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Introduction

The International Maritime Organization (IMO) is considering the implementation of a carbon pricing instrument to decarbonize international shipping. Meanwhile, legislators in the European Union (EU) have agreed to extend the application of the EU emissions trading system (ETS) to international shipping.[i] In both contexts, a key issue is ensuring that the implementation of these instruments supports—rather than hinders—an equitable energy transition in the international shipping sector.

Recent scholarship,[ii] grey literature,[iii] and submissions to the IMO[iv] have considered possible ways to address equity concerns in the design of these instruments. At the same time, some IMO Member States[v] and academic research[vi] have argued that World Trade Organization (WTO) law limits the possibility of implementing carbon pricing—or at least some forms of carbon pricing—for shipping. This article bridges these two strands of research by answering the following two questions: i) What limits does WTO law put on the implementation of market-based measures that account for equity considerations in shipping? To answer this question, the article discusses whether WTO law prevents any of the following: implementation of market-based measures in shipping *per se*, the adoption of exemptions, or the strategic use of carbon revenues from shipping to address equity

considerations; and ii) in light of the constraints identified in i), how can the WTO could act to contribute to the equitable decarbonization of international maritime transport?

The remainder of this article is structured as follows: first, it provides background information on the implementation of carbon pricing in international shipping and the key equity considerations that arise in this context. Next, it examines whether WTO law constrains the implementation of market-based measures in shipping, or constrains the design of such measures to address equity considerations. This is followed by a discussion on whether and how the WTO could proactively support the equitable decarbonization of international maritime transport. Finally, there are some concluding remarks.

Market-Based Measures and the Equitable Transition of International Maritime Transport

Negotiations at the IMO's Marine Environment Protection Committee (MEPC) are currently focusing on identifying mid-term measures—i.e., measures that according to the Initial IMO GHG Strategy need to be implemented between 2023 and 2030—to decarbonize international maritime transport. It is expected that IMO Member States will identify these measures at MEPC 80, scheduled for July 2023, and future negotiations will focus on their design in more detail.

Many IMO Member States have voiced support for the implementation of a market-based measure as part of a basket of mid-term measures to decarbonize international shipping.[vii] Similar positions are held by many industry and civil society stakeholders.[viii] Views differ on what form such market-based measure should take, with some IMO stakeholders supporting the implementation of a carbon levy,[ix] others an ETS,[x] or a feebate

scheme.[xi] At the moment, it is unclear whether a market-based measure will be adopted and what form it could take.

Meanwhile, EU institutions have made progress in including international shipping in the EU ETS. In December 2022, the Council of the EU and the EU Parliament reached an agreement on this matter.[xii] According to this agreement, the EU ETS will be extended to 50 percent of GHG emissions released in voyages between an EU port and the port of a non-EU country and 100 percent of GHG emissions released in voyages between two EU ports.[xiii] Coverage is expected to increase gradually, starting with 40 percent of verified emissions in 2024, 70 percent in 2025, and reaching full coverage in 2026.[xiv]

The inclusion of international shipping in the EU ETS is putting pressure on the IMO to implement adequate global GHG policies for the sector. Such developments could make the EU backtrack on the inclusion of international shipping in the EU ETS as shipping industry stakeholders fear the fragmentation of GHG regulations. They argue that fragmented regulatory regimes could imply greater compliance costs and reduce the competitiveness of some companies.[xv]

This section provides background information for the analysis presented later in the text . In particular, it discusses key equity concerns related to implementing market-based measures in international shipping and discusses potential ways to address these concerns through the design of such measures.

Market-Based Measures and the Equitable Transition of International Shipping

Stakeholders participating in negotiations at MEPC are increasingly calling for an equitable and/or just transition, with many advocating for a transition that leaves no country behind.[xvi]

While there is no explicit common understanding of what a "just" or "equitable" transition means, it is increasingly clear that ensuring such a transition has become a core part of the debate, alongside the achievement of GHG emissions reductions.

The Initial IMO GHG Strategy includes guiding principles that relate closely to equity considerations. In particular, it recognizes: i) the need to be cognizant of the principle of *common but differentiated responsibilities and respective capabilities in the light of different national circumstances* (CBDR-RC) and ii) the need to consider the impacts on states from the implementation of GHG measures in shipping, including impacts on developing countries and in particular on SIDS and LDCs. This section discusses these two principles and outlines potential ways to operationalize them in the design of market-based measures for shipping.

The Need to Be Cognizant of CBDR-RC

The CBDR-RC principle calls all countries to act on climate change but recognizes that those that have contributed less to causing climate change or have less capacity to address it should bear a lower burden in the transition.[xvii] The specific reference in the Initial IMO GHG Strategy to the Paris Agreement version of the CBDR-RC principle,[xviii] indicates that IMO Member States recognize the fluidity of the respective responsibilities and capabilities of countries — for example, some states that have historically contributed little to GHG emissions have become major polluters in the last two decades while also developing significant capacity to address climate change.[xix]

It is important to stress that the CBDR-RC principle has not achieved the status of customary international law.[xx] Therefore, the way the principle is understood in the UNFCCC does not bind the IMO negotiations to a particular interpretation or operationalization. Nonetheless, the explicit reference in the Initial IMO GHG Strategy to the CBDR-RC

principle as included in the UNFCCC, Kyoto Protocol, and Paris Agreement suggests that IMO Member States may consider the UNFCCC as a source of inspiration for the understanding of this principle.

The Need to Consider Impacts on States

The other equity principle included in the Initial IMO GHG Strategy refers to assessing and addressing disproportionately negative impacts (DNI) that may derive from implementing GHG policies to decarbonize shipping. The implementation of a market-based measure in international shipping can increase transport costs; this could reduce access to maritime services, reduced exports, or increased risks for food and energy security.[xxi] Some countries, including Small Island Developing States (SIDS) and Least Developed Countries (LDCs), are expected to be more vulnerable to these negative impacts due to their low connectivity with main shipping routes, lack of economies of scale, and less energy-efficient vessels serving their ports.[xxii] A procedure to assess impacts on States was adopted at MEPC 74,[xxiii] but it remains to be seen whether these negative effects will be seen as "disproportionate", as there is no agreed definition of what disproportionate means among IMO member states.

Options to Operationalize Equity in the Design of Market-Based Measures

There are two broad ways to operationalize the equitable transition in the design of market-based measures in shipping: exemptions or the use of potential carbon revenues raised. Below, I discuss each of these in some detail.

Exemptions could take various forms. One way to introduce exemptions would be to exempt (totally or partially) certain routes from the application of the carbon price (*route-based exemptions*). This could be done, for instance, by applying a lower carbon price on

selected routes, by reducing the share of GHG emissions covered by the instrument on certain routes, or by allocating free allowances to vessels that serve ports in selected countries.[xxiv] Alternatively, exemptions could be targeted at certain *cargoes*. For instance, to address food security concerns, food destined for (selected) developing countries could be exempted from the measures.[xxv] In theory, exemptions could be applied based on *flags* as well. However, this option is unlikely to be implemented by the IMO because it would violate the principle of no more favorable treatment. Thus, this option is not further considered in this study. Exemptions, if implemented, could be lifted gradually, resulting in the phasing-in of the market-based measure on certain routes or cargoes.

The other key option to address equity considerations in the energy transition of the sector is to rely on the use of carbon revenues that could be raised through the implementation of market-based measures. Research indicates that such revenues could be substantial if measures are applied at the global level, i.e., between $1 trillion and $3.7 trillion up to 2050.[xxvixxvii] This corresponds to about $40-60 billion a year,[xxviii] a potentially significant addition to current public climate finance flows, which some estimate ranged to about $68 billion in 2020.[xxix]

Relatedly, the Climate Vulnerable Forum, IMO Member States, and several industry and policy stakeholders are voicing support for the implementation of a market-based measure in international shipping. Such measures are not only seen as instruments that can contribute to decarbonizing the sector cost-effectively, but also ones that create opportunities for an equitable transition.[xxx]

Revenues from a market-based measure could be distributed to recipients through a fund or through passive forms of carbon revenue use, such as a feebate scheme, i.e., a

mechanisms under which vessels that pollute more pay a fee and the revenues are distributed to less polluting vessels. Some of the recent submissions to MEPC consider different approaches for using a fund to distribute carbon revenues, be it through a new fund or an existing one, such as the Green Climate Fund (GCF).[xxxi] Other submissions delineate what a potential feebate scheme could look like.[xxxiixxxiii]

The strategic use of carbon revenues can help address equity considerations in various ways. For instance, using carbon revenues to support the decarbonization of international shipping may reduce the need to implement stringent GHG policies — e.g., if revenues are used to address market barriers and market failures that reduce the GHG emission reductions achieved by a carbon pricing instrument — thereby reducing potential impacts on states. Similarly, investments in climate action in developing countries, or a selection thereof, can help to address CBDR-RC.[xxxiv]

Market-Based Measures, Equity, and WTO Non-Discrimination Rules

This section discusses whether the General Agreement on Tariffs and Trade (GATT)[xxxv] non-discrimination rules stand in the way of achieving an equitable transition in international maritime transport. In particular, it discusses whether the operationalization of equity considerations in decarbonizing international maritime transport is incompatible with GATT provisions.

This discussion is potentially relevant both with regard to the implementation of market-based measures for international shipping at the sub-global level (e.g., EU level) and at the IMO level. On the one hand, sub-global instruments that affect trade can be subject to

WTO law scrutiny. International shipping accounts for about 80 percent of international trade by volume, and the implementation of a carbon price in shipping can affect trade patterns. Not surprisingly, various legal scholars have addressed the compatibility of carbon pricing with WTO law in relation to the extension of the EU ETS to international shipping.[xxxvi]

On the other hand, WTO law can be relevant for the implementation of international GHG measures —including market-based measures— by the IMO in at least two ways. First, it cannot be excluded that in a potential dispute, WTO law rules would prevail over IMO rules.[xxxvii] While many analysts recognize that WTO law should not always prevail over rules imposed by multilateral environmental agreements,[xxxviii] the Panel decision in *EC –Biotech* indicates that —in a potential dispute— WTO law may prevail over subsequent international agreements unless *all* WTO Members are also a Party to that agreement.[xxxix] While this decision has been criticized as too narrow,[xl] it remains uncertain whether a different approach would be taken in a potential future dispute. In this respect, it is important to stress that currently, 15 WTO Members are not Members of the IMO,[xli] and more than 25 are not part of the International Convention for the Prevention of Pollution from Ships (MARPOL) —i.e., the international convention that may be amended to introduce a market-based measure in international shipping.[xlii] Second, and perhaps relatedly, the need for compliance with WTO law is often invoked in IMO negotiations on GHG emissions reductions.[xliii] This body of law may therefore be considered by IMO Member States when designing GHG policies, regardless of whether WTO law would prevail in a potential WTO dispute.

The GATT has two core non-discrimination rules. The first is the most-favored-nation clause (or MFN) included in Article I GATT. Article I establishes that an importing country must grant equal treatment to "like" imported products, regardless of their origin. In this context, various factors determine whether two products are "like", including whether they

are in a competitive relationship.[xliv] The second is the national treatment clause included in Article III GATT. Under Article III, § 2(a) of GATT, countries cannot impose a charge on imported products that is in excess of charges applied to "like" domestic products. As under Article I, the likeness between two products is established by taking into account various factors, such as their use, physical characteristics, and competitive relationship.[xlv]

In case a provision is found in violation of the MFN clause or the national treatment clause, they could still be justified under Article XX GATT. Article XX enlists public policy exceptions that can justify violations of other GATT provisions. Two exceptions —Article XX (b) and (g)— relate closely to environmental considerations. Article XX (b) protects measures "necessary to protect human, animal or plant life or health"[xlvi] and Article XX (g) justifies measures that relate "to the conservation of exhaustible natural resources."[xlvii]

Market-Based Measures and Non-Discrimination Rules

This section discusses concerns related to the compatibility of carbon pricing instruments for international shipping with WTO law. It starts by discussing concerns related to the implementation of a carbon pricing instrument that does not include exemptions and without accounting for how carbon revenues are used. These two aspects are then further considered below.

WTO compatibility concerns were raised by some IMO stakeholders during negotiations on market-based measures in 2012. In that context, a submission by India and Saudi Arabia[xlviii] contested the compatibility of market-based measures proposed by Cyprus et al. , Norway, Jamaica, and the UK with WTO law.[xlix] India and Saudi Arabia contested some of these proposals based on their specific design in relation to enforcement in ports and penalties applied for non-compliance,[l] but also more broadly on the grounds that: i) any

proposal that increases shipping costs could constitute a *de facto* charge on imports incompatible with national treatment obligation;[li] and ii) market-based measures that appear origin-neutral are discriminatory against products transported by non-compliant vessels and countries that export goods with a low value-to-weight ratio — which are often developing countries.[lii]

Similar concerns have been raised in connection with the inclusion of international shipping under the EU ETS. Also in this context, a carbon price levied equally on each ton of GHG emitted would result in a greater increase in the price of commodities transported from distant markets, with less energy-efficient vessels, or with a low-value per-weight ratio.[liii]

Ultimately, these concerns relate to the question of whether transported products with different levels of embedded GHG emissions are to be considered “like products” under Article I and Article III.2 GATT. If such products are "like", this could raise concerns in relation to the compatibility of the carbon pricing instrument with the non-discrimination provisions of the GATT.

This question has been recently considered in WTO law scholarship in relation to the implementation of border carbon adjustment (BCA) mechanisms, another type of instrument that prices emissions embedded in imported products. The scholarship is divided on the matter, with some arguing that WTO jurisprudence supports the view that products with different levels of embedded GHGs are like products,[liv] and others offering the alternative view.[lv] Existing WTO jurisprudence does not provide a definite answer to this issue.

If a carbon pricing instrument that applies a homogenous price on GHG emissions from shipping is found violating a GATT non-discrimination provision, the question becomes whether the market-based measure can be justified under Article XX GATT. This issue has

been discussed widely in WTO law scholarship in relation to the compatibility of the extension of the EU ETS to international shipping.[lvi] Most of this scholarship concludes that a sub-global carbon pricing instrument for shipping would be justifiable under Article XX GATT.[lvii]

The scholarship suggests, *a fortiori*, that a globally negotiated carbon price for international shipping is likely to be justified under Article XX GATT. These multilateral negotiations would have occurred under an inclusive, transparent, and predictable procedural framework that provides ample space for concerned countries and industry representatives to be heard —all matters that WTO jurisprudence considers relevant for compliance with the Chapeau of Article XX GATT.[lviii] Such negotiations would also indicate that no other less trade-restrictive and easily available GHG measures existed, a factor that is relevant for compliance with Article XX (b) GATT.[lix] The global nature of the instrument would also help to show the even-handedness of the treatment reserved for domestic and foreign producers. This even-handedness would help for compliance with Article XX (g) GATT.[lx]

Yet, even relatively low levels of uncertainty can sometimes slow or even block risk-averse policymakers. During the previous round of negotiations on market-based measures, the IMO secretariat unsuccessfully tried to address this legal uncertainty. In November 2012, the IMO Secretary-General wrote to Pascal Lamy (Director General of the WTO) requesting the WTO secretariat's view on compatibility of market-based measures for international shipping with WTO law. In his response, Pascal Lamy stated that it is not for the WTO Secretariat to interpret WTO law rules — this is an exclusive prerogative of WTO members.[lxi] The response also included an overview of WTO rules that could be relevant for the implementation of market-based measures in shipping. Could the WTO do something more to address these concerns? I will come back to this further in the article.

Exemptions and WTO Non-Discrimination Rules

Would adding exemptions to a market-based measure make the carbon pricing instrument less likely to comply with WTO law? This section considers this issue.

Route-based exemptions that take the form of reduced carbon prices on —or reduced coverage of— GHGs emitted on voyages from or to (selected) developing countries may violate the MFN principle because they can result in different prices being applied to "like" products imported from different countries. As such, they could represent *de jure* discrimination, as even products that are in competition in the market of the importing country and have similar levels of GHG emissions embedded could end up being priced differently depending on whether they come from an exempted country or not. Note that a similar incompatibility may exist if exemptions are implemented through the allocation of free allowances for fuel burned in transporting goods to selected ports —a solution recently suggested in an MEPC submission by Argentina et al..[lxii]

Cargo-based exemptions may also be incompatible with the MFN principle if they result in products imported from or exported to certain countries being subject to a lower price than "like" products from other countries —even if the two products have the same level of GHG emissions embedded. The question is, therefore, whether a market-based measure that includes some exemptions could be justified under Article XX GATT.

A key effect of exemptions is the reduction of incentives to decarbonize on exempted routes and for vessels that transport exempted cargoes. In addition, exemptions can result in the adoption of avoidance and evasion strategies, such as changing the order of port calls to reach an exempted port before calling at a non-exempted one.[lxiii] Research on the EU ETS

suggests that such avoidance strategies could become profitable even at moderate carbon price levels.[lxiv]

The GHG reduction effects of a measure are relevant at various points in determining its compatibility with Article XX GATT. For instance, WTO jurisprudence indicates that to meet the requirements of exception (b), the measure must make a "material contribution" to the protection of the environment.[lxv] Similarly, one of the factors considered in establishing whether the discrimination is arbitrary or unjustifiable under the Chapeau of Article XX GATT is whether the discrimination "can be reconciled with, or is rationally related to, the policy objective with respect to which the measure has been provisionally justified under one of the subparagraphs of Article XX"[lxvi]. Design features of a GHG instrument that reduce its effectiveness may undermine compliance with Article XX GATT.

Of course, the effects of exemptions on the GHG effectiveness of the market-based measure will depend on how *broad* —i.e., to which routes or cargoes they apply— and *deep* —i.e., whether it is a partial, full, or temporary— these exemptions are. Broad and deep exemptions, such as a full exemption that applies to all routes from/to low- and middle-income countries, may significantly reduce the GHG effectiveness of the measure, as maritime ports in developing countries accounted for more than 60 percent of imports and 55 percent of exports globally in 2021.[lxvii] On the contrary, a partial and temporary exemption to selected developing countries (e.g., SIDS and LDCs) is much less likely to lead to compliance issues.[lxviii] Other types of exemptions would fall between these two extremes.

One potential way to support the compatibility of exemptions with the Chapeau of Article XX GATT is to rely on the part of the provision stating that discrimination is forbidden only when it applies between countries "where the same conditions prevail".[lxix] It

could be argued that developing countries, and especially SIDS and LDCs, are not in the same conditions as developed ones. Thus, differentiation in their favor does not constitute forbidden discrimination.[lxx]

However, significant uncertainty exists with regard to the interpretation of "same conditions" under the Chapeau of Article XX, as little jurisprudence and scholarship have touched upon this issue.[lxxi] Such uncertainty may prevent risk-averse policymakers from adopting exemptions in the implementation of market-based measures in shipping. This can particularly be the case with regards to market-based measures implemented at the sub-global level, or even by the IMO if many countries party to the WTO are not part of the agreement that imposes the carbon price in shipping (and the related exemption).

The Strategic Use of Carbon Revenues and WTO Law

As discussed previously, a key alternative to using exemptions to address equity concerns in the decarbonization of international shipping is to rely on carbon revenues. This section discusses whether the strategic use of carbon revenues raises concerns about WTO law compatibility.

In particular, the section will consider the situation where carbon revenues are distributed through a fund that targets primarily (or exclusively), developing countries or a selection thereof. Potentially, a fund could also reserve a share of carbon revenues for selected developing countries, such as SIDS and LDCs, as recently considered in a World Bank submission to ISWG-GHG14.[lxxii] The key question here is whether such differential access to carbon revenues across countries would be inconsistent with WTO non-discrimination rules.

The Strategic Use of Carbon Revenues and the GATT

Would the strategic use of carbon revenues conflict with the non-discrimination provisions of the GATT? Legal scholars have considered a similar question in other contexts –the implementation of a carbon price in international aviation and the implementation of BCA mechanisms.[lxxiii] This literature can provide guidance in relation to the use of carbon revenues from international shipping.

Rajamani and Scott consider the use of carbon revenues as a way to address CBDR-RC in the implementation of carbon pricing on international flights at the EU level.[lxxiv] In particular, they consider the option of distributing carbon revenues from international aviation to developing countries through a climate fund. Similar to proposals put forward by some shipping stakeholders at the IMO, under the Rajamani and Scott framework, carbon revenues are not distributed to countries from which flights depart. Instead, they are distributed on the basis of the distribution framework adopted by the fund. In this respect, the authors do not find that such a framework raises issues with WTO law.[lxxv]

Scholarship on BCA mechanisms reaches a similar conclusion. In particular, Mehling et al. find that using carbon revenues from BCA mechanisms to support developing countries' climate action can strengthen the link between the measure and its environmental aims, thereby increasing its legality under Article XX GATT (b) and (g).[lxxvi] A similar line of reasoning would apply to using carbon revenues from international shipping to support climate action. This would apply both if revenues were used to support the decarbonization of international shipping — e.g., through the financing of zero-carbon bunker fuel infrastructure or by de-risking investments in fleet renewal and upgrade— or climate action more broadly.

The Strategic Use of Carbon Revenues and WTO Law on Subsidies

Carbon revenues from shipping could be distributed to governments and/or the private sector in the form of grants, loans, or guarantees. These financing instruments can fall under the scrutiny of the WTO in relation to the discipline on subsidies under the Agreement on Subsidies and Countervailing Measures (SCM Agreement). Would the use of carbon revenues be incompatible with the SCM Agreement?

The simple answer to this question is "not necessarily". This answer follows from the fact that not all forms of public financial support to industries constitute a violation of WTO law. Only two categories of subsidies are prohibited under the SCM Agreement: export subsidies — i.e., subsidies contingent on export performance— and local content subsidies — i.e., subsidies contingent on the use of domestic goods.[lxxvii] Other types of subsidies can be challenged under WTO law when they have adverse effects on the interests of another WTO Member (so-called *actionable subsidies*)[lxxviii]. The SCM Agreement and WTO jurisprudence provides some guidance on what subsidies would be "prohibited" or "actionable".[lxxix] Ultimately, whether the use of carbon revenues from shipping violates WTO rules will depend on the specific form carbon revenue spending takes.

Existing practice confirms this. Currently, there are about 100 public funds that disburse climate finance in operation.[lxxx] Carbon revenues could be channeled to recipients (whether governments or the private sector) through one of these funds or a new fund. Unless one wants to question the legitimacy of all these funds, it would be difficult to argue that the use of carbon revenues from shipping to address equity considerations is in violation of WTO law *per se*.

This is not to say that the use of carbon revenues finds no barriers in WTO law. As mentioned above, some types of subsidies are not consistent with WTO rules. Experience

indicates that subsidies for renewable energy have been challenged under WTO law –and sometimes successfully.[lxxxi] The distribution of carbon revenues from shipping should account for this jurisprudence to minimize the risks of a legal challenge.

In this respect, commentators have highlighted the paucity of WTO rules related to green subsidies,[lxxxii] which leaves some uncertainty as to what a WTO-law compatible distribution of carbon revenues might look like.

One aspect of the potential use of carbon revenues that could be particularly useful to clarify is whether contracts for difference can be designed in a way that complies with SCM Agreement requirements. Contracts for difference can help close the price gap between zero-carbon bunker fuels and conventional ones by providing certainty to investors about their future returns.[lxxxiii] Recent legal scholarship suggests that these instruments can be designed to be compatible with the SCM Agreement,[lxxxiv] however, there is no jurisprudence that directly assesses this matter.

How Can the WTO Support the Equitable Transition of International Shipping?

As discussed above, WTO non-discrimination principles have been invoked in the past by some IMO stakeholders to question the implementation of market-based measures for international shipping. Furthermore, the analysis above has highlighted the existence of grey areas in the application of WTO rules that create uncertainty on the possibility of addressing equity considerations through the design of market-based measures — especially in relation to the adoption of exemptions.

Against this background, this section discusses what the WTO could do to facilitate the effective and equitable energy transition of international maritime transport.

Clarifying WTO Rules?

A potential way for the WTO to proactively support the effective and equitable decarbonization of international shipping would be to reduce legal uncertainty on some of the issues highlighted above. One potential way to do so would be for WTO Member States to adopt an *authoritative interpretation* of GATT rules.

Such an authoritative interpretation could clarify two aspects of WTO discipline: First, whether an instrument that applies a homogeneous price on GHG emissions embedded in internationally traded products complies with the non-discrimination provisions of the GATT (assuming that domestic production is at least equally priced). Second, whether exemptions could be justified under Article XX based on the "different circumstances" in which countries find themselves. In this respect, the interpretation could also specify what "circumstances" matter and the breadth and depth of the differential treatment allowed.

Should climate-ambitious WTO Member States *proactively* seek such authoritative interpretation? Perhaps not. In recent rounds of negotiations, IMO Member States have not raised the issue of WTO compatibility of market-based measures for shipping. Proactively seeking such *authoritative interpretation* risks attracting attention to this issue, potentially to the detriment of the adoption of a climate-ambitious and equitable carbon pricing instrument. However, in case the issue is brought back prominently at IMO negotiations, as in 2012, seeking the adoption of such an authoritative interpretation may become useful.

In this respect, it is important to highlight that the political feasibility of such an *authoritative interpretation* is not obvious, as according to Article IX:2 of the WTO Agreement its adoption requires support by at least three-quarters of WTO members. If

agreement on such an interpretation is difficult to reach, two qualifications could be added to restrict its applicability and, thereby, potentially increase support.

The first qualification could be that the interpretation applies exclusively to instruments implemented through multilateral negotiations within the UN framework. This would ensure that the process through which the instrument is adopted is widely accepted and would exclude the application to sub-global instruments, such as those currently under implementation at the EU level.

The second qualification could be that such a homogeneous carbon price certainly complies with WTO non-discrimination rules as long as it aims to rectify trade distortions due to the non-internationalization of environmental externalities. Such an approach has been advocated in legal scholarship as a *first step* to realigning the trade and climate regimes,[lxxxv] as ensuring welfare maximization and the optimal allocation of resources are key aims of the WTO.

In this context, measures of the social cost of carbon —i.e., the cost to society of emitting an additional ton of GHGs— could provide guidance on what that level of the carbon price could be. A potential problem with this approach is that existing estimates of the social cost of carbon vary significantly,[lxxxvi] and therefore provide very loose guidance and risk undermining policy support if WTO Member States fear that the carbon price applied to shipping could become very high. To address this issue, in principle, the WTO could also provide its own estimate of the social cost of carbon that would be considered aligned with the WTO mandate. Many governments routinely adopt measures of the social cost of carbon to guide domestic policymaking.

Note that this would be a sub-optimal solution from a climate change mitigation perspective, as ideally, the level of a carbon price would be established based on what is needed to achieve the established GHG mitigation target. However, this option could be considered if it helps create political convergence toward the adoption of such an authoritative interpretation.

The second aspect that the authoritative interpretation could clarify is whether exemptions could be justified under Article XX based on the "different circumstances" in which countries find themselves. In this respect, the interpretation could also specify what "circumstances" matter and the breadth and depth of the differential treatment allowed.

At the sub-global level, jurisdictions that aim to price emissions from shipping could also try to obtain a climate waiver. A waiver is temporary and jurisdiction-specific and, as such, politically easier to obtain, although the quorum is the same as for authoritative interpretations.[lxxxvii]

Establishing Equivalence Between Stringency of GHG Policies for Shipping

Another area where the WTO could support the equitable transition of international maritime transport relates to establishing equivalences between the stringency of GHG policies for shipping implemented at the sub-global level and the international level. Contrary to the clarification of WTO rules discussed above, proactive action by the WTO could be beneficial in this area.

This issue is likely to become of relevance soon as the amendments to the EU Directive establishing the EU ETS require establishing an equivalence between the EU ETS and other potential GHG policies for international shipping.[lxxxviii] Article 3ge of the Directive

agreement between the EU Parliament and the EU Council on the EU ETS provides that the EU Commission will need to evaluate this global market-based measure. If the IMO

"does not adopt by 2028 a global market-based measure to reduce greenhouse gas emissions from maritime transport in line with the objectives of the Paris Agreement and at least to a level comparable to that resulting from the Union measures taken under this Directive"[lxxxix]

the Commission will present a report to the EU Parliament and the Council that examines the possibility of extending the coverage of GHG emissions from voyages between an EU Member State and a third country to more than 50 percent. In making this assessment, the EU Commission will need to consider the progress made at the IMO *and* whether another third country has adopted a market-based measure *equivalent* to the EU ETS. [xc] The issue of equivalence between the EU ETS and other GHG measures for shipping relates both to potential measures adopted by the IMO and other market-based measures adopted by third countries.

The issue of equivalence between measures adopted strictly relates to the issue of ensuring an equitable transition because the EU ETS does not provide exemptions for developing countries, including SIDS and LDCs, nor does it channel carbon revenues collected to these countries. As such, its design reflects a different view on what constitutes an equitable transition in the shipping sector from the one voiced by many IMO stakeholders, including many climate-vulnerable countries. Its application in its current form and potential expansion beyond the current 50 percent of GHG emissions from non-intra-EU voyages could therefore be at odds with a multilateral understanding of what an equitable transition looks like.

Significant work is underway at the WTO in relation to establishing an equivalence between GHG measures in the context of designing BCA mechanisms. This expertise could be harnessed in the IMO context to facilitate a dialogue between the EU and IMO member States in relation to potential IMO GHG measures that could be considered "equivalent" to the EU ETS. Similarly, work conducted at the WTO could be useful to ensure that equivalence between the EU ETS and measures implemented by third countries to decarbonize shipping are discussed and perhaps agreed upon multilaterally. Other international institutions that are currently working on establishing methodologies to establish equivalence between GHG policies across jurisdictions, such as the IMF, OECD, and World Bank, could also provide useful input in this respect.

Conclusions

A share of GHG emissions from international shipping will soon be under a carbon price. The IMO is considering the implementation of a carbon pricing instrument to decarbonize international shipping. At the same time, the EU is extending the application of the EU ETS to international shipping. In both contexts, a key issue is ensuring that carbon pricing instruments support an equitable energy transition for the sector.

This article bridges the debate on how to operationalize equity in the implementation of carbon pricing in shipping and the one on the limits that WTO law poses to the implementation of these instruments. In particular, the article discusses whether WTO law limits the implementation of market-based measures for shipping, the implementation of exemptions, or the strategic use of carbon revenues from shipping to address equity

considerations. Building on this analysis, the article considers how the WTO could act to contribute to the equitable decarbonization of international maritime transport.

The article concludes that while some uncertainty exists in relation to the compatibility of a market-based measure that applies a homogeneous carbon price on GHG emissions from shipping, its implementation at the multilateral level is unlikely to be successfully challenged. Similarly, the strategic use of carbon revenues to address equity considerations is unlikely to pose major WTO compatibility issues. On the other hand, the application of a carbon pricing instrument sub-globally and the adoption of exemptions is a less certain policy terrain, especially if the exemptions are implemented at the sub-global level.

On the basis of this analysis, the article suggests potential ways for the WTO to contribute to ensuring an effective and equitable energy transition for the international shipping sector. In this respect, it highlights the potential use of authoritative interpretations to reduce legal uncertainty. It also suggests that climate-ambitious WTO member states take a "wait and see" and reactive approach to the adoption of such authoritative interpretations.

The analysis suggests that the WTO can support the effective and equitable transition of international shipping in relation to establishing equivalence of GHG measures for international shipping. In this case, a proactive approach is less risky and could be encouraged.

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for-55-council-and-parliament-reach-provisional-deal-on-eu-emissions-trading-system-and-the-social-climate-fund/ (Accessed: 26 April 2023).

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[vi] Hermeling, C., Klement, J. H., Koesler, S., Köhler, J., & Klement, D. (2015) 'Sailing into a dilemma: An economic and legal analysis of an EU trading scheme for maritime emissions', *Transportation Research Part A: Policy and Practice*, 78, 34-53.

[vii] Marshall Island and Solomon Islands, *Proposal for greenhouse gas levy*; Japan, *Proposal for an MBM*; Argentina et al., *Proposal to establish an IMSF&R mechanism*; Norway, *Proposal for an ECTS.*

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[ix] e.g., Marshall Island and Solomon Islands, *Proposal for greenhouse gas levy*; ICS and Intercargo, *A levy-based MBM*

[x] e.g., Norway, *Proposal for an ECTS*

[xi] e.g., Japan, *Proposal for an MBM*

[xii] Council of the EU, 'Fit for 55'

[xiii] Council of the EU, 'Fit for 55'

[xiv] Council of the EU, 'Fit for 55'

[xv]ICS (2022) *Piecing together the emissions regulation puzzle*, *International Chamber of Shipping*. Available at: https://www.ics-shipping.org/news-item/piecing-together-the-emissions-regulation-puzzle/ (Accessed: 21 March 2023).; Morgan, S. (2020) *Shippers balk at EU carbon market plan*, *www.euractiv.com*. Available at: https://www.euractiv.com/section/shipping/news/shippers-balk-at-eu-carbon-market-plan/ (Accessed: 21 March 2023).; Yarrow-Wright, S. (2022) *Throwing Down the Gauntlet: The European Challenge to IMO on Carbon Pricing*, *Environmental Defense Fund*. Available at: https://blogs.edf.org/energyexchange/2022/12/08/throwing-down-the-gauntlet-the-european-challenge-to-imo-on-carbon-pricing/ (Accessed: 21 March 2023).

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[xix] Voigt and Ferreira, 'Dynamic Differentiation'

[xx] Bodansky, Daniel, Jutta Brunnée, and Lavanya Rajamani. International climate change law. Oxford University Press, 2017, page 52.

[xxi] CE Delft (2021) *Study on assessment of possible global regulatory measures to reduce greenhouse gas emissions from international shipping: final report*. Luxembourg: European Commission. Available at: https://data.europa.eu/doi/10.2834/330363 (Accessed: 21 July 2022).

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[xxiii] IMO (2019) *Procedure for Assessing Impacts on States of Candidate Measures,* MEPC.1/Circ.885. International Maritime Organization.

[xxiv] Argentina et al., *Proposal to establish an IMSF&R mechanism.*

[xxv] CE Delft, *Possible regulatory measures for international shipping.*

[xxvi] Mærsk Mc-Kinney Møller Center, *Market-Based Measures***;** Baresic et al. *Closing the Gap.*

[xxvii] These studies assume that carbon pricing is the only policy put in place to decarbonize international shipping.

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[xxxi] e.g., Norway, *Proposal for an ECTS*

[xxxii] e.g., Japan, *Proposal for an MBM***;** Argentina et al., *Proposal to establish an IMSF&R mechanism.*

[xxxiii] Argentina et al., *Proposal to establish an IMSF&R mechanism* is formally referred to as a pay-and-reward system, but it shares many similarities with a feebate. Thus, the

[xxxiv] Dominioni and Englert, *Carbon Revenues from International Shipping.*

[xxxv] General Agreement on Tariffs and Trade, Oct. 30, 1947, 61 Stat. A-11, 55 UNTS 194 [hereinafter GATT]; General Agreement on Tariffs and Trade 1994, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1867 UNTS 187 [hereinafter Marrakesh Agreement].

[xxxvi] M Kremlis, 'The Inclusion of the Shipping Industry in the EU ETS' (2010) 19 European Energy and Environmental Law Review 145, 152–155; T Bäuerle et al., 'Integration of Marine Transport into the European Emissions Trading System' (Umweltbundesamt 2010) 88–94; H Ringbom, 'Global Problem—Regional Solution? International Law Reflections on an EU CO2 Emissions Trading Scheme for Ships' (2011) 26 International Journal of Marine and Coastal Law 613; C Hermeling et al., 'Sailing into a Dilemma: An Economic and Legal Analysis of an EU Trading Scheme for Maritime Emissions' (2015) 78 Transportation Research Part A: Policy and Practice 34, 42; NL Dobson and C Ryngaert, 'Provocative Climate Protection: EU "Extraterritorial" Regulation of Maritime Emissions' (2017) 66 International and Comparative Law Quarterly 295, 298. The international climate law dimension has received more limited attention: see DP Rodriguez, 'The Inclusion of Shipping in the EU Emission Trading Scheme: A Legal Analysis in the Light of Public International Law' (2012) 3 Revista Catalana de Dret Ambiental 1, 6–1.

[xxxvii] Generally, the relationship between WTO law and other rules of international law is debated. See, for instance, Bossche, P. V. D., & Zdouc, W. (2017). The law and policy of the world trade organization: text, cases and materials (No. 126449). Cambridge University, pp 66 to 68; Lamy, Pascal. "The Place of the WTO and its Law in the International Legal Order." *The European Journal of International Law* 17, no. 5 (2006): 969-984; Pauwelyn, Joost. *Conflict of norms in public international law: how WTO law relates to other rules of international law*. Vol. 29. cambridge university press, 2003; Marceau, Gabrielle. "Conflicts of Norms and Conflicts of Jurisdictions the Relationship between the WTO Agreement and MEAs and other Treaties." *Journal of World Trade* 35, no. 6 (2001).

[xxxviii] Bossche, P. V. D., & Zdouc, W. (2017). The law and policy of the world trade organization: text, cases and materials (No. 126449). Cambridge University, pp 66 to 68; Lamy, Pascal. "The Place of the WTO and its Law in the International Legal Order." *The European Journal of International Law* 17, no. 5 (2006): 969-984.

[xxxix] *EC – Measures Affecting the Approval and Marketing of Biotech Products* (DS291). In this decision, the Panel did not consider rules contained in the Cartagena Protocol on Biosafety as superseding WTO law rules because not all WTO Members are also Party to the Cartagena Protocol on Biosafety.

[xl] McGrady B (2008) Fragmentation of international law or 'systemic integration' of treaty regimes: EC – Biotech Products and the proper interpretation of article 31(3)(c) of the Vienna Convention on the Law of Treaties. Journal of World Trade 42:589–618

[xli] These are: Afghanistan, Burkina Faso, Burundi, Central African Republic, Chad, Eswatini, Kyrgyz Republic, Lao People's Democratic Republic, Lesotho, Liechtenstein, Mali, Niger, Rwanda, Chinese Taipei, Tajikistan.

[xlii] These are: Afghanistan, Armenia, Botswana, Burkina Faso, Burundi, Central African Republic, Chad, Costa Rica, Democratic Republic of the Congo, Eswatini, Haiti, India, Kyrgyz Republic, Lao People's Democratic Republic, Lesotho, Liechtenstein, Mali, Nepal, Niger, North Macedonia, Paraguay, Rwanda, Chinese Taipei, Tajikistan, Yemen, Zambia, Zimbabwe.

[xliii] See above**,** and recent IMO submissions and discussions on green corridors, where an explicit reference to compliance with WTO law was made by different IMO stakeholders Angola et al. (2023) 'The draft revised IMO strategy on reduction of GHG emissions from ships', ISWH-GHG 14/2/10. International Maritime Organization.; MEPC (2023) 'Report of the Marine Environment Protection Committee on its Seventy-Ninth Session', MEPC 79/15. International Maritime Organisation, Marine Environment Protection Committee.

[xliv] Englisch & Falco, *supra* note 136.

[xlv] Joachim Englisch & Tatiana Falco, EU Carbon Border Adjustments for Imported Products and WTO Law (June 2021) (unpublished manuscript) (available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3863038 [https://perma.cc/BJ4B-U367]);

[xlvi] GATT, *supra* note 131, at Article XX (b).

[xlvii] GATT, *supra* note 102, at Article XX (g).

[xlviii] India and Saudi Arabia, Possible incompatibility between the WTO rules and Market-Based Measures

for international shipping, MEPC 64/5/3 29 June 2012

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[l] India and Saudi Arabia, Possible incompatibility between the WTO rules and Market-Based Measures

for international shipping, MEPC 64/5/3 29 June 2012, paras 14, 15, 29.

[li] India and Saudi Arabia, Possible incompatibility between the WTO rules and Market-Based Measures

for international shipping, MEPC 64/5/3 29 June 2012, para 27

[lii] India and Saudi Arabia, Possible incompatibility between the WTO rules and Market-Based Measures

for international shipping, MEPC 64/5/3 29 June 2012, para 19

[liii] Wilensky, Meredith. 2014. Authority of Pacific Island States to Regulate Greenhouse Gases from the International Shipping Sector. Tech. rept. Columbia Law School Center for Climate Change Law, New York. For a similar argument made in relation to aviation, see Meltzer, Joshua. 2012. Climate Change and Trade - The EU Aviation Directive and the

WTO. Journal of International Economic Law, 15(1), 111–156.

[liv] Englisch, Joachim, and Tatiana Falcao. "EU Carbon Border Adjustments and WTO Law, Part One." Envtl. L. Rep. 51 (2021): 10857.

[lv] Dominioni, G., & Esty, D. C. (2023). Designing effective border-carbon adjustment mechanisms: aligning the global trade and climate change regimes. Arizona Law Review, (65), 1.

[lvi] M Kremlis, 'The Inclusion of the Shipping Industry in the EU ETS' (2010) 19 European Energy and Environmental Law Review 145, 152–155; T Bäuerl et al., 'Integration of Marine Transport into the European Emissions Trading System' (Umweltbundesamt 2010) 88–94; H Ringbom, 'Global Problem—Regional Solution? International Law Reflections on an EU CO2 Emissions Trading Scheme for Ships' (2011) 26 International Journal of Marine and Coastal Law 613; C Hermeling et al., 'Sailing into a Dilemma: An Economic and Legal Analysis of an EU Trading Scheme for Maritime Emissions' (2015) 78 Transportation Research Part A: Policy and Practice 34, 42; NL Dobson and C Ryngaert, 'Provocative Climate Protection: EU "Extraterritorial" Regulation of Maritime Emissions' (2017) 66 International and Comparative Law Quarterly 295, 298. The international climate law dimension has received more limited attention: see DP Rodriguez, 'The Inclusion of Shipping in the EU Emission Trading Scheme: A Legal Analysis in the Light of Public International Law' (2012) 3 Revista Catalana de Dret Ambiental 1, 6–16; D Heine et al., 'A Regional Solution for a Transnational Problem? A Mechanism to Unilaterally Tax Maritime Emissions While Satisfying Extraterritoriality, Tax Competition and Political Constraints' (Rotterdam Institute of Law and Economics 2015) 24–44.

[lvii] H Ringbom, 'Global Problem—Regional Solution? International Law Reflections on an EU CO2 Emissions Trading Scheme for Ships' (2011) 26 International Journal of Marine and Coastal Law 613; NL Dobson and C Ryngaert, 'Provocative Climate Protection: EU "Extraterritorial" Regulation of Maritime Emissions' (2017) 66 International and Comparative Law Quarterly 295, 298. The international climate law dimension has received more limited attention: see DP Rodriguez, 'The Inclusion of Shipping in the EU Emission Trading Scheme: A Legal Analysis in the Light of Public International Law' (2012) 3 Revista Catalana de Dret Ambiental 1, 6–16; D Heine et al., 'A Regional Solution for a Transnational Problem? A Mechanism to Unilaterally Tax Maritime Emissions While Satisfying Extraterritoriality, Tax Competition and Political Constraints' (Rotterdam Institute of Law and Economics 2015) 24–44.

[lviii] See, for instance, Appellate Body Report, United States—Import Prohibition of Certain Shrimp and Shrimp Products, para. 181, WT/DS58/AB/R (Nov. 6, 1998) paras. 166 and 181. On requirements for compliance with Article XX GATT, see more generally Mehling, M. A., Van Asselt, H., Das, K., Droege, S., & Verkuijl, C. (2019). Designing border carbon adjustments for enhanced climate action. American Journal of International Law, 113(3), 433-481.

[lix] Appellate Body Report, European Communities—Measures Affecting Asbestos and Asbestos-Containing

Products, para. 172, WT/DS135/AB/R (Apr. 5, 2001) [

[lx] Appellate Body Report, United States—Standards for Reformulated and Conventional Gasoline WT/DS2/AB/R, para 21 (May 20, 1996).

[lxi] IMO Secretary-General, Reduction of GHG Emissions from Ships, World Trade Organization's views on document MEPC 64/5/4, MEPC 65/INF.18, 21 February 2013.

[lxii] Argentina et al., *Proposal to establish an IMSF&R mechanism.*

[lxiii] CE Delft, *Possible regulatory measures for international shipping.*

[lxiv] Defour, S. and Afonso, F. (2020) All aboard! Too expensive for ships to evade EU carbon market. Transport & Environment; Lagouvardou, S. and Psaraftis, H.N. (2022) 'Implications of the EU Emissions Trading System (ETS) on European container routes: A carbon leakage case study', *Maritime Transport Research*, 3, p. 100059. Available at: https://doi.org/10.1016/j.martra.2022.100059.

[lxv] Appellate Body Report (2007) *Brazil—Measures Affecting Imports of Retreaded Tyres*, ¶¶ 145, 210, WT/DS332/AB/R (Dec. 3, 2007).

[lxvi] Appellate Body Report (2014) European Communities—Measures Prohibiting the Importation and Marketing of Seal Products, para. 5.318, WT/DS400/AB/R, WT/DS401/AB/R (May 22, 2014).

[lxvii] UNCTAD (2021) *Review of Maritime Transport 2021*. United Nations. Available at: https://unctad.org/system/files/official-document/rmt2021_en_0.pdf .

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[lxix] Chapeau, Article XX GATT.

[lxx] For a recent reading in this sense in the context of the implementation of BCA mechanisms, see Durán, G. M.(2023) 'Securing Compatibility Of Carbon Border Adjustments With The Multilateral Climate And Trade Regimes.' *International & Comparative Law Quarterly.* 72, no. 1: 73-103.

[lxxi] For a recent review, see Durán, Gracia Marín. "Securing Compatibility Of Carbon Border Adjustments With The Multilateral Climate And Trade Regimes." International & Comparative Law Quarterly 72, no. 1 (2023): 73-103.

[lxxii] World Bank (2023) "Carbon revenues from international shipping: considerations for a possible distribution framework", ISWG-GHG 14/3/3. International Maritime Organisation, Intersessional Working Group for the Reduction of GHG emissions from Ships.

[lxxiii] See, for instance, Joanne Scott, Lavanya Rajamani, EU Climate Change Unilateralism, European Journal of International Law, Volume 23, Issue 2, May 2012, Pages 469–494, https://doi.org/10.1093/ejil/chs020; UNCTAD, 'A European Union Carbon Border Adjustment Mechanism: Implications for Developing Countries', (2021) 27–8; A Pirlot, 'Carbon Border Adjustment Measures: A Straightforward Multi-Purpose Climate Change Instrument?' (2022) 34(1) JEL 28–9; M Mehling et al., 'Designing Border Carbon Adjustments for Enhanced Climate Action' (2019) 113(3) AJIL.

[lxxiv] Scott, J. and Rajamani, L. (2012) 'EU climate change unilateralism.' *European Journal of International Law*, 23, no. 2: 469-494.

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[lxxvii] Article 3, SCM Agreement

[lxxviii] Article 5(c), SCM Agreement.

[lxxix] See, for instance, Van den Bossche, Peter, and Denise Prévost. *Essentials of WTO law*. Cambridge University Press, 2021.

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[lxxxiv] Roland Ismer, Harro van Asselt, Jennifer Haverkamp, Michael Mehling, Karsten Neuhoff, Alice Pirlot, Supporting the Transition to Climate-Neutral Production: An Evaluation Under the Agreement on Subsidies and Countervailing Measures, Journal of International Economic Law, 2023, jgac058, https://doi.org/10.1093/jiel/jgac058

[lxxxv] Esty, D.C. (2022). Trade Implications of Greenhouse Gas Emissions Pricing. World Trade Report 2022; Dominioni, G. and Monti, A. (2022) 'Remaking the Global Trade System for a Sustainable Future White Paper Internalizing Climate Externalities from Internationally Traded Goods: Challenges and Way Forward for Border Carbon Adjustment Mechanisms'. Available at: https://doi.org/10.2139/ssrn.4389673.

[lxxxvi] Ricke, Katharine, Laurent Drouet, Ken Caldeira, and Massimo Tavoni. 2018. "Country-Level Social Cost of Carbon." Nature Climate Change 8(10): 895–900.

[lxxxvii] Dominioni and Monti, 'Border Carbon Adjustment Mechanisms'.

[lxxxviii] See Article 3ge EU ETS Directive.

[lxxxix] Article 3ge 1a EU ETS Directive.

[xc] Article 3ge 1a EU ETS Directive.