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Supporting developing countries in WTO dispute settlement

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Supporting Developing Countries in WTO Dispute Settlement

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Supporting Developing Countries in WTO Dispute Settlement

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March 23, 2016

Abstract

Even though the World Trade Organization (WTO) ensures equal access to the dispute settlement system, the legal process is still highly costly, an aspect that primarily affects poorer developing countries. It is feared that this imbalance discourages developing countries from filing and defending complaints against richer countries. In an effort to reduce these costs and increase participation by developing countries, the WTO provides two supporting measures: legal assistance, and preferential panel composition. The latter reserve one slot on the panel exclusively for a judge from a developing country. This paper examines whether these measure leads to increased participation, applying a model that takes into account the decision to participate by both the developing and the industrialised country. We show that both measures encourage developing countries to file more complaints, yet, the number of adjudicated disputes may not increase accordingly. Furthermore, the measures may decrease developing countries' average success rate in panel. Using unique data, we also empirically inspect the presumed benefit of including a developing-country judge on the panel (Art. 8.10) and find a negative impact on the developing-country success rate. This apparent inconsistency is, however, resolved within the theoretical framework through a selction mechanism. The model developed in this paper aims to provide a more systematic approach to policy evaluation of certain types of supporting measures in the WTO.

*Research Institute of Industrial Economics (IFN), Stockholm and Örebro University. E-mail: louise.johannesson@ifn.se. I would like to express my deep gratitude to Professor Henrik Horn for his enormous patience, guidance and generosity in the writing of this paper. I also wish to thank Professor Dan Johansson for his continued encouragement and support. A very special thanks to Professor Johan Stennek for his insightful and constructive comments. I gratefully acknowledge financial support from the Jan Wallander and Tom Hedelius Foundation and the Marianne and Marcus Wallenberg Foundation. This essay is a revised version of my Licentiate Dissertation in Economics from the Department of Economics & Statistics, School of Business, Örebro University.

1 Introduction

It has been suggested that high dispute costs in the World Trade Organization (WTO) dispute settlement mechanism (DSM) restrict developing countries' ability to properly safeguard their trade insterests, which in turn, may weaken their position in global trade. A few studies such as Horn, Mavroidis, and Nordström (2005) and Horn, Francois, and Kaunitz (2008) argue, however, that lower participation rates by developing countries are to be expected due to their, relatively, lower trade volumes and narrower export compositions, both of which, lead to fewer opportunities for disputes to arise. Still, only around 24% of all developing countries have sought formal adjudication in the WTO even though they constitute over 80% of all the members. Hence, developing-country participation remains a concern, and furthermore, this notion may reflect poorly on the WTO, as it may be perceived as an institution concerned, primarily, with protecting the interests of richer countries.

In an effort to reduce these litigation costs for developing countries, so as to increase participation, the WTO has made available two supporting measures. The first measure is legal assistance and is available either in-house through Art. 27.2 DSU, or by becoming a member of the Advisory Centre on WTO Law (ACWL)—an independent organisation that provides legal aid for developing countries that wish to engage in a WTO dispute. The second measure allows a developing country that faces an industrialised country to reserve one of the three slots on an adjudication panel for a judge from a developing country; it is available under the special and differential provision (SDT) Art. 8.10 DSU. The rationale for this policy is not well specified by the WTO, but the underlying idea could be that judges from developing countries have a better understanding of issues that are specific to developing countries. Hence, they may be more favourable to argumentation by developing countries which allow them to win more cases. Such judges could also mitigate unfair

application of the law that favour industrialised countries, which would minimise judicial errors and increase efficiency. The empirical study, Mitchell (2013), could not find any negative bias in panel outcome for developing countries which could stem from Art. 8.10 since they did not account for panel composition in their analysis. Regardless of the specific objective of Art. 8.10, the general benefit seems clear: developing-country judges may alleviate some of the burden of producing evidence and argumentation, which in turn, reduces dispute cost. Although lower dispute costs undoubtedly makes participation more appealing, it is not self-evident that these measures can bring about more disputes involving developing countries.

We show that reducing litigation cost, through either measure, encourages developing countries to challenge more trade measures, but that the observable policy effects are ambiguous. A simple model is developed in which a developing country and an industrialised country decide, independently, whether to participate in a dispute. If both countries wish to adjudica, the dispute will be observable in the dispute settlement system. Note that we do not take into account how a dispute arise; we only outline whether there is an an adjudication for a given dispute. For models that predict trade disputes in equilibrium, see for example Horn (2011), Maggi and Staiger (2011) and Beshkar (2010).

Once the developing country has entered into adjudication it must negotiatiate over panel composition; specifically the number of developing-country judges it wishes to promote. The overall cost of litigation for developing countries is introduced into the model as two parts: a fixed cost for pursuing a dispute that is common for both developing and industrialised countries and a variable cost of producing evidence and argumentation that is associated with an additional developing-country judge. The supporting measures address the dispute cost by using legal assistance to reduce the fixed cost and Art. 8.10 to reduce the marginal cost of producing evidence and argumentation. We find that, while

reducing fixed costs increase filed complaints and observable adjudications, the result is not as straightforward when reducing the cost of developing-country judges. Although this measure encourages developing countries to file more complaints by making it easier to win by successfully promote developing-country judges, industrialised countries will respond by settling more complaints without adjudication, thus curbing the total number of adjudicated disputes. As we only observe adjudicated disputes, we may mistakenly infer that developing country participation has decreased despite that filed complaints have increased. Another source of ambiguous effects is the decrease in average success probability. As developing countries find more trade measures to challenge, the additional disputes that are pursued will have weaker legal merits, thereby reducing the average probability of success. Such seemingly negative effects in observable outcomes, however, do not necessarily imply that a policy is bad. We conclude the analysis by showing that both supporting measures are welfare enhancing for developing countries which suggests that policy evaluation based on participation frequency and average success probability is most likely unreliable.

As of writing, there are no policy evaluations available of these particular measures and their effect on developing-country participation and success rate. But there is a literature on the influence of legal capacity on developing-country participation, with some focus on the impact of ACWL, with mixed results. There are no studies on the impact of Art.8.10. Bown and McCulloch (2010) suggest that ACWL affects dispute frequency through three main channels: increasing the extensive and intensive margin, (more countries participate, and already participating countries file more complaints), diversification of activities, and scale effects (smaller claims are pursued). Although they observe effects at the intensive margin, they do not note a general rise in developing-country participation rates. Davis and Bermeo (2009) confirm that ACWL members were significantly more likely to initiate a dispute, although they did not address the potential selection of developing countries

that decide to become ACWL members. Guzman and Simmons (2005) found no significant effects of the ACWL on a poor complainant's propensity to file more complaints against richer countries (potential scale effects). They speculate that simultaneous changes in both the intensive and extensive margin muddles the result. Bown and Hoekman (2005) also argue that high litigation costs explain the lack of participation by developing countries. They acknowledge that the ACWL reduces costs but observe that the current arrangement is insufficient to engage developing countries at a larger scale. We can tentatively infer from this literature that ACWL appears to aid developing countries to engage more in the DSM, though confounders make it difficult to speculate on the likely mechanisms.

In the second part of the paper, we empirically examine the presumed positive relationship between developing-country judges and the developing-country success rate in adjudication as implied by the supporting measure Art. 8.10. Thus, we expect that developing countries win more claims when there are more developing-country judges on the panel, a presumption that we denote the *a priori* belief of Art. 8.10. However, a first glance on panel outcomes suggests otherwise. Panels with developing-country judges reject the claims of developing countries to a greater extent than do panels without such judges. This implies that Art. 8.10 lacks merit, but we show, by applying the framework developed in this paper, how this negative empirical relationship between developing-country judges and success rate is compatible with the belief that developing-country judges are beneficial.

The contributions of this paper is twofold: first, we develop a theoretical framework that enables us to systematically analyse the consequences of certain supporting measures. Our model provides new insights into policy evaluation and the effects of different types of support policies in WTO DSM. Second, this paper includes the first evaluation of Art. 8.10 in the literature, both empirically by quantifying the *a priori* belief and theoretically by showing a mechanism that determines the use of Art. 8.10.

The next section offers a brief overview of the dispute settlement process followed by a review of legal assistance through the WTO and Art. 8.10 and their associated studies. In Section 4, a model of a three-stage dispute from the perspective of a developing country is presented. In Section 5, we compare the measures and summarise the results. Section 6 concludes.

2 The dispute settlement process

The DSM comprises five stages: 1) Consultations; 2) Panel adjudication; 3) Appeal; 4) Implementation; and 5) Suspension of concession. The parties can at any time abandon adjudication in favor of a mutually agreed solution (MAS). The process begins when one or several WTO member(s), the complainant(s), files a "Request for consultations" with an another member country, the respondent, that allegedly has violated a WTO provision. During a minimum period of 60 days, negotiations are conducted to settle the dispute bilaterally (DSU Art. 4). If they are unable to settle the issue within this time frame, the complainant may submit a request for "Establishment of panel" (DSU Art. 6.2) to the Dispute Settlement Body (DSB) (DSU Art. 6). This launches formal adjudication.

The parties will, together, select three judges[1] to examine the claims and counter-claims of the parties. In the event of disagreement, the composition is relegated to the Director-General (DG) (DSU Art. 8.7). The panel work has a statutory deadline of six months, from the panel composition date (DSU Art. 12.8), with a possible extension up to nine months. In practice, the average duration tends to be longer (Horn, Johannesson, and Mavroidis, 2011). The panel will publish its findings (DSU Art. 16.4) in a report to the DSB and its members, along with a recommended course of action (DSU Art. 12).

[1]The WTO Dispute Settlement Understanding do allow a panel of five judges, but, so far, that has never been requested.

Both the complainant and the respondent can appeal these rulings to the Appellate Body (AB) (DSU Art. 17) and usually do so. If they abstain, the DSB will adopt the report as is. The AB panel consists of three members chosen from a permanent group of seven members—unlike the *ad hoc* composition of the panel—using an undisclosed rotating algorithm. The AB may either reverse or uphold the original findings of the panel. Note that the AB is restricted to points of law, while the panel engages in questions of fact. Analysis of legal interpretation, but not a review of facts, is permissible in the AB report.

There is no enforcement, and hence non-compliance with the recommendations of the panel and the AB can only be countered through further bilateral negotiations or retaliation, such as temporarily suspending trade privileges. There are no retroactive compensation schemes for the period in which a trade violation was in place.

2.1 Legal assistance

The WTO provides legal assistance through Art. 27.2 DSU and the ACWL. Although procedural support is offered to all Members, additional resources should be reserved especially for developing countries, according to Art 27.2:

> While the Secretariat assists Members in respect of dispute settlement at their request, there may also be a need to provide additional legal advice and assistance in respect of dispute settlement to developing country Members. To this end, the Secretariat shall make available a qualified legal expert from the WTO technical cooperation services to any developing country Member which so requests. This expert shall assist the developing country Member in a manner ensuring the continued impartiality of the Secretariat.

There is no information available regarding the use of in-house legal services by developing countries. However, considering that a legal expert is required to safeguard the neutrality

of the Secretariat, it stands to reason that in-house legal assistance is limited in scope compared to the ACWL.

The ACWL offers legal advice, support in dispute proceedings and training for government officials to their developing country members and all least developed countries, which are entitled to legal aid without membership (Agreement Establishing the Advisory Centre on WTO Law). The WTO introduced the ACWL in 2001 as a stand-alone organisation and all countries are welcome to become members, but only developing countries may use the ACWL's services; industrialised countries are sustaining members. There are currently 32 developing-country members and 11 industrialised-country members. Legal advice is free but ACWL charges a reduced rate for active support in settlement proceedings and a nominal fee for least developed countries. As of 2014, the ACWL has provided over 2000 legal opinions, and acted as legal support in 45 dispute settlement proceedings (Advisory Centre on WTO Law, 2014). In nearly half of the disputes (42 percent) the developing country opposed an industrialised country.

2.2 Art. 8.10 DSU and the importance of nationality

If a developing country faces an industrialised country at the panel stage, the developing country may choose to invoke Art. 8.10. It states:

> When a dispute is between a developing country Member and a developed country Member the panel shall, if the developing country Member so requests, include at least one panelist from a developing country Member.

The DG, together with the Secretariat, holds considerable influence over the composition process. The Secretariat is responsible for providing a shortlist of appropriate judges (Art. 8.6 DSU), and according to Shoyer (2003), the Secretariat prefers balanced geographical

representation on the panel, although this can be challenging for various reasons.[2] The parties are not allowed to oppose these nominations unless for "compelling reasons" (Art. 8.6 DSU). Although it is not made public which appeals are compelling, nationality of judges appears to be admissible (Bourgeois, 2001). If the parties cannot reach an agreement, the DG is authorised to appoint the judges with the advice of the parties, DSB chairperson and relevant committee chairpersons.

It has been indicated through written proposals by the Least Developed Country (LDC) Group together with Haiti that a judge's nationality is considered valuable in adjudication. They suggested that one developing-country judge on the panel should be mandatory, and if requested, an additional developing-country judge could be appointed.[3] They proposed the following:

> When a dispute is between a developing-country Member and a developed-country Member the panel shall include one panelist from a developing-country Member, and if the developing-country Member so requests, there shall be a second panelist from a developing-country Member.

Along with The African Group (TN/DS/W/15), they also appealed for more equal geographic representation of judges. These proposals also suggest that the poorest WTO members may find it difficult to enforce Art. 8.10 against an industrialised country and consider themselves unusually disadvantaged in adjudication.

In short, a developing country that lacks the resources to properly vet each potential judge may use geographical background as a means to find a judge favourable to its position

[2]For example, Art. 8.3 limits the pool of potential judges with respect to geographical background. "Citizens of Members whose governments are parties to the dispute or third parties as defined in paragraph 2 of Article 10 shall not serve on a panel concerned with that dispute, unless the parties to the dispute agree otherwise." (Art. 8.3 DSU) The definition of "Members" is (footnote 6 in the DSU): "In the case where customs unions or common markets are parties to a dispute, this provision applies to citizens of all member countries of the customs unions or common markets." This definition means that, when, for example, the European Union is involved in a dispute, potential judges from any EU country will not be considered.

[3]TN/DS/W/17 and TN/DS/W/37.

(Bourgeois (2001)). Since nationality is a low-cost, low-effort benchmark to characterise judges, it may become an important criterion for developing countries.

3 The model

Consider a case in which an industrialised country has implemented a policy measure against a developing country (henceforth country I and country D, respectively) that reduces exports from country D to country I. Note that our model is not dependent on whether the developing country is the complainant or the respondent. If the roles were reversed, it would only affect which payoffs they receive (see Appendix A). The sequence of the events is as follows: country D first decides whether to file a complaint or refrain. If a complaint is filed, country I decides whether to contest it. If they settle, the measure is withdrawn and the dispute ends. If country I contests the complaint, the dispute is settled by an adjudication panel, at which time country D will decide how much effort to exert to promote developing-country judges. Lastly, success rates are realised. Thus, we denote participation as the decision to file or contest a complaint and observed participation when their participation decisions lead to adjudication.

3.1 Developing country's success probability

Let π denote the probability of successful litigation for country D, i.e. its success probability. The success probability function for a developing country is defined as

$$\pi = \Pi(q, n)$$

where q is the quality of the dispute for the developing country and $n \in [0, 1]$ is the share of developing-country judges on the panel. Dispute quality is interpreted as the legal merit

of a case and is observable by both parties.

We make three assumptions concerning the properties of this function. First, dispute quality is measured such that a higher q increases the developing country's success probability.

Assumption 1. $\frac{\partial \Pi(q,n)}{\partial q} > 0$

Second, developing-country judges have a positive impact on D's success probability, which captures the *a priori* belief of Art. 8.10.

Assumption 2. $\frac{\partial \Pi(q,n)}{\partial n} > 0$

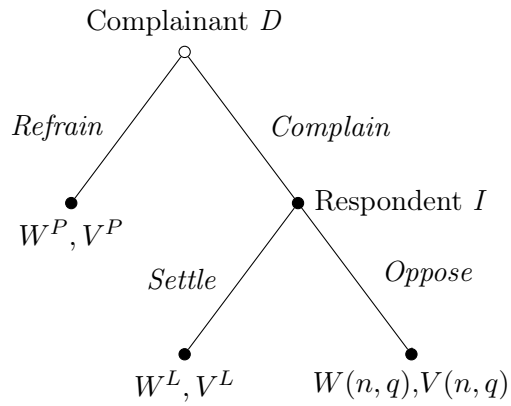
Third, there is a diminishing marginal return of n. If the role of a developing-country judge is to provide a developing-country perspective and ensure that such issues are adequately considered during the analysis of the case, significant contributions by each additional judge will be diminishing.

Assumption 3. $\frac{\partial^2 \Pi(q,n)}{\partial n} < 0$

3.2 Payoffs

If the trade measure is maintained or if it is challenged but the complainant loses, country D and I receive payoffs W^P and V^P, respectively. If country D instead decides to launch a complaint, and country I settles or if the complainant wins the challenge, then country D and I receive W^L and V^L, respectively. To repeat, a dispute is only adjudicated if country D files a complaint that country I opposes. The expected payoffs from adjudication are $W(q,n)$ and $V(q,n)$ for country D and I. The game and its associated payoffs are summarised in Figure 1.

Figure 1: Expected payoffs



We solve the game backwards, beginning with the parties' payoffs in panel.

Country D's payoff in panel

The expected payoff in panel for country D is defined as:

$$W\big(q, n, k^D, c\big) \equiv \Pi(q,n)\, W^L + [1 - \Pi(q,n)]\, W^P - \big(k^D + cn\big)\,, \tag{1}$$

where k^D is the fixed cost of adjudication, c is the marginal cost of promoting developing-country judges, and n is the share of such judges on the panel.

Country I's payoff in panel

The expected payoff in panel for country I is similarly defined as:

$$V\big(q, n, k^I\big) \equiv \Pi(q,n)\, V^L + [1 - \Pi(q.n)]\, V^P - k^I, \tag{2}$$

with k^I being the fixed cost of adjudication for country I. The total cost of litigation for country I consists only of a fixed cost k^I.

3.3 Country D's choice of judges

In stage 3, country D maximises(1) w.r.t. n, resulting in the following first order condition (FOC):

$$\frac{\partial W(q,n)}{\partial n} = \frac{\partial \Pi(q,n)}{\partial n}\Delta^D - c = 0,$$

where $\Delta^D \equiv W^L - W^P$ is the relative benefit of liberalisation for country D. The second order condition (SOC) is

$$\frac{\partial^2 W(q,n)}{\partial n^2} = \frac{\partial^2 \Pi(q,n)}{\partial n^2}\Delta^D < 0,$$

where the inequality follows from Assumption 3. Since $\partial^2\Pi/\partial n < 0$, the FOC implicitly defines the optimal n for each (q,c):

$$n^* = N(q,c).$$

This results in the following indirect welfare function for country D,

$$\tilde{W}\big(q,c,k^D\big) \equiv \Pi(q,N(q,c))\,\Delta^D - k^D - cN(q,c) + W^P, \tag{3}$$

and for country I,

$$\tilde{V}\big(q,c,k^I\big) \equiv [1-\Pi(q,N(q,c))]\,\Delta^I - k^I + V^L, \tag{4}$$

where $\Delta^I \equiv V^P - V^L$ is the relative benefit of protection for country I.

3.4 Country I's choice of whether to contest

In stage 2, country I decides whether to settle and withdraw the challenged measure or to proceed to adjudication. If the expected welfare is greater than the welfare from settling the dispute, the complaint will be contested,

$$\tilde{V}(\cdot) \geq V^L. \tag{5}$$

Assume that there is a reservation point q^I at which country I is indifferent between opposing or settling:

$$\tilde{V}\big(q^I\big) \equiv V^L. \tag{6}$$

Given the assumptions made thus far, it is unclear that q^I is the highest dispute quality for country D, that country I is willing to pursue. To see this, differentiate $\tilde{V}(\cdot)$ w.r.t. q

$$\frac{\mathrm{d}\tilde{V}(\cdot)}{\mathrm{d}q} = -\Delta^I \left[\underbrace{\frac{\partial \Pi}{\partial q}}_{(+)} + \underbrace{\frac{\partial \Pi}{\partial n}}_{(+)} \underbrace{\frac{\partial N}{\partial q}}_{(?)} \right],$$

where factor $\partial N/\partial q$ is the effect of dispute quality on the optimal share of developing-country judges. The direction of this effect, however, is undetermined, and because $\partial \Pi/\partial q$ and $\partial \Pi/\partial n$ are positive by Assumptions 1 and 2, we see that the direction of $\mathrm{d}\tilde{V}/\mathrm{d}q$ is ambiguous. To allow for the possibility that $\partial N/\partial q$ is negative, a sufficient assumption, to ensure that the net effect is negative, is to assume that the direct effect is larger than the indirect effect;

Assumption 4. $\frac{\partial \Pi}{\partial q} > \frac{\partial \Pi}{\partial N} \frac{\partial N}{\partial q}$.

In other words, there are two terms that determine the net effect on welfare as dispute quality changes: a direct change in success probability and an indirect change through

changes in the optimal share of developing-country judges. Assumption 4 implies that, on the margin, the legal merits of the dispute contribute more to success probability than does the number of developing-country judges that the developing country has on the panel. Thus, we determine that $\mathrm{d}\tilde{V}/\mathrm{d}q < 0$ for country I. Foreseeing the behaviour of country D, country I will contest a complaint for all $q < q^I$.

3.5 Country D's choice to launch a dispute

In stage 1, country D chooses whether to file a complaint. For $q > q^I$, country I will settle, knowing that if there is a panel, country D will choose $n = N(q, c)$. Country D will complain for $q > q^I$, and there will not be a panel, assuming that the complaint can be made without cost. For $q < q^I$, country D files complaints if the expected welfare is larger than the welfare received from protection:

$$\tilde{W}(\cdot) \geq W^P. \tag{7}$$

Assuming that country D has a reservation point q^D at which it is indifferent between filing or not, we obtain the following condition:

$$\tilde{W}(q^D) \equiv W^P. \tag{8}$$

Note that country D will complain for $q \geq q^D$ since

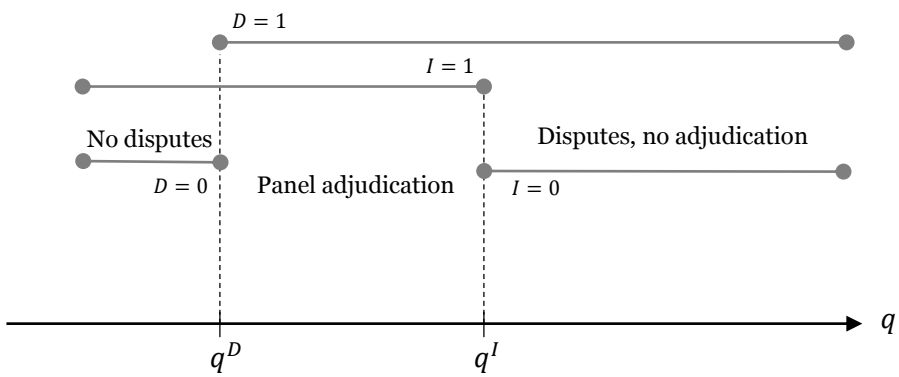
$$\begin{aligned} \frac{\mathrm{d}\tilde{W}(\cdot)}{\mathrm{d}q} &= \Delta^D \left[\frac{\partial \Pi}{\partial q} + \frac{\partial \Pi}{\partial n} \frac{\partial N}{\partial q} \right] - c \frac{\partial N}{\partial q} \\ &= \Delta^D \frac{\partial \Pi}{\partial q} > 0, \end{aligned}$$

by the envelope theorem, and $\partial\Pi/\partial q$ is positive by Assumption 1. This tells us that Country D will file complaints for all $q > q^D$.

3.6 Zone of Possible Disagreement

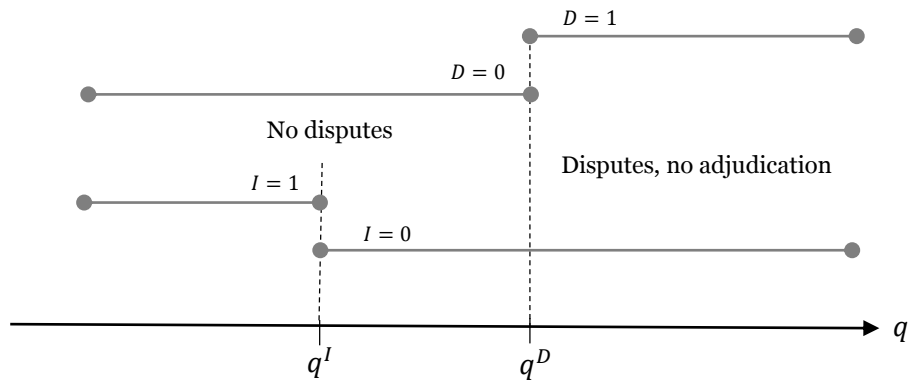
We now know that country D files complaints for all $q > q^D$ and country I contest all complaints when $q < q^I$. However, adjudication only takes place when both parties engage. Consequently, $q^D \leq q^I$ is a necessary condition for there to be adjudicated disputes. This situation is illustrated in Figure 2.

Figure 2: Adjudication interval when $q^D < q^I$



If, instead, $q^I < q^D$, there will be no disputes that lead to adjudication, as illustrated in Figure 3.

Figure 3: No adjudication interval when $q^I < q^D$



We are primarily interested in the case depicted in Figure (3). To see that this case might arise given our assumptions, we will use an example:

Proposition 1. *If* $N(q, \infty) = 0$, $\frac{k^D}{\Delta^D} < 1 - \frac{k^I}{\Delta^I}$, *then* $q^D < q^I$.

Proof. Let c be sufficiently high that there are no developing-country judges on the panel. We then have:

$$\begin{aligned} \Pi\big(q^D, 0\big)\,\Delta^D - k^D + W^P &= W^P \\ \big[1 - \Pi\big(q^D, 0\big)\big]\,\Delta^I - k^I + V^L &= V^L \end{aligned}$$

Rearrange and divide both sides by Δ^D and Δ^I, respectively.

$$\begin{aligned} \Pi\big(q^D\big) &= \tfrac{k^D}{\Delta^D} \equiv \gamma^D \\ 1 - \Pi\big(q^D\big) &= \tfrac{k^I}{\Delta^I} \equiv \gamma^I. \end{aligned}$$

As Π is monotonically increasing in q for the complainant, there exists an inverse function

Π^{-1} such that

$$\begin{aligned} q^D &= \Pi^{-1}\big(\gamma^D\big) \\ q^I &= \Pi^{-1}\big(1-\gamma^I\big)\,. \end{aligned}$$

And, since Π is monotonically increasing in q, Π^{-1} is monotonically increasing in γ. Hence, for $\gamma^D < 1-\gamma^I$, $q^D < q^I$, and there will be panels in equilibrium. □

4 Comparing supporting measures

In what follows, we will restrict our attention to cases in which $q^D < q^I$.

4.1 Number of adjudicated disputes

Having determined the equilibrium dispute pattern as functions of c and k^D we will now examine and compare the two supporting measures in terms of participation. We first focus on changes in the total number of adjudicated disputes and how it relates to the lower and upper bounds of the dispute interval. Hence, we begin by rearranging (8) and (6) which implicitly define functions for q^D and q^I:

$$\begin{aligned} q^D &= Q^D\left(k^D, c\right) \\ q^I &= Q^I\left(c\right). \end{aligned}$$

The impact of c and k^D on q^D and q^I is determined by totally differentiating (6) and (8):

$$\begin{aligned}\frac{\partial \tilde{W}}{\partial q}dq^D + \frac{\partial \tilde{W}}{\partial k^D}dk^D + \frac{\partial \tilde{W}}{\partial c}dc &= 0 \\ \frac{\partial \tilde{V}}{\partial q}dq^I + \frac{\partial \tilde{V}}{\partial c}dc &= 0.\end{aligned}$$

Next we analyse how changes in fixed cost k^D and variable cost c affect q^D and q^I, which in turn determine the number of adjudicated disputes.

A. Legal assistance

Legal assistance corresponds to lowering the fixed cost of litigation faced by developing countries. To determine how a reduction in k^D affects q^D, we set dc to zero and solve for dq^D/dk^D:

$$\frac{dq^D}{dk^D} = -\frac{\frac{\partial \tilde{W}}{\partial k^D}}{\frac{\partial \tilde{W}}{\partial q}} = -\frac{-1}{\frac{\partial \Pi}{\partial q}\Delta^D} > 0. \tag{9}$$

As k^D decreases, the lower bound q^D will also decrease. Country I is not directly affected by this policy since q^I is not a function of k^D or q^D. As we set $dc = 0$, we see that $dq^I = 0$. Consequently, country D files more complaints, and because q^I is unchanged, the dispute interval widens such that a larger share of the filed disputes are adjudicated.

B. Subsidising judges

Changes to q^D when judges are subsidised are given by setting dk^D to zero and solving for dq^D/dc:

$$\frac{dq^D}{dc} = -\frac{\frac{\partial \tilde{W}}{\partial c}}{\frac{\partial \tilde{W}}{\partial q}} = -\frac{-n}{\frac{\partial \Pi}{\partial q}\Delta^D} > 0 \tag{10}$$

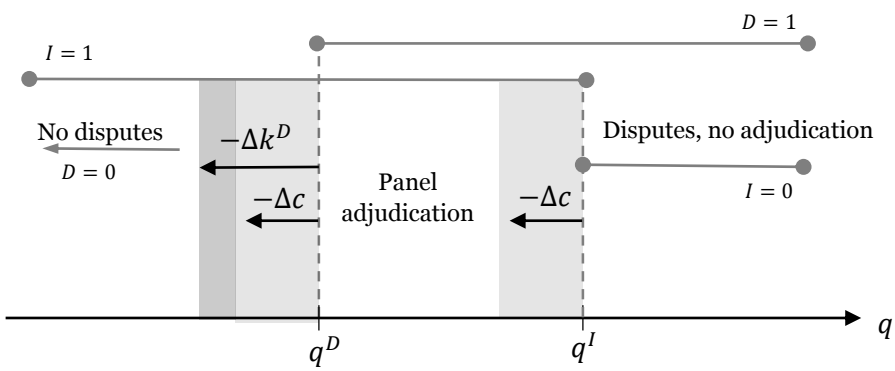
As in the case of legal assistance, there is a decrease in q^D. Changes in c will, however, also affect the success probability of country I, thus, we need to determine how q^I changes:

$$\frac{dq^I}{dc} = -\frac{\frac{\partial \tilde{V}}{\partial c}}{\frac{\partial \tilde{V}}{\partial q}} = -\frac{-\frac{\partial \Pi}{\partial n}\frac{\partial N}{\partial c}}{-\left(\frac{\partial \Pi}{\partial q} + \frac{\partial \Pi}{\partial n}\frac{\partial N}{\partial q}\right)} > 0. \tag{11}$$

The expression in parentheses is positive by Assumption 4, and hence $dq^I/dc > 0$. As lowering c induces both parties to decrease their reservation points, country D will file more complaints, and country I will settle more of them. These opposing effects imply that the effect on the total number of adjudicated disputes is ambiguous, and which will depend on the relative effect sizes and the probability density function around q^D and q^I.

Observation 1. The results thus far can be summarised in Figure 4.

Figure 4: Changes to participation and total no. of adjudicated disputes.



To gain some intuition concerning the reasons for these findings, note first that both policies encourage developing countries to file more complaints, meaning they are more willing to pursue disputes with lower marginal benefits. However, a consequence of subsidising judges is that industrialised countries become more inclined to settle. This can be seen in Figure 4 as a decrease in q^I that results in ambiguous changes in the total number of adjudicated

disputes. Finally, as litigation costs decrease, the additional disputes pursued by developing countries will be of lower quality, which in turn affects the average success probability.

4.2 Average success probability in panel

Let $f(q)$ denote the density function of q. The average observed success probability in panel is obtained by taking the expected value of $\Pi(q, c)$, provided that the dispute proceeded to the panel stage:

$$\bar{\pi} = \frac{1}{F(q^I) - F(q^D)} \int_{q^D}^{q^I} f(q)\, \Pi(q, c)\, \mathrm{d}q.$$

We continue by examining the change in average success probability when reducing k^D and c.

A. Legal assistance

The change in $\bar{\pi}$ as k^D changes is given by

$$\frac{\mathrm{d}\bar{\pi}}{\mathrm{d}k^D} = \underbrace{\frac{f(q^D)}{F(q^I) - F(q^D)}}_{(+)} \left[\bar{\pi} - \Pi(q^D, c)\right] \underbrace{\frac{\mathrm{d}q^D}{\mathrm{d}k}}_{(+)} > 0,$$

where $\mathrm{d}q^D/\mathrm{d}k^D$ is positive, as demonstrated above, and $\bar{\pi} > \Pi\left(q^D, c\right)$ as q^D is the minimum of the interval over which we compute the average success probability. It follows that reducing the fixed cost unambiguously decreases the average success probability. However, this result is a direct consequence of an increase in filed complaints, and hence, the negative impact on the average success probability is not necessarily evidence that the measure is unsuccessful in aiding developing countries. In general, increasingly weaker cases will be filed the more we reduce litigation costs.

B. Subsidising judges

We are unable to determine $\mathrm{d}\bar{\pi}/\mathrm{d}c$. The reason for this is that as c decreases both q^D and q^I will decrease which means that $F\left(q^I\right)$ and $F\left(q^D\right)$ also decrease. Accordingly, the change in $F(q^I) - F(q^D)$ is ambiguous, provided we do not know the effect sizes. The effect on the integral is likewise ambiguous, as it will depend on the unknown distribution of q around q^I and q^D. We conclude that subsidising judges appears to have ambiguous effects on the average success probability.

4.3 Welfare effects

Lastly, we analyse welfare changes to evaluate whether developing countries are better off with these supporting measures in place. For this purpose, we define the total expected welfare for country D and country I, respectively:

$$\mathrm{E}\left[W\right] = W^P F(q^D) + \int_{q^D}^{q^I} f(q)\, \tilde{W}(\mathrm{q};\cdot)\, \mathrm{d}q + W^L \left[1 - F(q^I)\right] \tag{12}$$

$$\mathrm{E}\left[V\right] = V^P F(q^D) + \int_{q^D}^{q^I} f(q)\, \tilde{V}(\mathrm{q};\cdot)\, \mathrm{d}q + V^L \left[1 - F(q^I)\right] \tag{13}$$

Welfare stems from three sources in equations (12) and (13): the first term captures trade measures that are not challenged, the second term represents trade measures that are adjudicated and the third term captures trade measures that are challenged but not defended.

A. Legal assistance

The net welfare effect for country D when lowering k^D is given by:

$$\frac{\mathrm{dE}\left[W\right]}{\mathrm{d}k^D} = \int_{q^D}^{q^I} f(q) \underbrace{\frac{\partial \tilde{W}(q;\cdot)}{\partial k^D}}_{(-)} \mathrm{d}q < 0,$$

and for country I by

$$\frac{\mathrm{dE}\left[V\right]}{\mathrm{d}k^D} = f(q^D) \underbrace{\left(V^P - \tilde{V}(q^D;\cdot)\right)}_{(+)} \underbrace{\frac{\mathrm{d}q^D}{\mathrm{d}k^D}}_{(+)} > 0.$$

The overall effects show that legal assistance is welfare-enhancing for country D and welfare-reducing for country I. For country D, there is a direct welfare effect $\partial \tilde{W}/\partial k^D < 0$ when reducing k^D, such that for a given set of disputes, the costs are reduced. From above we know that lowering litigation costs leads to an increase in filed complaints, but that developing countries do not receive welfare from participation. However, these additional filed disputes reduce welfare for country I by $V^P - \tilde{V}(q^D, c)$ because these are trade measures that country D previously did not find it worth pursuing, but are now at risk of being revoked . The signs of all the terms were determined by (7), (5) and (9).

B. Subsidising judges

The net welfare effects for country D when subsidising judges are given by

$$\frac{\mathrm{dE}\left[W\right]}{\mathrm{d}c} = \int_{q^D}^{q^I} f\left(q\right) \underbrace{\frac{\partial \tilde{W}(q;\cdot)}{\partial c}}_{(-)} \mathrm{d}q + f\left(q^I\right) \underbrace{\left(\tilde{W}(q^I;\cdot) - W^L\right)}_{(-)} \underbrace{\frac{\mathrm{d}q^I}{\mathrm{d}c}}_{(+)} < 0,$$

and for country I by

$$\frac{\mathrm{dE}\left[V\right]}{\mathrm{d}c} = \int_{q^D}^{q^I} f\left(q\right) \underbrace{\frac{\partial \tilde{V}(q;\cdot)}{\partial c}}_{(+)} \mathrm{d}q + f\left(q^D\right) \underbrace{\left(V^P - \tilde{V}(q^D;\cdot)\right)}_{(+)} \underbrace{\frac{\mathrm{d}q^D}{\mathrm{d}c}}_{(+)} > 0.$$

Thus, in contrast to the effect on observable outcomes, the welfare effect can be unambiguously established to be welfare-enhancing for country D and welfare-reducing for country I. For country D, the direct effect $\partial \tilde{W}/\partial c < 0$ is the same as above, but in this case there is also an indirect effect because country I settles more disputes without adjudication that contributes to an increase in the number of disputes country D wins. For country I, the indirect effect is analogous to the case of legal assistance, but now there is an additional direct effect in that all disputes are now more difficult to win for country I. The signs of the first terms are determined by (10) and (11) and the second terms by (7) and (5).

Observation 2. For developing countries there are positive welfare effects from both supporting measures. There are two sources of these welfare gains: first, when litigation costs are reduced, there is a direct increase in welfare when adjudicating a dispute. Second, when subsidising judges, country I will now choose to settle disputes that it had previously chosen to contest. For industrialised countries, by contrast, both supporting measures are welfare decreasing because fewer disputes are settled to their advantage. There is also a direct negative effect, in the case of subsidising judges, on industrialised countries' welfare. Comparing these results with the previously derived policy effects reveals that the number of adjudicated disputes and success rates are only partial outcomes that do not capture the full impact of the supporting measures. If the main purpose of the policies is to empower developing countries to challenge more trade measures, then the efficacy of the supporting measures cannot be inferred from observed participation.

5 Is there support for Art. 8.10?

In this part of the paper, we inspect the empirical relationship between developing-country judges and the developing-country success rate at the panel stage. For this purpose, we use a data set constructed by Henrik Horn and Petros Mavroidis for a World Bank Project.[4] This data set captures all five formal stages of a dispute (as described previously) and covers all disputes initiated between 1995 and 2010.[5] An additional two years' worth of disputes were also collected for this study. During this period, 479 disputes were filed, and 200 of those have progressed to the panel stage. Nearly 50 percent involve one developing country and one industrialised country. (See Appendix B for an overview of all developing-country members that have participated in adjudicated dispute against an industrialised country. There is also a discussion of country classification.)

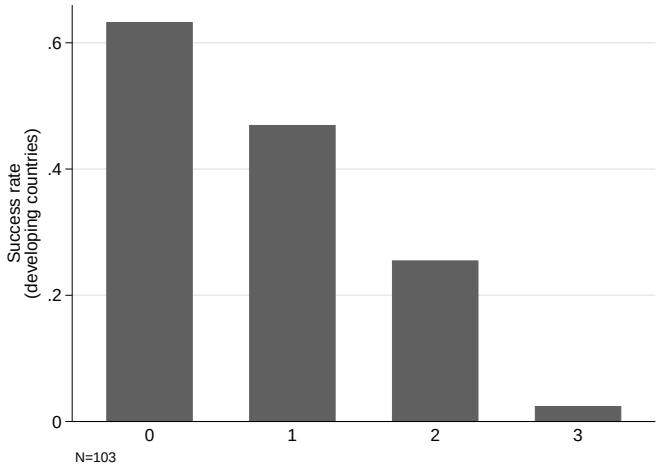
The nationality of developing-country judges was readily available in the data set, while the success rate was constructed using the average number of accepted claims,[6] as done in Hoekman, Horn, and Mavroidis (2009). Figure 5 plots the success rate against the number of judges from developing countries. For the data to be consistent with the *a priori* belief of Art. 8.10, we expect a positive relationship between developing-country judges and the success rate.

[4]The data set can be found at www.worldbank.org/trade/wtodisputes

[5]The rules allow several countries to file a complaint jointly, which will be filed under the same case number. Thus, in practice there are 426 disputes with a unique case number. In the data set, however, such joint complaints are analysed separately for each country that joined, hence we call these bilateral disputes. This is acknowledged practice for dispute settlement data that is motivated by the fact that each country will receive individual panel rulings despite only one panel report being issued. For a detailed overview of these data see Horn et al. (2011).

[6]We use the mean of accepted claims when the developing country is the complainant and the mean of rejected claims (for the industrialised country) when it is the respondent. A panel can also rule judicial economy on claims. This occurs when the complainant asserts that a trade measure violates several provisions simultaneously. In those cases, the panel need not address all claims, if only one of them resolves the dispute. The remainder of the claims is ruled as judicial economy. Both judicial economy and claims with undefined rulings are excluded in the final calculation of the success rate.

Figure 5: Success rate of developing countries, by number of developing-country judges



Two observations emerge from Figure 5. First, although there have been considerably more panels with at least one developing-country judge (85 percent), it is surprising that developing countries do not invoke Art. 8.10 in all of them. Second, the success rate decreases with the number of developing-country judges, seemingly contradicting the *a priori* belief that developing-country judges *increase* the success rate.[7] In other words, panels with no developing-country judges have a higher success rate than panels with at least one such judge, and this novel finding is significant. (We applied a two-sample t-test with a one-tailed p-value of 0.038—where the alternative hypothesis is that such judges make no difference or have a negative effect.) The linear correlation in Figure 5 is $r = -0.36$ and also significant at the one percent significance level. (See Appendix B for alternative specifications.) Is this evidence against the *a priori* belief of Art. 8.10? We propose an alternative explanation that reconciles the *a priori* belief with the experimental data and

[7]Keep in mind however that the data for panels with three developing-country judges consist of only three disputes, and those disputes all concern the same issue against China. The other sub-samples have relatively larger sample sizes with 62 disputes for one developing-country judge on the panel and 25 disputes with two developing-country judges.

the theory outlined in this paper.

5.1 Selection effects in panel composition

To explain how the pattern in Figure 5 could arise within our framework, we note that dispute quality influences success probability through two distinct channels:

$$\frac{\mathrm{d}\Pi(q, N(q))}{\mathrm{d}q} = \frac{\partial \Pi}{\partial q} + \frac{\partial \Pi}{\partial n}\frac{\partial N}{\partial q} > 0.$$

A direct effect that is positive by Assumption 1, and an indirect effect through the share of developing-country judges on the panel, where $\partial\Pi/\partial n$ is positive by Assumption 2, while the direction of $\partial N/\partial q$ is undetermined. The net effect is positive by Assumption 4. To explain Figure 5 it is necessary to determine the effect of dispute quality on the optimal share of developing-country judges. Thus, we take the total differential of (3):

$$\frac{\partial}{\partial n}\left[\frac{\partial \Pi(q, N(q;\cdot))}{\partial n}\Delta^D - c\right] dN + \frac{\partial}{\partial q}\left[\frac{\partial \Pi(q, N(q;\cdot))}{\partial n}\Delta^D - c\right] dq = 0$$

or

$$\frac{dn^*}{dq} = -\frac{\frac{\partial^2 \Pi(q, N(q;\cdot))}{\partial n \partial q}}{\frac{\partial^2 \Pi(q, N(q;\cdot))}{\partial n^2}}$$

Since the denominator is strictly negative by SOC, the sign of the differential ratio will depend on the sign of the mixed partial derivative. If positive, $\mathrm{d}\Pi/\mathrm{d}q$ is guaranteed to be positive. Recall that this implies that the impact of n on Π is increasing in q and that we should observe a positive correlation between n and Π. This is however contrary to Figure 5. However, a negative mixed partial derivative implies that the impact of n on Π is decreasing in q, and hence we should observe a negative correlation between n and Π. We see that this is consistent with Figure 5. Note that a negative mixed partial derivative means that an increase in the number of developing-country judges will be more valuable

when dispute quality is low (denoted as q^{lo}) compared to high (q_i^{hi}):

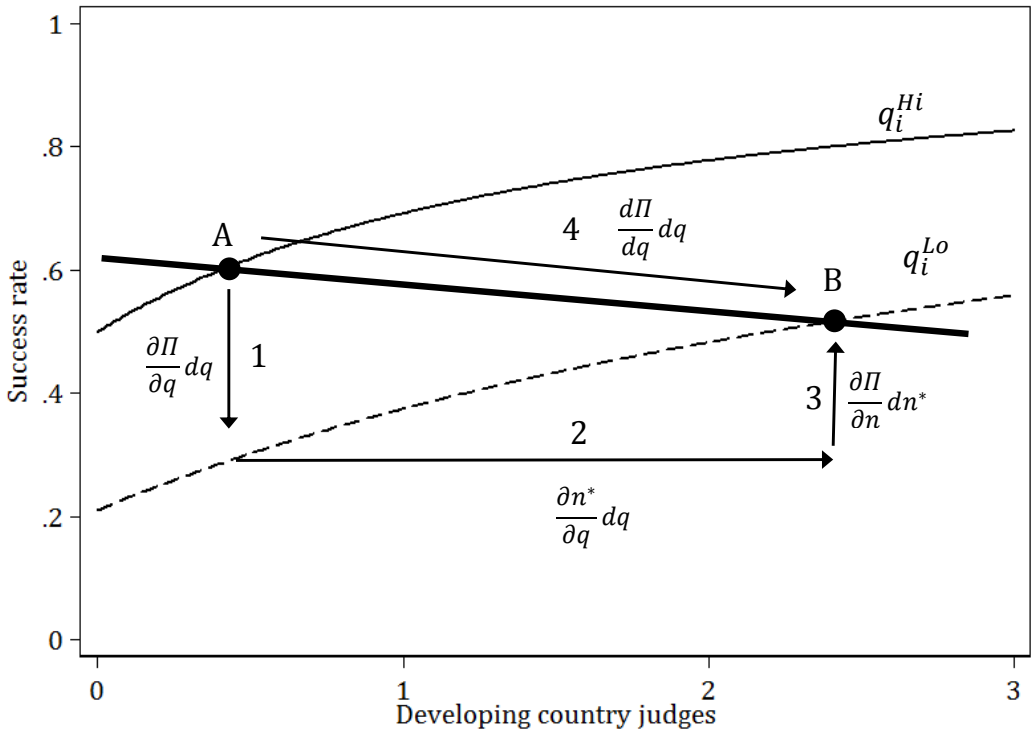
$$\frac{\partial \Pi(q^{\text{hi}}, n)}{\partial n} < \frac{\partial \Pi(q^{\text{lo}}, n)}{\partial n}.$$

This tells us that developing countries with lower-quality disputes will be incentivised to promote more developing-country judges on their panel. In equilibrium, we will therefore observe that weaker cases will have a higher share of developing-country judges on their panels. This selection mechanism would give rise to the negative slope in Figure 5, although Assumptions 2 and 4 still hold.

5.2 An illustration of selection

We show, with some abuse of notation, the comparative statics of going from a case of higher quality to a case of lower quality. This encapsulates several properties of our model and illustrates the negative correlation found in Figure 5. Note that the example function presented in Figure 6 is monotonic, where $\partial\Pi/\partial n > 0$, $\partial^2\Pi/\partial n^2 < 0$ and $\partial\Pi/\partial n \partial q < 0$.

Figure 6: Comparative statics, illustrated



Starting from point A, which is the optimal choice of n for q^{hi}, we introduce a decrease in dispute quality from q^{hi} to q^{lo} (dq). First, there is a direct effect ($\partial\Pi/\partial q$) that leads to a decrease in success probability, moving downwards from $\Pi(q^{\text{hi}}, n)$ to $\Pi(q^{\text{lo}}, n)$ along arrow 1. A decrease in dispute quality will, however, also affect the optimal n, which means that we will move sideways along arrow 2. Finally, this increase in n^* will increase the success probability ($\partial\Pi/\partial n$), and hence we move up along arrow 3 until we reach point B. This illustrates the following features of the model: first, holding the share of developing-country judges constant, the success probability is increasing in dispute quality (Assumption 1, $\partial\Pi/\partial q > 0$), as $\Pi(q^{\text{hi}}, n)$ lies strictly above $\Pi(q^{\text{lo}}, n)$. Second, holding dispute quality constant, developing-country judges increase success probability (Assumption 2, $\partial\Pi/\partial n >$

0), as $\Pi(q, n)$ is increasing in n for both levels of dispute quality. Third, the curvature is different for the two levels of dispute quality: the slope is steeper for the lower-quality case as we approach $n = 3$. The relative gain from each developing-country judge is therefore larger for low-quality disputes compared to high-quality disputes. Given identical costs, it follows that developing-country judges are more likely to be found on panels associated with lower quality disputes (negative mixed partial derivative). The fourth and final observation is that the total derivative ($\mathrm{d}\Pi/\mathrm{d}q$) is positive, as $\Pi(q^{\mathrm{lo}}, n) < \Pi(q^{\mathrm{hi}}, n)$. This is illustrated as a movement along arrow 4. This implies that the impact of the indirect effect is strictly smaller than that of the direct effect (Assumption 4, $\mathrm{d}\Pi/\mathrm{d}q > 0$). In other words: while lower quality cases are associated with a higher number of developing-country judges, and the latter do increase success probability, the increase in developing-country judges cannot fully compensate for the direct negative effect of the lower dispute quality. The thicker downward-sloping line is the linear correlation that we observed in Figure 5.

To conclude, the negative empirical relationship between developing-country judges and developing-country success rates can arise through improper pooling of the data; that is, pooling high- and low-quality disputes. Depending on whether developing countries are pursuing a lower or higher quality case, they will be more or less inclined to promote developing-country judges onto the panel, and it is this difference in behaviour that brings about the negative correlation.

5.3 Developing-country judges and success rate as a statistical paradox

The type of selection effect described above is associated with a statistical phenomenon called Simpson's paradox.[8] Although it is beyond the scope of this paper to conduct an in-

[8] According to Pearl (2014), the first statistician to describe the paradox was Edward Simpson in 1951, though it had been mentioned earlier by Karl Pearson et al. (1899) and Udny Yule (1903). All three noted that correlations disappeared when introducing a third variable, but reversal of signs was only later identified by Ernst Nagel and Morris Cohen (1934). The term 'Simpson's paradox' was popularised by

depth analysis, we briefly outline its importance for the relationship just described. Given the underlying mechanism of developing-country judges and dispute quality assumed above, the statistical properties can be summarised as follows: the probability of winning claims can be increasing in n for each sub-population but be decreasing in n for the population as a whole. In our case, the sub-populations are defined as those disputes that have the same dispute quality, $\bar{q}$. Thus, for the entire population we have that:

$$\mathrm{E}\left[\pi \mid N = n_0\right] > \mathrm{E}\left[p \mid N = n_1\right]$$

for $n_0 < n_1$. We observed this in Figure 5. However, according to our model, when we also condition on dispute quality we have a reversal of the inequality:

$$\mathrm{E}\left[\pi \mid N = n_0, Q = \bar{q}\right] < \mathrm{E}\left[p \mid N = n_1, Q = \bar{q}\right]$$

for any fixed q.

At first glance, the issue appears to be an omitted variable problem where we have omitted dispute quality. The "paradox" can therefore be easily resolved by including this variable. This resolution, however, is only valid if we know beforehand that dispute quality is the omitted variable. In the absence of any assumptions regarding the role of dispute quality, note that the above statement says that if we know dispute quality, we should include developing-country judges, while if we do not know it, we should exclude it. Without any theoretical guidance regarding the causal relationships, the problem becomes paradoxical. The framework developed in this paper can be used to understand this statistical paradox when conducting empirical analysis.

Colin Blyth (1972). See Pearl (2014) for a detailed exposition of Simpson's paradox.

6 Concluding remarks

We developed a theoretical framework to examine the effects of legal assistance and subsidising developing-country judges (Art. 8.10 DSU) on developing-country participation in the WTO DSM. The model outlines the decision to participate by both parties and the panel-optimisation by the developing country. We showed that reducing dispute costs increases the number of complaints filed by developing countries, but in the case of subsidising judges, this increase may not always be reflected in the number of adjudications. As it becomes easier for developing countries to promote developing-country judges, it becomes relatively more difficult for industrialised countries to win in adjudication. For this reason, industrialised countries require a higher marginal benefit to adjudicate after the policy reform which means that marginal disputes that previously would have been adjudicated are now settled. Subsidising judges implies two effects for developing countries: first, they will file more disputes than they otherwise would have done and second, they will win more disputes without adjudication. Legal assistance, however, does not have such an effect; an increase in filed complaints will be directly observed as an increase in adjudication. Given that winning is more important than participating, subsidising judges appears to be the better supporting measure for developing countries, since it strengthen their case while weakening their opponent's.

A consequence of an increase or decrease in the number of adjudications, however, is a subsequent change in average success probability. As demonstrated, when dispute costs are reduced, developing countries will file more disputes, however, these additional disputes will be of lower quality. As legal assistance implies an increase in the number of adjudications, it will contribute to a lower average success probability. By the same token, there are ambiguous effects on the frequency of adjudication by subsidising judges, so the effect on the average success probability is likewise ambiguous. Thus, a decrease in average success

probability is not necessarily indicative of bad policies; it may in fact indicate the opposite.

Despite the somewhat mixed policy effects, the welfare effects were clear-cut: both supporting measures were welfare-enhancing for developing countries. The policy reforms led to reductions in litigation costs and an increase in the number of settlements by industrialised countries, both of which, yielded positive welfare effects. As can be seen, an increase in filed complaints does not lead to an increase in welfare. Taken together, welfare gains arise from lower dispute costs and from successful complaints, not from participation.

We empirically examined the *a priori* belief of Art. 8.10: that developing-country judges have a positive impact on panel outcomes for developing countries. Initially, it appeared that developing countries lost more claims the more developing-country judges were appointed. This counter-intuitive result, however, could be resolved within the framework outlined in this paper. If there is a belief that developing-country judges can positively affect success rate for developing countries, then such judges become more valuable in disputes with weaker legal merits. This motivates developing countries with weaker complaints to exert greater effort in promoting developing-country judges onto the panel. As a result, we observe more developing-country judges on panels that handle low-quality disputes Yet, developing-country judges cannot fully compensate for a weak case. The negative relationship between developing-country judges and the developing-country success rate that we found in the data is therefore explained by means of selection: developing countries that bring weak cases to adjudication will promote more developing-country judges onto the panel but, simultaneously, they will lose more claims due to the case's poor legal merits.

To conclude, a useful extension to this framework would be to allow for complainant- and respondent-specific characteristics. It is well-known that complainants win more disputes in the WTO, on average.[9] Another interesting area of research would be to empirically test

[9]See for example Colares (2009) and Turk (2011). See also appendix C.3

our proposed framework by defining a proxy for dispute quality or finding an instrument for n.

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Appendices

A Developing country as respondent

We show here how the model can be adapted to capture cases in which developing countries are respondents. Recall, that the success probability function is developing-country specific, and therefore it is defined as before: $\pi = \Pi(q, n)$. Dispute quality q is also developing-country specific and measures the legal merits of the case for developing countries. It will therefore result in the same dispute interval. The timing and the payoffs, however, are changed. The payoffs that country I and D receive if the trade measure goes unchallenged are V^P and W^P. If country I decides to launch a complaint that country D settles, then country I and D receive W^L and V^L respectively. A dispute is only adjudicated if country I files a complaint that country D opposes; at that time country I receives expected welfare $V\big(q, n, k^I\big)$ and country D receives $W\big(q, n, k^D, c\big)$. The changed payoffs imply the following indifference conditions $\tilde{V}\big(q^I\big) \equiv V^P$ and $\tilde{W}\big(q^D\big) \equiv W^L$, which in turn means that the intervals in which settlements take place have switched. That is, country D surrenders all trade measures up to q^D while country I refrains from making complaints for all disputes in the interval $1 - q^I$.

B Developing countries in adjudication

B.1 Country classification

There is no official country classification system within the WTO; instead a country self-selects into one of two categories: developing country or industrialised country. Countries that are classified as least-developed by the United Nations will automatically be recognised as such in the WTO. The self-imposed development status does not, however, automatically entitle a member to the use of SDT privileges, as other members can contest their status. Bohanes and Garza (2012) notes, however, that in practice, development status is rarely contested. Considering that developing countries are a far more diverse group than industrialised countries, the rough country classification of the WTO may seem questionable. Horn (2011) notes this and instead divides WTO Members into five income categories: least-developed, developing, BIC (Brazil, India and China), developed and G2 (US and EU). Separating out BIC acknowledges that these countries are usually considered emerging markets and hence not as economically constrained as we might expect from developing countries. (Together with Russia, they are part of the country group usually recognised as BRIC. However, Russia only became a member in 2012 and is therefore not yet included in these data.)

For the rest of the developing country group, no relevant country (i.e., countries that have been involved in panel adjudication) have graduated to developed country status within this time period, except for South Korea. It proclaimed itself to be a developing country when joining the WTO in 1995 and its official status has not changed since then, even though it graduated to industrialised country status in 1997. We therefore categorised South Korea as an industrialised country. We have otherwise adhered to the self-selected status, following Horn (2011). The same classification scheme was used to determine the

geographical background of the judges.

As complainant	Freq.	As respondent	Freq.
Antigua and Barbuda	1	Argentina	7
Argentina	2	Brazil	2
Brazil	11	Chile	2
Chile	1	China	15
China	6	India	7
Chinese Taipei	1	Indonesia	4
Costa Rica	1	Mexico	5
Ecuador	2	Philippines	2
Guatemala	1	Thailand	1
Honduras	1	Turkey	1
India	9		
Indonesia	3		
Malaysia	1		
Mexico	5		
Pakistan	2		
Peru	1		
Thailand	6		
Venezuela	1		
Viet Nam	2		
Total	57	Total	46

Table B.1: Developing countries in adjudication against industrialised countries

B.2 BIC countries

The benefit of developing-country judges is less apparent for the BIC country group compared to other developing countries, as their legal capacity is closer to that of the richer members. Nevertheless, they are still developing countries in many other respects, and therefore such expertise may still prove valuable. In fact, India is a member of the ACWL. Figure B.2 suggests at least that the BIC countries appear to behave as other developing

countries with respect to our proposed selection effect of developing-country judges.

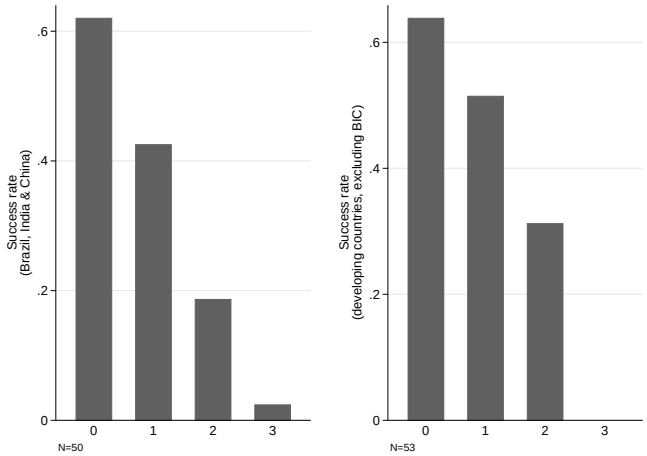

Figure B.1: Success rate and developing-country judges for BIC

B.3 Developing country complainant and respondent

It may be relevant to examine the outcomes conditional on whether the developing country is a complainant or a respondent, to ensure that Figure 5 is not the result of compositional effects due to complainant/respondent specific attributes.

Figure B.2: Success rates for developing country complainants and respondents, by developing-country judges

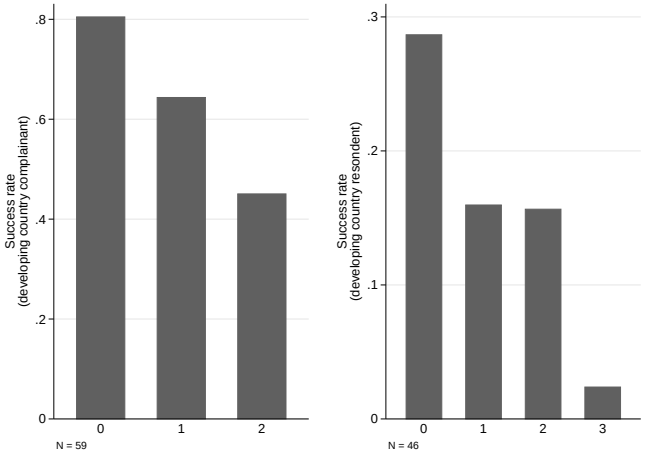

Figure B.2 shows that the negative linear correlation with developing-country judges is present regardless of whether the developing country is a complainant or a respondent. However, the correlation is only significant (at the 5% significance level) for complainants. Respondents and complainants could therefore differ in certain respects relating to the choice of developing-country judges. However it is also likely that there are too few observations to discern any significant differences. Respondents only had 5 disputes without any developing-country judges, while there are 10 such disputes for complainants.