘ammunition’. This kind of difficulty is certainly more pernicious in the similar coverage of traffic in ‘implements of war’ or ‘traffic in goods and materials ... carried on directly or indirectly for the purpose of supplying a military establishment’.⁸⁴

The context and the structure of subparagraph (ii) suggest that ‘implements of war’ shall be understood as items designed for military purposes. ‘Implements of war’ is listed together with arms and ammunitions, ie, items that are specifically designed for war, or battles more broadly, and have no other use. While interpreting the meaning of ‘in time of war or other emergency in international relations’, the panel in *US – Steel and Aluminium Products (China)* explained that ‘the reference to “war” informs the meaning of “emergency in international relations” as part of the circumstances “in time of” which a Member may act under Article XXI(b) for the protection of its essential security interests’.⁸⁵ In a similar vein, the nexus to ‘arms’ and ‘ammunitions’ supports for an interpretation that ‘implements of war’ also fall within items designed for military purpose, as arms and ammunition. Furthermore, ‘implements of war’ shall be understood as a narrower category than ‘other goods and materials as is carried on directly or indirectly for the purpose of supplying a military establishment’. Otherwise, the meaning of the latter would be nullified. This suggests that special semiconductors designed in line with military specifications could be considered ‘implements of war’. However, other semiconductors designed for commercial use need to be

⁸² Normally, it would have been possible to appeal the panel decisions to the WTO Appellate Body whose ruling creates expectations as to the meaning and interpretation of the WTO agreements in future disputes. However, the US has blocked new additions to the Appellate Body, making it de-facto unfunctional.

⁸³ *US – Origin Marking Requirements*, *supra* n. 20, at 7.301.

⁸⁴ Article XXI(b)(II) GATT.

⁸⁵ *US – Certain Measures on Steel and Aluminium Products (China)* (9 Dec. 2022) WTO Panel Report WT/DS544/R, at 7.139.

further examined whether they satisfy the additional requirement of subparagraph (ii) for their traffic ‘to be carried on directly or indirectly for the purpose of supplying a military establishment’.

Almost any goods offered on the markets might be used to supply a military establishment, including generally used goods or materials that might sometimes be used in the military or to produce military equipment. During the negotiations of security exceptions in the 1950s, it was mentioned that export restrictions on iron ore could meet the requirement of supplying ‘for the purpose of supplying a military establishment’ when ‘it was believed that the ore would be used by ordinary smelting works and ultimately for military purposes by another country’.⁸⁶ Notably, it is not just ‘military’, ‘armed forces’, or ‘army’ but ‘a military establishment’.⁸⁷ The use of an indefinite article ‘a’ would mean that the provision is not about securing supply for the military in general but aims to address supply for ‘specific’ equipment, hardware, or facility of the military.⁸⁸ An ordinary meaning of the phrase ‘for the purpose of’ would also point to a rather confined situation, as opposed to an open-ended or remote relationship with the military in the abstract.⁸⁹

It is important to note, however, that whether an action is permissible under subparagraph (ii) also depends on whether the transaction is related to the traffic in such goods and materials. While interpreting the term ‘relating to’ under Article XX (g), the Appellate Body in *US – Gasoline* noted that this term was equivalent to ‘primarily aimed at’.⁹⁰ In *US – Shrimp*, the Appellate Body appears to have abandoned the ‘primarily aimed at’ test and rather focused on a reasonable ‘means and ends relationship’ between the measure and the natural resource conservation.⁹¹ In *China – Rare Earths*, the Appellate Body also held that a GATT-inconsistent measure that is merely incidentally or inadvertently aimed at a conservation objective would not satisfy the ‘relating to’ condition.⁹² In a similar vein, it can be argued that whether an action is permissible under Article XXI(b)(ii) depends on whether the

⁸⁶ US Department of Commerce, Memorandum to Lionel H. Olmer, Under Secretary for International Trade, from Sherman E Unger, General Counsel, Export Administration Act – International Legality of Proposed Import Sanction (28 Jun. 1983), <https://www.govinfo.gov/content/pkg/CREC-1995-11-01/html/CREC-1995-11-01-pt1-PgS16516.htm> (accessed 16 May 2023).

⁸⁷ Jaemin Lee, ‘Commercializing National Security? National Security Exceptions’ *Outer Parameter under GATT Article XXI* (2018) 13(2) AJWH 277, 293.

⁸⁸ *Ibid.*

⁸⁹ *Ibid.*

⁹⁰ *US – Standards for Reformulated and Conventional Gasoline* (29 Apr. 1996) Appellate Body Report WT/DS2/AB/R, at 18.

⁹¹ *US – Import Prohibition of Certain Shrimp and Shrimp Products* (12 Oct. 1998) Appellate Body Report WT/DS58/AB/R, at 141.

⁹² *China – Measures Related to the Exportation of Rare Earths, Tungsten and Molybdenum* (7 Aug. 2014) Appellate Body Report WT/DS431/AB/R WT/DS432/AB/R WT/DS433/AB/R, at 5.112.

challenged measure had ‘a close and genuine relationship of ends and means’ with the prevention (or facilitation) of the trade intended to supply a military installation.

The history of the GATT (1947) includes discussions on this topic where direct linkage to specific military goods was being contemplated under Article XXI GATT. The case of *Sweden – Import Restrictions on Certain Footwear* concerned a global import quota system for specific footwear introduced by Sweden in November 1975.⁹³ Swedish global import quota system for leather shoes, plastic shoes, and rubber boots claimed to be military–strategic goods was supposed to apply to imports from all sources, except in some countries where special restrictive arrangements concerning imports to Sweden existed.⁹⁴ The Swedish government stated, among others, that ‘decrease in domestic production has become a critical threat to the emergency planning of Sweden’s economic defence as an integral part of the country’s security policy’.⁹⁵ It explained that other domestic adjustment assistance measures were not sufficient to guarantee a basic supply in the case of emergency, which prompted Sweden to refer to the import quota system.⁹⁶ Many states’ representatives expressed their concerns that justifying such a quota system for security reasons was an example of abuse and misuse of security exceptions.⁹⁷

Following such a line of reasoning, it is beyond the scope of Article XXI(b)(ii) to ensure the viability of industries producing dual-use high-technology goods or other goods, which, like shoes, might be needed by the military in general. It is also beyond the scope of this exception to cover the measures aimed to ensure the country’s security if they do not concern the production or traffic of weapons or equipment to support a military establishment. WTO panels can be expected to require an invoking state to make a clear and objective specification that allows it to establish the line between a military-related and commercial item, minimizing the risk of impeding commercial transactions.⁹⁸ In the context of current debates, this means that unless an invoking state is able to demonstrate that its export control measures are related to the fact that computer chips or other semiconductor industry goods and technologies are intended to be used for the production or enhancement of military systems in China, the exception will not apply. This also means that a general ban on the exports of all types of semiconductors to China

⁹³ Communication from Sweden, *Sweden – Import Restrictions on Certain Footwear* 1 (17 Nov. 1975) L/4250, <https://docs.wto.org/gattdocs/q/GG/L4399/4250.PDF> (accessed 17 Mar. 2022).

⁹⁴ *Ibid.*

⁹⁵ *Ibid.*, at 3.

⁹⁶ *Ibid.*

⁹⁷ GATT Council, Minutes of Meetings 9 (31 Oct. 1975) L/M/109, <https://docs.wto.org/gattdocs/q/GG/C/M109.PDF> (accessed 17 Mar. 2022).

⁹⁸ Michael J Hahn, *Vital Interests and the Law of GATT: An Analysis of GATT’s Security Exception*, 12 Mich J. Int’l L. 558, 604 (1991).

would be more difficult to justify than the requirement to receive approval for the export of certain items on a case-by-case basis.

3.2 WAR OR OTHER EMERGENCY IN INTERNATIONAL RELATIONS?

Alternatively, the question remains to what extent WTO panels in future disputes would be flexible in interpreting the phrase ‘other emergency in international relations’ to cover situations that go beyond severance of ‘all diplomatic and economic ties’ amounting to armed conflicts to include severance of diplomatic and economic ties for other reasons, such as strategic competition between the US and China. The panel in *Russia – Traffic in Transit* observed that merely political or economic differences between members do not suffice to be an emergency in international relations.⁹⁹ The panel in *US – Origin Marking (Hong Kong, China)* also confirmed that ‘most political tensions and differences among countries, even those that may appear to be of a quite serious nature’, would typically be situated close enough to the end of the spectrum encompassing friendly and peaceful interaction between states rather than to the other end covering the breakdown of relations between two or more countries.¹⁰⁰

The negotiation history of the GATT (1947) sheds some light on drafters’ understanding of the scope of ‘emergency in international relations’. In response to a question from the delegate for the Netherlands as to the meaning of the term ‘emergency in international relations’, the delegate for the US gave the example of the situation of war affecting the activities of the invoking party even though this party does not directly participate in the war at the time of the adoption of the measures.¹⁰¹ Thus, in principle, unilateral economic sanctions imposed by a country that does not participate in the ongoing war can be qualified as taken during the ‘emergency in international relations’.

The panel in *US – Origin Marking (Hong Kong, China)* expressly stated that nothing implies that the ‘war’ in the meaning of Article XXI(b)(iii) should ‘affect conflicting parties directly’.¹⁰² It ‘may also affect international relations more broadly’, also suggesting that the emergency in the meaning of Article XXI(b)(iii) ‘does not necessarily have to originate in the invoking Member’s own territory and bilateral relations’.¹⁰³ The panel highlighted that ‘a war taking place between two or more countries could also give rise to an emergency in international

⁹⁹ *Russia – Measures Concerning Traffic in Transit*, *supra* n. 73, at 7.75.

¹⁰⁰ *US – Origin Marking Requirements*, *supra* n. 20, at 7.311.

¹⁰¹ *2nd Session of the Preparatory Committee of the UN Conference on Trade and Employment*, Thirty-Third Meeting of Commission (24 Jul. 1947) E/PC/T/A/PV/33 20, <https://docs.wto.org/gattdocs/q/UN/EPCT/W236.PDF> (accessed 17 Mar. 2022).

¹⁰² *US – Origin Marking Requirements*, *supra* n. 20, at 7.297.

¹⁰³ *Ibid.*

relations affecting other countries',¹⁰⁴ which implies that the war or another emergency might have extraterritorial reach and harm other WTO members even if it starts as a conflict between two states. Following this logic, other countries can potentially invoke the US-China emergency as a justification that their trade restrictions fall under Article XXI(b)(iii).

At the same time, an 'emergency in international relations' under Article XXI (b)(iii) refers 'to situations of a certain gravity or severity and international tensions that are of a critical or serious nature in terms of their impact on the conduct of international relations'.¹⁰⁵ Thus, even assuming that the US-China conflict can, in principle, constitute an emergency for both countries, it has to be severe enough, not least because the emergency under the security exception clause is mentioned alongside 'war', which sets the benchmark of a supposed disturbance at a relatively high level, but also because it needs to be recognized on the international level and to involve and/or affect multiple states before it could be considered an emergency 'in international relations'.¹⁰⁶

The minimal legal and factual evidence required by the panels from respondents in *Russia – Traffic in Transit* and *Saudi Arabia – IPRs* to properly articulate the emergency seems to be related to the panels' overarching finding that the disputes touched the 'hard core' of war or armed conflict, which was also recognized by the United Nations (UN). Conversely, in the *US – Steel and Aluminium Products* disputes and in *US – Origin Marking (Hong Kong, China)*, the WTO panels examined the existence of an emergency in international relations more closely, not least because the situation invoked by the US as an 'emergency' was not related to an armed conflict between the parties or the crisis of the international gravity. Notably, these cases confirm that a state's qualification of the gravity or severity of the situation in which it adopted security measures is not enough to demonstrate the international character of the claimed emergency, which significantly limits the scope of WTO-style security exceptions and might have implications for the future disputes, where states attempt to portray a threat to their national security based solely on domestic law and domestic perspective.

Following these panels' logic, future panels shall either require an invoking state to demonstrate a clear, observable breakdown of international relations or shall accept that the situation is of severe gravity based on its characterization by the UN or based on the actions and declarations of the international community in general or of the bloc of affected states. Currently, neither of these preconditions exists in the ongoing and potential semiconductor-related trade disputes.

¹⁰⁴ *Ibid.*

¹⁰⁵ *US – Certain Measures on Steel and Aluminium Products (China)*, *supra* n. 85, at 7.147.

¹⁰⁶ Sergey Ripinsky, *Global Economic Crisis and the Danger of Protectionism: Does International Law Help?*, 1(3) Amsterdam L.F. 3, 7 (2009), doi: 10.37974/ALF.69.

The panels' findings in previous disputes also confirm that security measures can be legally adopted only in response to a current emergency rather than to prevent a future emergency or deal with an imminent or permanent threat, such as cyber-related emergencies that are not always temporary/time-bound.¹⁰⁷ Allowing for a broader defence covering all measures necessary to avert imminent threats appears counterproductive, given that it can easily be misused and result in the systematic overreliance on the exceptions, thereby excluding a significant portion of transactions from the international trading regime. Nonetheless, ignoring the pitfalls of potential threats sets an equally dangerous precedent for the international trade community.¹⁰⁸ Thus while a strict approach to the interpretation of the measures adopted 'in time of emergency in international relations' as advanced by WTO panels might ensure that security measures are justified only in extreme situations (rather than in situations of normality), the question arises whether such an approach allows states to legally address pressing domestic concerns that they connect to their national security interests.¹⁰⁹

3.3 GOOD FAITH REVIEW

Even if a panel could find that export restrictions might be objectively related to one of the substantive subsections of Article XXI(b), it does not necessarily follow under the formal approach that such measures plausibly relate to an essential security interest in good faith. While reviewing the measures that Russia attempted to justify under Article XXI(b) GATT, the panel in *Russia – Traffic in Transit* found that the obligation of good faith produces for an invoking member two legal requirements: to demonstrate that the essential security interests arise from the invoked emergency in international relations and to demonstrate that there is a plausible connection between essential security interests and the measures adopted for their protection.¹¹⁰

The WTO panel in *Russia – Traffic in Transit* highlighted that:

'[e]ssential security interests', which is a narrower concept than 'security interests', may generally be understood to refer to those interests relating to the quintessential functions of the state, namely, the protection of its territory and its population from external threats, and the maintenance of law and public order internally.¹¹¹

¹⁰⁷ Neha Mishra, *The Trade: (Cyber)Security Dilemma and Its Impact on Global Cybersecurity Governance*, 54(4) *JWT* 567, 584 (2020), doi: 10.54648/TRAD2020025.

¹⁰⁸ *Ibid.*

¹⁰⁹ See more Olga Hrynkiv, *Legal and Policy Responses to National Security Measures in International Economic Law*, 54(2) *Geo. J. Int'l L.* (in-print) (2023).

¹¹⁰ *Russia – Measures Concerning Traffic in Transit*, *supra* n. 73, at 7.138.

¹¹¹ *Ibid.*, at 7.130.

The designation of essential security interests is left, in general, to the WTO member since '[t]he specific interests that are considered directly relevant to the protection of a state from such external or internal threats will depend on the particular situation and perceptions of the state in question, and can be expected to vary with changing circumstances'.¹¹² The panel in *Saudi Arabia – IPRs* also reaffirmed that in that case, Saudi Arabia's articulation of essential security interest, ie protecting itself from the 'dangers of terrorism and extremism', was sufficiently precise and related to the 'quintessential functions of the state'.¹¹³ Although Qatar argued that such formulations are vague or imprecise, the panel saw no basis in the text of Article 73(b)(iii) TRIPs or otherwise for demanding greater precision than to articulate its 'essential security interests' sufficiently to enable an assessment of whether the challenged measures were related to those interests.¹¹⁴ Thus, the approach of the WTO panels in *Russia – Traffic in Transit* and *Saudi Arabia – IPRs* acknowledges that the invocation of a security defence for the sole purpose of evading an obligation is unlawful, yet it also confirms that good faith test is loose and not easy to apply or administer.

States might use unilateral export measures not only to protect their genuine national security interests but also to advance domestic economies or slow the technological development of their economic competitors, claiming that such measures are too necessary to safeguard their economic security. For example, economic damage to a security competitor might be a military gain, given that the economy is fundamental to military power.¹¹⁵ However, such measures aiming at damaging commercial transactions and undermining the economy of another country have a scarce link to military supply and would doubtfully pass a requirement of a plausible connection between the challenged measure and the state's security interest.

It can be argued that in the case of the measures with dual purposes, ie, measures that have an economic purpose and a security purpose at the same time, whether such a dual-purpose measure passes the good faith test will depend on whether the country 'considered' that the measure was necessary. According to the panel in *Russia – Traffic in Transit*, an invoking state has to demonstrate that there is 'a minimum requirement of plausibility in relation to the proffered essential security interests' without proving the objectives of the measure or providing any evidence that the measure is capable of contributing to such an objective.¹¹⁶

¹¹² *Ibid.*, at 7.131.

¹¹³ *Saudi Arabia*, *supra* n. 73, at 7.280–7.281.

¹¹⁴ *Ibid.*, at 7.281.

¹¹⁵ See more Michael Beckley, *Economic Development and Military Effectiveness*, 33(1) J. Strategic Stud. 43 (2010), doi: 10.1080/01402391003603581.

¹¹⁶ *Russia – Measures Concerning Traffic in Transit*, *supra* n. 73, at 7.136.

Such a marginal test nevertheless allowed the panel to differentiate between the measures that were potentially related to the protection of Saudi Arabia's essential security interests and those that were not, as demonstrated in *Saudi Arabia – IPRs*.¹¹⁷

The panel in *Russia – Traffic in Transit* seemed to be guided by the idea that the burden of proof in respect of Article XXI(b) 'cannot be understood in isolation from the overarching logic of that provision, and the function which it is designed to serve'.¹¹⁸ The panel did not require Russia to provide any factual foundation for the empirical assessment of the relationship between the measures and the claimed security interests, which would be indispensable to demonstrate the real motivation behind the measures.¹¹⁹ The preliminary economic analysis conducted by Paulsen and Crivelli confirms obvious economic and geopolitical considerations for the imposition of Russia's measures, directly questioning their plausibility and their 'good faith' application.¹²⁰ In addition, it remains unclear whether such measures could be considered retaliatory and, if so, whether retaliatory economic measures could be used to protect national security by weakening the 'enemy' in an international conflict.¹²¹

The controversies in the panels' findings can be attributed to the flaws in the chosen analytical approach to security exceptions but also to a gap between theory and practice. Particularly, it can be argued that the theoretical test for examining security exceptions proposed by the panels in *Russia – Traffic in Transit* and *Saudi Arabia – IPRs* was far more stringent than the test the panels eventually applied in practice.¹²² The panels in *US – Steel and Aluminium Products* disputes and the panel in *US – Origin Marking (Hong Kong, China)* also implied the degree of deference in the state's determination of the action that 'it considers necessary for the protection of its essential security interests' (excluding the subparagraphs).¹²³ Yet, regrettably, none of these panels have elaborated on the scope of such a deferential review.

Future panels could focus a good faith review of security exceptions on the consideration of a plausibility relationship that the measures are adopted for the protection of a national security interest, similar to what was proposed by the WTO panels, combined with a more rigorous review of the objectives of the

¹¹⁷ *Saudi Arabia*, *supra* n. 73, at 7.288–7.289.

¹¹⁸ Shin-yi Peng, *Cybersecurity Threats and the WTO National Security Exceptions*, 18 J. Int'l Econ. L. 449, 478 (2015), doi: 10.1093/jiel/jgv025.

¹¹⁹ Pramila Crivelli & Mona Paulsen, *Separating the Political from the Economic: The Russia – Traffic in Transit Panel Report*, 20(4) World Trade Rev. 582, 603 (2021), doi: 10.2139/ssrn.3804718.

¹²⁰ The panel, e.g., did not consider the fact that Russia had not adopted a complete embargo but instead applied specific restrictive measures on only dutiable goods in transit from Ukraine. *Ibid.*, at 602.

¹²¹ *Ibid.*

¹²² Jacob Gladysz, *The National Security Exception in WTO Law: Emerging Jurisprudence and Future Direction*, 52 Geo. J. Int'l L. 835, 852–854 (2021).

¹²³ *US – Certain Measures on Steel and Aluminium Products (China)*, *supra* n. 85, at 7.114; *US – Origin Marking Requirements*, *supra* n. 20, at 7.185.

measures to ensure that they do not have any ‘hidden’ protectionist motives. The latter can be investigated while assessing the factual basis of the state’s decision, including the measures’ economic effects, the consistency of the state’s actions, and the connection between the measure and the claimed security interests. In this case, an appropriate standard of review could be limited to establishing whether a member genuinely considers that its measure is related to the objective of protection of its essential security interests and whether it considers that there are serious reasons to take the measures that would make it proportionate to the protection of those interests.¹²⁴

Admittedly, tightening a good faith review might cause verification problems for adjudicators and be difficult in practice. Governments have a right to refuse to disclose information that could affect their essential security interests under Article XXI(a) GATT. The exact scope of this exception remains disputable.¹²⁵ Furthermore, more substantial scrutiny of security measures and their motives will only contribute to the tension between disputing parties where a respondent claims that national security issues are not subject to adjudicative review. Boosting the trust of WTO members in that international adjudicators can make findings on national security matters without undermining their national interests is a crucial prerequisite for any viable proposal to reconsider the approach for reviewing security exceptions.

3.4 WHAT COMES NEXT?

Irrespective of the outcomes of the national security dispute between China and the US, China is unlikely to change the US view on the non-justiciability of national security disputes even in the case of a WTO panel ruling that the US’s chip export restrictions are inconsistent with the US trade obligations. If the panel does not agree with the US’ security arguments and renders the decision against it, the US can be further expected to appeal such rulings ‘into the void’. If appealed, the panel report against the US would not be adopted because of the lack of a functioning Appellate Body to hear such appeals. Consequently, the WTO will not be able to allow complainants to retaliate should the US fail to negotiate ‘mutually acceptable compensation’ with them.¹²⁶ In this case, China is only left with the option of retaliation against the US outside the WTO system.

¹²⁴ Stephan Schill & Robyn Briese, ‘If the State Considers’: *Self-Judging Clauses in International Dispute Settlement*, 13(1) Max Planck Y.B. UN L. Online 61, 109 (2009), doi: 10.1163/18757413-90000037.

¹²⁵ Peter Van den Bossche & Sarah Akpofure, *The Use and Abuse of the National Security Exception under Article XXI(b)(iii) of GATT (1994)*, in *A New Global Economic Order: New Challenges to International Trade Law* 157 (Chia-Jui Cheng ed., Brill Nijhoff 2021).

¹²⁶ Article 22(2) DSU.

The situation would be different if China started a dispute in the WTO against Japan or the Netherlands, represented by the EU.¹²⁷ As an interim measure until the WTO Appellate Body dispute settlement function is restored, several WTO members, including the EU and China, set up Multi-Party Interim Appeal Arbitration Arrangement (MPIA) pursuant to Article 25 the Dispute Settlement Understanding (DSU).¹²⁸ Japan has recently decided to join the MPIA. The MPIA embodies the WTO appellate review rules in a dispute between its parties. Thus, if the WTO panel does not support the national security arguments of either the EU or Japan and finds that their export controls violate their trade commitments, the EU and Japan can appeal this decision. If the MPIA nevertheless upholds a panel ruling on the breach, the Netherlands or Japan would have to remedy such a breach by restoring compliance: either withdrawing or modifying the inconsistent measure. Suppose the Netherlands or Japan refuses to restore compliance. In that case, WTO law allows the parties to negotiate compensatory trade concessions or authorizes China to retaliate by suspending 'equivalent' trade concessions vis-à-vis the respondent under Article 22 DSU.¹²⁹ Channelling retaliation through the WTO system allows WTO arbitrators to ensure that aggrieved complainants retaliate in a more calibrated manner.¹³⁰ In addition to inducing compliance, such retaliation might aim to temporarily rebalance trade concessions, provide some form of political or economic compensation to aggrieved parties, or deter possible future violations.¹³¹

China firmly opposes the export controls over its semiconductor industry and signals its readiness to retaliate without waiting for the panel recommendations and the WTO authorization. China is currently revisiting its export control list and may include new technologies where China enjoys a tactical advantage¹³² or exploit its dominance in key rare earth elements used in the microelectronics industry.¹³³ China controls much of global critical minerals refining and the

¹²⁷ If there is a case with respect to Dutch measures, the EU will represent the interests of the Netherlands.

¹²⁸ Statement on a Mechanism for Developing, Documenting and Sharing Practices and Procedures in the Conduct of WTO Disputes (30 Apr. 2020) JOB/DSB/1/Add.12.

¹²⁹ Article 22(1)–(4) DSU.

¹³⁰ Robert Z Lawrence, *Crimes & Punishments?: Retaliation Under the WTO* 10 (Institute for International Economics 2003); Michelle Limenta, *WTO Retaliation: Effectiveness and Purposes* 14 (Bloomsbury Publishing 2017).

¹³¹ See more Joost Pauwelyn, *The Calculation and Design of Trade Retaliation in Context: What is the Goal of Suspending WTO Obligations?*, in *The Law, Economics and Politics of Retaliation in WTO Dispute Settlement* (Joost Pauwelyn & Chad P. Bown eds, CUP 2010).

¹³² Gregory C Allen, *China's New Strategy for Waging the Microchip Tech War* (CSIS 3 May 2023), <https://www.csis.org/analysis/chinas-new-strategy-waging-microchip-tech-war> (accessed 16 May 2023).

¹³³ Gustavo Ferreira & Jamie Critelli, *China's Global Monopoly on Rare-Earth Elements*, 52(1) *Parameters* 57 (2022), doi: 10.55540/0031-1723.3129.

manufacturing of electric vehicle batteries, solar panels, wind turbines, energy storage, and electric transmission.¹³⁴ Imposing limitations on the export of these minerals can impede the climate change objectives of both the EU and the US. China may also choose to hinder mergers in the semiconductor industry¹³⁵ or to use its new arsenal of sanctions and cybersecurity legislation.¹³⁶ To date, the partial prohibition for Chinese operators of key infrastructure to buy products from the US memory chip giant Micron Technology is the example of the most powerful retaliation against the US export controls.¹³⁷

The case studies show that retaliation outside the WTO system might create a negotiating position from which to return to the bargaining table.¹³⁸ For example, in the context of the US unilateral measures in the interest of national security, retaliation likely played a role in the withdrawal of steel and aluminium tariffs for the US allies, such as Canada, Mexico, and the EU, yet it did not work in other cases, such as in disputes with China, Russia, and Turkey.¹³⁹ The US challenged such retaliatory measures before the WTO.¹⁴⁰ Thus the risk remains that the Chinese retaliatory measures will further escalate the tension between trading partners rather than contribute to resolving it.

All in all, the refusal to comply with the adverse WTO rulings on national security issues, the lack of a functioning Appellate Body, and retaliation outside the WTO procedures can have far-reaching consequences for the stability and integrity of the WTO. The WTO plays a crucial role in promoting fair and equitable trade practices, hereby fostering economic growth, reducing poverty, and facilitating the transfer of technology between countries. Weakening of the power and effectiveness of the WTO in implementing its rulings and retaliation outside the established procedures may result in a greater proliferation of trade restrictions and consequently reduced market access, diminished competition, and potentially

¹³⁴ Nis Grünberg & François Chimits, *A Wake-up Call: China Threatens a Solar Trade Embargo* (Hinrich Foundation 21 Mar. 2023), <https://www.hinrichfoundation.com/research/article/protectionism/china-threatens-a-solar-trade-embargo/> (accessed 16 May 2023).

¹³⁵ Thomas Hale, *China Escalates Tech Battle With Review of US Chipmaker Micron*, FT (1 Apr. 2023), <https://www.ft.com/content/79ddb4bb-cbfc-4e4f-bca8-ef52ea0157c1> (accessed 16 May 2023).

¹³⁶ Chinese Anti-Foreign Sanctions Law (2021) (unofficial translation).

¹³⁷ Eleanor Olcott & Demetri Sevastopulo, *China Bans Micron's Products from Key Infrastructure over Security Risk*, FT (22 May 2023), <https://www.ft.com/content/e6a8e034-cbc2-4267-9b41-b7670db7d130> (accessed 1 Jun. 2023).

¹³⁸ Marc D Froese, *Does Trade Retaliation Work? How Members Learned Effective Retaliation at the WTO and Applied Those Strategies to the Trump Tariffs* (SSRN 8 Jul. 2022), <https://ssrn.com/abstract=4157936> or, <http://dx.doi.org/10.2139/ssrn.4157936> (accessed 16 May 2023).

¹³⁹ See more International Trade Administration of US Department of Commerce, *Foreign Retaliations Timeline* (accessed 29 Mar. 2022), <https://www.trade.gov/feature-article/foreign-retaliations-timeline> (accessed 12 Dec. 2022).

¹⁴⁰ See e.g., *Turkey – Additional Duties on Certain Products from the US* (DS561) (pending); *China – Additional Duties on Certain Products from the US* (DS558) (pending); *Russia – Additional Duties on Certain Products from the US* (DS566) (pending).

unequal distribution of economic benefits. Many scholars and state officials emphasize the necessity of reforming the WTO and its security exceptions,¹⁴¹ which, as this paper demonstrates, do not necessarily adequately address the protection of states' security interests in the era of increasingly pervasive digitalization, developments in AI, the rising importance of new economic sectors, and emerging security threats. Yet, achieving consensus among WTO members to reform the trade-security linkages under international law could prove exceedingly challenging, given the erosion of trust among governments and the escalation of military and trade tensions.¹⁴² Until a compromise can be reached, certain governments can be expected to continue to use power politics and selectively invoke security exceptions whenever it aligns with their interests.

4 CONCLUSIONS

The decisions of Japan and the Netherlands to join the US in adopting new semiconductor export controls confirm two emerging trends: the establishment of stronger economic and political ties between the allies or 'friend-shoring',¹⁴³ and the securitization of the global semiconductor market, where geopolitical and national security concerns start to weigh as much as market forces.¹⁴⁴ Yet, the case of computer chips – the smallest items essential for state power and national well-being – is a good example of how states cannot easily restrict trade with their 'enemies' without accounting for the global supply chain and international law framework.

The practice of interpreting and applying security exceptions by WTO panels suggests that whether new export control policies can be justified under the WTO security defence highly depends on the scope and manner in which domestic regulations are adopted. The measures targeting military-related goods and materials and aiming to prohibit a transaction with a military-related purpose have more chances to satisfy the national security test than generic measures aimed to eliminate competition with a specific country. By the same token, an invoking state can be expected to provide more substantial evidence to demonstrate that its measures are adopted in times of emergency in international relations, where

¹⁴¹ See e.g., *Statement by the United States at the Meeting of the WTO Dispute Settlement Body* (27 Jan. 2023), <https://worldtradelaw.typepad.com/files/jan27.23.dsb-statement.pdf> (accessed 28 Jan. 2023). See also Mona Paulsen, *Let's Agree to Disagree: A Strategy for Trade-Security*, 24(4) J. Int'l Econ. L. (2022), J. Benton Heath, *The New National Security Challenge to the Economic Order*, 129 Yale L.J. 1020 (2020).

¹⁴² Claus-Dieter Ehlermann & Lothar Ehring, *Decision-making in the World Trade Organization*, 8(1) J. Int'l Econ. L. 51, 51 (2005).

¹⁴³ Hung Tran, *Decoupling/Reshoring Versus Dual Circulation: Competing Strategies for Security & Influence* (Atlantic Council Geoeconomics Centre Apr. 2021), https://www.atlanticcouncil.org/wp-content/uploads/2021/04/Decoupling_Reshoring_versus_Dual_Circulation.pdf (accessed 15 May 2023).

¹⁴⁴ Allen, Benson & Putnam, *supra* n. 58

such an emergency is not related to armed conflict or a complete breakdown of relationships between countries and is not recognized on the international level. Nonetheless, the criteria for applying security exceptions remain unclear, the exceptions themselves have not been thoroughly tested in international courts, and there is no functioning Appellate Body to create expectations as to the interpretation of the exceptions in future disputes.

Unlike more traditional security concerns, the threats posed by imminent cyberattacks and concerns arising from the new technologies or technological capabilities that can significantly affect the balance of military and economic power between states might require risk-based, long-term restrictions on trade in goods and technologies that do not have a direct connection with military activities. WTO security exceptions were not designed to address such measures. This paper demonstrates that security exceptions under WTO law are not sufficiently clear to address technological developments and the pressing needs of some states to respond to them. The attempts of WTO panels to interpret certain highly volatile concepts, such as ‘essential security interests’ and ‘emergency in international relations’, has not shed light on precise situations permitted under current security exceptions, apart from the state of war, armed conflict or a complete breakdown in international relations. Not surprisingly, the paradigm shift brought by the digital economy strengthened a disagreement between WTO members on the role and meaning of security exceptions under WTO law.

The outcomes of the WTO disputes on the export controls in the semiconductor industry will unlikely force the US to accept the limits of current security exceptions under WTO law or change its export control policy in the semiconductor industry. They might nevertheless have a signalling effect for other WTO members that favour a narrower interpretation of security defence or prefer to keep the measures motivated by political considerations outside the WTO. Furthermore, such disputes will reinforce the need for reforming international trade law and its dispute settlement function. Implementing reforms within the WTO can prove challenging in practice. Thus, as long as consensus remains elusive among WTO members, the adoption of ‘decoupling’ strategies by specific governments towards one another will persist, affecting global technological progress and reshaping the international trade landscape.