Agreements and Disputes over Behind-the-Border Non-Tariff Measures*

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Abstract

In trade agreements, governments can design remedies to ensure compliance (property rule) or to compensate victims (liability rule). This paper describes an economic framework to explain the pattern of remedies over non-tariff restrictions—particularly domestic subsidies and nonviolation complaints subject to liability rules. The key determinants of the contract form for any individual measure are the expected joint surplus from an agreement and the expected loss to the constrained government. The loss is higher for domestic subsidies and nonviolations because these are the policies most likely to correct domestic distortions. Governments choose property rules when expected gains from compliance are sufficiently high and expected losses to the constrained country are sufficiently low. Liability rules are preferable when dispute costs are relatively high, because inefficiencies in the compensation process reduce the number of socially inefficient disputes filed.

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1. Introduction

An important decision in trade agreement design is whether remedies should ensure compliance or instead allow breach with appropriate compensation. In standard law and economics parlance, the former defines a *property rule*, while the latter defines a *liability rule*. (Calebresi and Melamed, 1972). This paper applies economic theory to understand the history of property rules vs. liability rules in the GATT/WTO, and its particular aim is to understand remedies for non-tariff measures. I focus on two stylized facts from this history: (1) the progression from a system of liability rules under the GATT to a system of property rules under the WTO and (2) two remaining examples of liability rules are actionable subsidies and non-violation complaints. (Maggi and Staiger, 2015; Pauwelyn, 2013). In proposing an explanation, I first observe that the two examples of liability rules each primarily regulate non-discriminatory domestic policies that could be first-best policy solutions. Building on this observation, I argue that governments choose a liability rule when the loss to a government from a policy constraint is large relative to the potential gains from cooperation, and such is the case for actionable domestic subsidies and non-violations.

Here I describe key features of the proposed economic framework. Potential policies to include in trade agreements exhibit heterogeneity in both the ex-ante expected global gains from coordination and the ex-ante expected loss to the government whose policy is constrained. After signing an agreement, relative payoffs from cooperation are subject to shocks that are unverifiable and non-contractible. The choice to include a policy in the agreement or not then depends on whether the gains from coordination are worth the dispute costs, and policies with high ex-ante expected losses are far more likely to result in disputes. Disputes are necessary for enforcement, but they come with high costs, large enough to swamp the gains for coordination on the marginal policies included in the contract, though filing disputes is still individually rational. One advantage of the liability rule is that it reduces the incentive to file disputes that are jointly inefficient. With fewer disputes also comes lower probability of compliance overall, but larger gains conditional on compliance. The advantages of the liability rule are largest when the ex-ante loss to the constrained country is large relative to the gains from coordination, because such policies have the largest potential for disputes.

I argue the framework can explain the pattern of liability rules vs. property rules in the GATT/WTO. Achieving compliance is more difficult on actionable subsidies and non-violations

because of the potential benefits of these policies, so my economic framework suggests these policies will be subject to liability rules. I support my argument using (1) the negotiation history and case law of non-violations and (2) the negotiating history of the Agreement on Subsidies and Countervailing Measures. As for the progression from liability rules in the GATT to property rules in the WTO, the economic framework suggests this results from increases in gains from coordination over time, and such coordination gains have indeed occurred due to falling trade costs.

The paper contributes to the literature by providing an economic explanation for long-puzzling distinctions in remedies in the WTO. For example, Bagwell (2008) criticizes the SCM for regulating export subsidies with the harsher property rule punishment compared to the lighter liability rule punishment for actionable domestic subsidies. Pauwelyn (2013) questions why "politically and culturally more controversial commitments such as those under WTO agreements on health and safety are more rigidly protected under a property rule." More recently, Maggi and Staiger (2015) argue that the property rule vs. liability rule choice depends on the uncertainty in expected outcomes after contracting over any individual policy, and that such uncertainty is higher in both domestic subsidy and non-violation cases. They argue that greater uncertainty means greater possibility of breach being first-best ex-post, and the liability rule allows for this efficient breach. While they focus on second moments of payoffs, I focus on the first moments, and I argue that properties of the first moments are the key distinguishing features of the policies in question.

The rest of the paper proceeds as follows. Section 2 details the background on liability rules vs. property rules in the GATT/WTO. Section 3 details the economic framework. Section 4 discusses the case law and negotiating history. Section 5 concludes.

2. Background

This section details the legal and economic facts which motivate the analysis. Specifically, I discuss property rules vs. liability rules in the GATT/WTO, I explain why actionable subsidies and non-violations are classified as liability rules, and I detail relevant economic features of actionable subsidies and non-violations.

The key distinction between property rules and liability rules, per the Calabresi and Melamed (1972) classification, is that the property rules offer an entitlement that can be taken

only with the holder's consent, while liability rules offer entitlements that can be taken with appropriate compensation. In the domestic law context, the broad conclusion is that the optimal contract progresses from property rule to liability rule as the transaction costs of bargaining increase.

The question of what is a property rule or liability rule in the GATT/WTO context is murkier, because there is no comparably powerful international authority that can enforce property rules as in the domestic law context, and rarely do we observe interstate transfers typical of liability rules. Both enforcement and payment in the GATT/WTO are typically achieved through tariff retaliation. Paulewyn (2013) makes a convincing case that the WTO is largely a property rule regime, since in most matters, the case in not closed until compliance is achieved by removing the offending policy, or the complainant settles. Though tariff retaliation is a form of compensation in the WTO, disproportionate retaliation designed to ensure enforcement is characteristic of a property rule. Still some GATT/WTO remedies classify as liability rules because the cases can be closed through adjustments without the consent of the complainant.

The difference in rules between export subsidies and domestic subsidies in the Agreement on Subsidies and Countervailing Measures exemplifies the difference between property rules and liability rules in the WTO. Export subsidies are in the "prohibited category" for which a subsidizing country should "withdraw the subsidy without delay" per Article 4.7. In contrast, for an "actionable" domestic subsidy, members "shall take appropriate steps to remove the adverse effects or shall withdraw the subsidy." To enforce the limited set of options for export subsidies requires harsher punishment than for domestic subsidies, such as disproportionate retaliation in line with the trade effects of the subsidy, and Bagwell (2008) argues this is indeed true in the WTO SCM case law. Domestic subsidy remedies classify as liability protection because the offending subsidy need not be withdrawn provided its adverse effects are removed.

In addition to domestic subsidies, authors agree that non-violation complaints have features of liability rules. The rule, dating back to Article XXIII of the 1947 GATT, concerns policies leading to the nullification or impairment of benefits. Targets of complaints can either remove the offending policy, provide compensation, or face withdrawal of substantially equivalent concessions (Staiger and Sykes, 2013). Since the offending policy need not be removed, the non-violation is a liability rule. Among liability rules, domestic policies and non-

violations are the focus of my analysis, though tariff bindings and a few GATS and TRIPS rule also have liability rule features, according to the Paulewyn (2013) classification.

The focus of the analysis is why domestic subsidies and non-violations are still subject to liability rules. I start by considering the economic features of such complaints. For domestic subsidies, it has long been understand they can be the first-best instrument for addressing domestic distortions (Bhagwati and Ramaswami, 1963). For example, the Checklist of Issues for SCM Negotiations, notes "The Code quite rightly intends not to restrict the right of signatories to use other subsidies than export subsidies as legitimate instruments for the promotion of important social and economic policy objectives which are given the form of e.g. regional development, employment policy programmes, structural adjustment, research and development schemes."[1] The possibility of restricting such first-best subsidies ultimately leads Bagwell and Staiger (2006) to criticize all SCM restrictions on domestic subsidies. They argue that non-violations provide the appropriate protection, though their analysis abstracts from the dispute settlement process. My analysis, which does model the dispute settlement process, will consider distinguishing features of payoffs from domestic subsidy disputes. First, restrictions of domestic subsidies, relative to restrictions of other policies are likely to cause a larger loss to the constrained country because domestic subsidies directly address domestic distortions. This larger loss, all else equal, implies a lower expected joint surplus from restrictions on domestic subsidies, relative to other policies. I then proceed to analyze how these facts influence the liability vs. property rule choice.

As for non-violations, Staiger and Sykes (2013) summarize the case law as follows: "Successful non-violation claims have all involved 'commercial measures' such as subsidies and tariffs that change in a way that reduces export opportunities for the complainant…. Historically, the paradigm non-violation case was a new (post-negotiation) subsidy to domestic firms that compete with imports." Staiger and Sykes further note that the past cases could now be challenged as actionable domestic subsidies under the SCM. Still, subsidies that satisfy the economic subsidy definition but do not meet the SCM criteria (e.g. subsidies that are not specific) could still nullify and impair benefits and lead to non-violation complaints. I conclude that the types of policies typically challenged under non-violations are more similar in joint and

[1] See document MTN.GNG/NG10/W/9/Rev.4.

unilateral payoffs to actionable domestic subsidies than to other restricted domestic policies in the WTO.

My assessment of the economic facts has focused on the first moments of expected payoffs to countries who agree to actionable domestic subsidy rules and non-violations. In contrast, the theories of Maggi and Staiger (2015) argue that these policies are subject to liability rules due to higher uncertainty in their evaluation from the dispute settlement body. As evidence, they put forth that domestic subsidies and non-violations are more likely to involve import-competing industries subject to political shocks that the DSB cannot easily evaluate. Such an argument is readily applicable to contingent protection like safeguards, for which the criterion regards injury to domestic production for the country imposing the safeguard. But for actionable subsidies the criterion is about adverse effects of trade-distorting subsidies, and for non-violations the criterion is about nullification and impairment of benefits. The laws for actionable subsidies and non-violations are about evaluating external effects of the policies, and not at all about evaluating the domestic benefits.[2] Comparing the criteria for safeguards to the criteria for these domestic policies, the law for these domestic policies does not require assessment of injury to the member from removing the disputed policy (i.e. the overall benefit from imposing the policy in addition to trade benefits). So it is then questionable that relative DSB inability to assess domestic effects of these policies compared to other policies is what is driving the liability rule choice, given that that the law is indifferent to variation in the domestic effects that are deemed useful information for other WTO laws.

The theory that follows instead argues that the main driver of the liability rule choice is the relative loss to the constrained country, compared to the gains from cooperation. To contrast with the hypothesis that uncertainty alone drives the choice, I compare two hypothetical policies which have the same expected gains from cooperation and the same ex-post uncertainty in policy payoffs, so the probability of "efficient breach" for both policies is the same.[3] The difference between the policies instead is that one is characterized by a large expected loss to the constrained country, while other policies have a smaller expected loss. This variation alone can lead to a liability rule for the policy with the higher transfer of welfare between nations from any

[2] The external effects, of course, could be positively correlated with the domestic benefits.

[3] By "efficient breach" I mean simply that ex-post nations are better off not complying with the contract for a particular policy. Paulewyn (2013) argues for a stronger standard in using this term, noting that breach is efficient only when the other party is fully compensated. I follow the usage of Maggi and Staiger (2015) in comparing contracts' ability to facilitate efficient breach as I have defined it, i.e. to move closer to the ideal.

restriction over a single policy, and a property rule for the policies with the lower transfer of welfare between nations from any restriction over a single policy. The conventional economic theory I described above then suggests that actionable subsidies and non-violations require a relatively higher shift in welfare across nations to achieve gains, so they are a better suited to be governed by liability rules. The new theory will then explain the tradeoffs between liability rules and property rules in such an environment and how this fits with negotiating history and case law of the GATT/WTO.

3. Theory

I propose a two-country model of bilateral agreements such that countries negotiate over several different policies which can differ in the joint surplus of the first-best agreement, as well as who gains and who loses. Governments choose to contract over a symmetric set of policies which are the same in the expected gains from cooperation but exhibit heterogeneity in the loss to the country whose policy is constrained. Here loss can be interpreted in the broad political economic sense from a government preference function—so payoffs could include economic factors in the sense of national income maximization, but also distributional concerns.[4] A cooperative agreement is then achieved by contracting over several policies that lead to losses for one country for any individual policy in the contract, but the overall contract exhibits gains for each country. The objective of the agreement is to maximize the joint gains of the negotiating nations, whatever their aims may be.

The body here contains an informal description of the model and a stylized example, while a formal model with some more general results is provided in the appendix.

[4] For details of the many pros and some cons of this economic modeling approach, see Gene Grossman and Henrik Horn, "Why the WTO? An Introduction to the Economics of Trade Agreements," in Horn and Petros C. Mavroidis (eds.) *Legal and Economic Principles of World Trade Law*, (Cambridge University Press, 2013).

3.1 Description of the game

Governments act in a sequential game as follows:

1. For each policy, governments maximize the ex-ante expected gains from the agreement by choosing between (1) a liability rule, (2) a property rule or (3) no contract.[5]
2. Unverifiable mean-zero shocks are realized for the payoffs to both governments for noncooperation and cooperation over each policy
3. Each government decides whether to renege on the contract for an individual policy. In doing so, each government anticipates the other government's decision to file a dispute and the potential cost of such a dispute.
4. For any violations, governments decide to file dispute at a cost, anticipating an uncertain DSB decision.
5. The DSB rules with exogenous accuracy.
6. If a property rule was chosen and DSB ruling favors the complainant, then payoffs are realized when the policy is removed. If a liability rule was chosen, then the target of the complaint can then choose to compensate the complainant. The complainant is assured to be worse off from compensation (under the liability rule) relative to compliance (under the property rule) because unverifiable shocks to the complainant are uncompensated.

Such a game can then be solved through backward induction, whereby at each step the choice rule for each government is solved for based on the expected payoffs from future stages.

This model clarifies the tradeoffs between liability rules and property rules. The two rules differ both in the level and type of compliance with the contract, and also in the number of disputes filed. Because the inefficiency of the liability rule overall reduces the incentive to use the dispute settlement system given the errors in compensation, the incentives fall for potential complainants to file disputes under liability rules, which in turn induces far greater breach under liability rules.[6] But the breach under liability rules is more likely to be efficient (e.g. the joint payoffs are greater than if the contract were followed) then would be the case under property

[5] I assume governments can maximize joint welfare at the stage of designing the institution while anticipating future individualistic behavior. This is typical of the economic literature (e.g. Maggi and Staiger, *2015*).

[6] Again, to be clear, I use breach here to mean breach permitted by the contract leading to disputes, rather than a breach of the overall agreement, which is assumed to be binding.

rules. When the costs of filing disputes is sufficiently large—such that dispute costs are large enough to swamp joint payoffs, but filing a dispute is still individually rationale—the reduction in disputes from the liability rule is also an advantage.[7]

How the loss to the constrained country then affects the liability rule choice than depends on how this loss interacts with the various tradeoffs. Disputes are more likely when the loss to the constrained country is high, holding the joint payoff fixed, as it is more likely that a particular issue will satisfy the threshold for dispute costs. Choosing liability rules for such policies becomes optimal, because of the lower use of the DSB, and compared to the property rule, the DSB is more likely to be invoked when there is potential for efficient breach, and there is more compliance when breach is inefficient.

3.2 A Stylized Example

To further justify the positive economic rationale for liability rules, I provide a stylized example. Consider two countries, which we denote as Home and Foreign (as is standard practice in the international economics literature), who are contracting over a policy choice variable. The agreement constrains Home's policy to Foreign's benefit, and the two nations choose the contract (liability rule or property rule) that maximizes the ex-ante expected joint surplus of the agreement (there is a symmetric rule that will constrain Foreign's policy to Home's benefit). After the agreement is signed, certain shocks are realized that affect the nations' relative payoffs from compliance, and nations cannot contract over the outcomes of these shocks. Home can then choose to break the rule, and Foreign can file a dispute if Home reneges. If there is a dispute, the Dispute Settlement Body then rules with less-than-perfect accuracy. If Foreign wins a property rule dispute, then Home must bring its policies into compliance. If Foreign wins a liability rule dispute, then Home can choose to comply or to pay damages to Foreign. The damage is imperfectly evaluated due to lack of information from the DSB. Both nations suffer a significant cost for each dispute, and these large costs are what generally distinguish the international setting from the domestic setting. This exogenous cost represents both direct costs of the dispute settlement process and indirect costs on international cooperation. In all, this is a plausible model that captures key tradeoffs of rules and disputes.

[7] In such a case, economists would endorse a tax for using the dispute settlement system, but such a policy is problematic due to the inefficiency of international transfers. Liability protection limits disputes to similarly enhance efficiency.

To make the tradeoffs favoring liability rules more concrete, we assign specific payoffs, costs, and probabilities to the model. The values assigned here have no direct empirical basis and are chosen simply to illustrate the relevant tradeoffs:

- Two potential shock outcomes for Home: after the "Good" shock, Home's loss from compliance is 12; and after the "Bad" shock, Home's loss is 72.
- Three potential shock outcomes for Foreign:[8] after the "Good" shock, Foreign's gain from Home's compliance is 84; after the "Medium" shock, Foreign's gain is 72; and after the "Bad" shock, Foreign's gain is 36.
- The cost of filing a dispute to each nation is 48.
- The probability of a correct DSB ruling is 75 percent.
- The liability rule payoff from Home to Foreign is equal to 75 percent of the value of the Foreign's gain from compliance.[9]

Table 1 then summarizes the potential outcomes for each of the expected outcomes in each of the six states under a property rule and a liability rule:

[8] The simplest illustrative model requires three shocks for Foreign, and just two for Home. We need one shock where Foreign always disputes and one shock where Foreign never disputes for the rule choice to be interesting.

[9] We do not provide a firm microfoundation for the home bias in the liability rule payoff, but the model is consistent with the payoff being increasing in the Foreign payoff, and the DSB being influenced by the threat of the "Bad" shock outcome under which Foreign would never dispute.

Table 1 – Payoffs favoring a liability rule

Home Shock Type	Bad	Good	Bad	Good	Bad	Good
Foreign Shock Type	Good	Good	Medium	Medium	Bad	Bad
Home payoff from compliance	-72	-12	-72	-12	-72	-12
Foreign payoff from compliance	84	84	72	72	36	36
Surplus from compliance	12	72	0	60	-36	24
Property Rule Outcomes						
Foreign payoff from dispute	15	15	6	6	-21	-21
Foreign disputes (if home reneges)	YES	YES	YES	YES	NO	NO
Home payoff from reneging	-68	-38	-68	-38	-68	-38
Home chooses to renege	YES	NO	YES	NO	YES	NO
Joint expected payoff (avg=**-4.5**)	-87	72	-96	60	0	24
Liability Rule Outcomes						
Liability payoff for home	-63	-63	-54	-54	-27	-27
Liability payoff for foreign	63	63	54	54	27	27
Home would choose liability payment	YES	NO	YES	NO	YES	NO
Foreign payoff from dispute	7.125	7.125	-0.75	-0.75	-24.375	-24.375
Foreign disputes (if home reneges)	YES	YES	NO	NO	NO	NO
Home payoff from reneging	-31.75	-19	-31.75	-19	-31.75	-19
Home chooses to renege	YES	NO	YES	NO	YES	NO
Joint expected payoff (avg= **+10**)	-96	72	0	60	0	24

The strategic game is solved using the standard technique of backward induction, in which we solve for the optimal behavior of each agent at the later stages of the game, and work our way backwards to the initial decision of the contract. Here the final decision favors the liability rule (+10 expected joint surplus), and nations would not agree on a property rule (-4.5 expected joint surplus).

Comparing across the six possible shock outcomes reveals the potential tradeoffs involving the liability rule. In four of the six potential ex-post outcomes, the rules lead to the same expected payoffs—Home never finds it worthwhile to renege after the Good shock, and Foreign never finds it worthwhile to dispute after the Bad shock. In one outcome, we also observe both contracts achieving so-called "efficient breach" where it is optimal for Home to

renege and Foreign not to file the dispute. The cost of the liability rule occurs when Home receives the Bad shock, and Foreign gets the Good shock: because there is no Home compliance under the liability payment, the surplus of 12 in this state of the world is destroyed under the liability rule, whereas it is achieved 75 percent of the time under the property rule (the compliance is less than 100 percent due to DSB inaccuracy). Notice another potential downside of the liability rule is that it reduces the threat of foreign filing a dispute (from 2/3 in the property rule case to 1/3 in the liability rule case, due to the lower expected payoffs under the liability rule), and this in turn could increase home's probability to renege – however, under the payoffs of this example, home reneges only after the bad shock, regardless of the rule. The benefit of the liability rule occurs when Foreign receives the Medium shock and Home receives the Bad shock—in this state of the world, there is no surplus from compliance, but there is still a costly dispute settlement process under the property rule that is avoided under the liability rule. This process is avoided under the liability rule because Foreign no longer has incentive to dispute in the Medium outcome – only the Good outcome. The liability rule is then successful here as a lighter less rigid form of enforcement that leads to fewer disputes.

What then accounts for the prevalence of the property rule in international law? Table 2 describes the same game as before, except with the home payoffs 12 units higher and the Foreign payoffs 12 units lower—the outcomes then involve the same potential surplus in any state of the world, but the potential for conflict over the surplus is much lower than in the Table 1 example.

Table 2 – Payoffs favoring a property rule

Home Shock Type	Bad	Good	Bad	Good	Bad	Good
Foreign Shock Type	Good	Good	Medium	Medium	Bad	Bad
Home payoff from compliance	-60	0	-60	0	-60	0
Foreign payoff from compliance	72	72	60	60	24	24
Surplus from compliance	12	72	0	60	-36	24
Property Rule Outcomes						
Foreign payoff from dispute	6	6	-3	-3	-30	-30
Foreign disputes (if home reneges)	YES	YES	NO	NO	NO	NO
Home payoff from reneging	-31	-16	-31	-16	-31	-16
Home chooses to renge	YES	NO	YES	NO	YES	NO
Joint expected payoff (avg=+11.5)	-87	72	0	60	0	24
Liability Rule Outcomes						
Liability payoff for home	-54	-54	-45	-45	-18	-18
Liability payoff for foreign	54	54	45	45	18	18
Home would choose liability payment	YES	NO	YES	NO	YES	NO
Foreign payoff from dispute	-0.75	-0.75	-8.625	-8.625	-32.25	-32.25
Foreign disputes (if home reneges)	NO	NO	NO	NO	NO	NO
Home payoff from reneging	0	0	0	0	0	0
Home chooses to renege	YES	YES	YES	YES	YES	YES
Joint expected payoff (avg=0)	0	0	0	0	0	0

There are two significant changes as we move from the payoffs in Table 1 to the payoffs in Table 2. First, notice that the liability rule in Table 2 is a complete failure. Foreign never finds the dispute payoffs worthwhile and never files a dispute, so Home never complies. Meanwhile, the property rule becomes effective—Home no longer finds the dispute worthwhile after the Medium shock, so the property rule achieves an overall expected surplus. Even more surplus is achieved under the property rule than under the liability rule with the Table 1 payoffs (which recall involve the same joint surplus in each state of the world), because more surplus is achieved by the dispute settlement process when times are Good for Foreign and Bad for Home under the property rule compliance than under the liability rule payment.

To conclude, exactly what relevance do the Table 1 and Table 2 examples have for subsidy rules? Because domestic subsidies have long been considered more likely to be first-best instruments by economists, we argue that the Table 1 scenario—with larger losses to the constrained nation from compliance—is more plausible for domestic subsidy constraints. A property rule approach under such payoffs would yield too many disputes relative to the amount of surplus available, while the liability rule would strike the right balance and only result in disputes after higher-stake shocks for each nation.

If from an economic point of view liability protection is feasible with regard to actionable subsidies the legal question arises, whether the economic rationale has been adequately translated into the SCM. We shall thus take a closer look into the rules and the respective case law so far decided with regard to Art. 5 and 6 SCM.

4. Evidence

I compare here how the theory matches with GATT/WTO negotiating history and case law. Section 2 already noted how the SCM negotiation history recognizes subsidies' legitimate uses. The fact that domestic subsidies can be maintained once adverse effects are removed reflects a standard "efficient breach" logic. The revealed preference that governments are willing to impose such subsidies, while potentially bearing costs of compensation and dispute, is the credible demonstration of the domestic benefits of any such policy. An additional bullet point from the negotiating history is also revealing: "The SCM Group should explore new approaches that would prohibit certain domestic subsidies… that are likely to have a significant effect on competitiveness or trade. This approach avoids the reliance on subjective judgments, or impractical prohibitions, that are inherent in the other subsidy approaches."[10] The SCM ultimately did not prohibit such subsidies but just the adverse effects described. But a key point is the acknowledgement of "impractical prohibitions." This reflects that property rules would create impractical remedies for certain kinds of subsidies. While it is unclear exactly what makes a prohibition impractical or a legitimate subsidy, my theory suggests a plausible interpretation is that domestic subsidies with trade effects are impractical to prohibit because of the large degree of conflict that could occur under property rule prohibitions.

[10] Again see MTN.GNG/NG10/W/9/Rev.4.

Why did the SCM Group perceive the prohibitions to be impractical? Further text reveals that indeed the main concern that governments would never forgo illegal subsidies for their political and "practical" benefits: "One approach, of course, would be to ban domestic subsidies completely. While theoretically attractive, this approach would appear impractical at this time. We must recognize that governments, as a practical matter, are for political and policy reasons unlikely to completely forgo the use of domestic industrial subsidies, particularly since many subsidies are relatively small, have other aims, or have a limited relationship to trade." Thus, consistent with the theory, the negotiating history reflects that prohibitions on domestic subsidies would lead to an impractical amount of conflict relative to the potential gains from cooperation.

Another key point of evidence is the limited number of disputes that would fall under liability rules, particularly for non-violation complaints. This case law has acknowledged that such disputes are exceptional. Specifically, the Japan – Film ruling states, "[B]oth the GATT contracting parties and WTO Members have approached this [non-violation] remedy with caution and, indeed, have treated it as an exceptional instrument of dispute settlement…. Members negotiate the rules that they agree to follow and only exceptionally would expect to be challenged for actions not in contravention of those rules."[11] Staiger and Sykes (2013) also acknowledge the possibility that non-violations are often not worth the cost: "When the 'price' to be paid following a successful non-violation complaint does not capture the harm done to others with much accuracy, and when the other costs of the system including the economic costs of trade sanctions and the costs of litigation are substantial, one must then consider the possibility that the game is simply not worth the candle." My theory suggests that a reduction in disputes under liability disputes is part of their aim of liability rules compared to property rules, so that the cases that actually occur under liability rules do not by themselves appear to be efficient.

5. Conclusion

I have argued that a the liability rule and property rule choice is driven primarily by the expected loss to the constrained government, and that the benefit of the liability rule is to facilitate efficient breach and reduce the overall number of disputes, while the advantage of the property rule is achieving in overall compliance. The results are roughly consistent with the negotiating history and case law

[11] Japan – Measures Affecting Consumer Photographic Film and Paper, WT/DS44,

In comparison to the Maggi and Staiger (2015) theory, in which the liability rule choice is driven by DSB uncertainty, there is little clear evidence from the case law or history to favor one theory over the other. But the larger loss to the constrained country in actionable subsidy cases is consistent with basic economic theory, and the importance of DSB uncertainty in the liability rule choice seems inconsistent with the negotiated law not evaluating the domestic effects for countries imposing actionable subsidies, and such domestic effects of policy are evaluated in other areas of WTO law.

Additionally, my explanation formalizes common concerns over national sovereignty.[12] There has long been some intuition that certain policies simply cannot have property enforcement in trade agreements because they violate a notion of sovereignty. This intuition often manifests itself in nations who seek to maintain a certain threshold of policy space in negotiations or come to regret what they have already given up.[13] Understanding the liability rule vs. property rule choices for these non-tariff measures will be important as trade negotiations are more intent on achieving domestic policy coordination going forward.[14]

[12] See e.g. Bagwell and Staiger, "Domestic Policies, National Sovereignty and International Economic Institutions," *Quarterly Journal of Economics* 116, 519-562 (2001).
[13] See e.g. Dani Rodrik, The Globalization Paradox, (New York: Norton, 2011); Joseph E. Stiglitz, Making Globalization Work, (W.W. Norton, 2006).
[14] See World Trade Organization, "Trade and Public Policies: A Closer Look at Non-Tariff Measures in the 21st Century," *World Trade Report* (2012).

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A Technical Appendix

A.1 Model

Consider two governments who negotiate over several non-tariff measures r_i indexed from 1 to R. We highlight again the special contracting setting of international economics where governments prominently negotiate over many issues in a repeated setting. Each measure operates in an independent market assumed not to affect others. We consider home's choice of policies and the affect on foreign, and there is symmetric set of policies for foreign. An objective function can represent individual government preferences over each policy, G_i and G_i^* for home then foreign, while W_i is for global (joint) preferences. The optimal policies depend linearly on unverifiable shocks to home and foreign preferences (ε_i and ε_i^* with cumulative distribution functions F and F^*respectively). For each policy there is the unilateral optimum $r_i^N(\varepsilon_i, \varepsilon_i^*)$ and the cooperative optimum $r_i^C(\varepsilon_i, \varepsilon_i^*)$ The first-best (non state-contingent) contract for r_i is then the mean across all shocks. We define the ex-ante expected joint surplus as $\bar{\Gamma}_i = E[W_i(r_i^C) - W_i(r_i^N)]$ and then the individual country effects are $\gamma_i = E[G_i(r_i^C) - G_i(r_i^N)]$ and $\gamma_i^* = E[G_i(r_i^C) - G_i(r_i^N)]$. We consider only the interesting cases where $\bar{\Gamma}_i > 0$, $\gamma_i < 0$ and $\gamma_i^* > 0$ such that there is conflict between home and foreign, with γ_i reflecting the degree of conflict for any particular available joint surplus $\bar{\Gamma}_i$. We will ultimately justify that the low conflict policies will make for easier contracting.

Governments face a contracting choice for each policy ex-ante, a direct contract versus an indirect contract. An example of a direct contract that motivates the model is the prohibition on export subsidies in the Agreement on Subsidies and Countervailing Measures (a property rule) while the example of an indirect contract is the nonviolation complaint (a liability rule). The regulation on actionable subsidies lie in between these extremes. We model this choice in reduced-form fashion as an endogenous choice of DSB accuracy, because the more detailed agreement will be easier to adjudicate.

Governments can sustain cooperation on the contract choice. They maximize the joint expected surplus including expected dispute costs, but anticipate potential ex-post failure in cooperation.

After forming the contract, the shocks are realized. Subsequently, home faces a decision to renege on the agreement and foreign faces a decision to file a dispute. Home can renege in bad faith of the contract but not in a way that is obvious. DSB accuracy is assumed to be increasing in the ex-ante joint surplus $\bar{\Gamma}_i$ (a reduced-form effect of an activist DSB rule to implement the expected first-best despite the specifics of the contract). The first argument of the accuracy function q_i is the contract directness d_i, and the function satisfies $q_i(1, \Gamma_i) > q_i(0, \Gamma_i)$ for all Γ_i.

If foreign files a dispute to home's reneging, foreign weighs the probability of a ruling in its favor against an exogenous cost c of filing the dispute. If foreign wins the dispute and a property rule is in place, the expected payoff relative to the Nash policy is $\gamma_\mu^* - c$ and if foreign loses the payoff is $-c$.

When home does not file a dispute, the (negative) expected payoff is γ_μ. If home wins a dispute, the payoff is instead $-c$. The payoff is not dependent on liability and property rule, and we assume the benefit of home to the liability rule is just enough for home to find the liability option worthwhile. In deciding whether to file a dispute, home weighs the probability of evading punishment, either due to a favorable DSB ruling or foreign choosing not to file a dispute.

To sum up, we consider the following timing:

1. Governments jointly choose the contract directness for each policy d_i (1 for direct).
2. The shocks ε_i and ε_i^* are realized
3. Home decides whether to renege on the agreement
4. Foreign decides whether to file a dispute at cost c
5. The DSB rules with accuracy $q_i(d_i, \bar{\Gamma}_i)$
6. Payoffs are realized

For the initial analysis, we will focus on the impact of the payoffs γ and γ^* on the contract directness. For brevity in notation, we henceforth omit the subscripts i and derive the equilibrium for a given good conditional on the payoffs γ and γ^*.

A.2 The Probability of Disputes

We proceed to consider the subgame perfect equilibrium. First we consider foreign's decision to file the dispute. Foreign files a dispute under the following condition under which it expects to get more under the dispute than under the noncooperative home policy:

$$q(d)(\gamma^* + \varepsilon^*) - c > 0.$$

Denote the probability of foreign filing a dispute (unconditional on ε^*) as $p^*(q, \gamma^*)$ which is increasing in DSB accuracy and the ex-ante foreign payoff.

There exists a cutoff ε^* such that a dispute is filed for $\varepsilon^* > \bar{\varepsilon}^*$. Then the probability of a foreign dispute is

$$p^* = 1 - F^*(\frac{c}{q} - \gamma^*).$$

The increase in foreign payoff increases the probability of a dispute

$$\frac{dp^*}{d\gamma^*} = f^*(\bar{\varepsilon}^*) > 0,$$

and the increase in DSB accuracy increases the probability of a dispute

$$\frac{dp^*}{dq} = f^*(\bar{\varepsilon}^*)\frac{c}{q^2} > 0.$$

Next we consider home's decision to renege. Home reneges when the (negative) payoff satisfies the following:

$$p^*(-c + q(\gamma + \varepsilon)) > \gamma + \varepsilon.$$

We denote the probability of home reneging (unconditional on ε^* and ε) as $p(q, \gamma, \gamma^*)$. The probability is decreasing in p^*, and thus decreasing in DSB accuracy and the ex-ante foreign payoff. An increase in the absolute home loss naturally increases the probability of reneging.

The function p is then

$$p = F(\frac{-cp^*(q, \gamma^*)}{(1 - qp^*(q, \gamma^*))} - \gamma).$$

A decrease in home's loss (increase in γ) reduces the chance of reneging:

$$\frac{dp}{d\gamma} = -f(\bar{\varepsilon}) < 0.$$

An increase in foreign's probability of a dispute reduces home's probability of reneging

$$\frac{dp}{dp^*} = -f(\bar{\varepsilon})\frac{c}{(1 - qp^*)^2} < 0,$$

which means that an increase in foreign's gain leads to a decrease

$$\frac{dp}{d\gamma^*} = -f(\bar{\varepsilon})\frac{c}{(1 - qp^*)^2}f^*(\bar{\varepsilon}^*) < 0,$$

as does an increase in DSB accuracy

$$\frac{dp}{dq} = -f(\bar{\varepsilon})\frac{cp^{*2}}{(1 - qp^*)^2}f^*(\bar{\varepsilon}^*)\frac{c}{q^2} < 0.$$

Now consider the effect of q on the probability of total disputes pp^*. Notice that when $q = 0$, we have $p = 1$ and $p^* = 0$ because the DSB is completely inaccurate. And when $q = 1$, we have $p = 0$ and $p^* = 1$. To characterize the intermediate ranges,

$$\frac{d(pp^*)}{dq} = p\frac{dp^*}{dq} + p^*\frac{dp}{dq}.$$

So when $q = 0$, we have that $\frac{d(pp^*)}{dq} = \frac{dp^*}{dq} > 0$ and when $q = 1$, we have that $\frac{d(pp^*)}{dq} = \frac{dp}{dq} < 0$. To determine the cutoff with the maximum number of disputes, we evaluate

$$\frac{d(pp^*)}{dq} = \frac{dp^*}{dq}\left(p - \frac{f(\bar{\varepsilon})p^{*3}c}{(1-qp^*)^2}\right).$$

Since the probability of a foreign dispute is always increasing in accuracy ($\frac{dp^*}{dq} > 0$), the cutoff is where $p = \frac{f(\bar{\varepsilon})p^{*3}c}{(1-qp^*)^2}$.

Similarly, in evaluating the effect of the foreign payoff on the number of disputes, we derive that if $q = 0$, then $\frac{d(pp^*)}{d\gamma^*} = \frac{dp^*}{d\gamma^*} > 0$ and if $q = 1$ then $\frac{d(pp^*)}{d\gamma^*} = \frac{dp}{d\gamma^*} < 0$. To determine the cutoff such that the foreign payoff has the maximum effect on disputes, we evaluate

$$\frac{d(pp^*)}{d\gamma^*} = \frac{dp^*}{d\gamma^*}\left(p - \frac{f(\bar{\varepsilon})p^{*}c}{(1-qp^*)^2}\right).$$

The cutoff is thus where $p = \frac{f(\bar{\varepsilon})p^{*}c}{(1-qp^*)^2}$.

Notice that as q progress from 0 to 1, p decreases from 1 to 0, and the cutoff p such that $\frac{d(pp^*)}{dq} = 0$ is less than the cutoff p such that $\frac{d(pp^*)}{d\gamma^*} = 0$. So as q increases from 0 to 1, initially the number of disputes is increasing and the impact of a foreign surplus increase is to increase the number of disputes. Eventually, a critical value of q is reached such that an increase in foreign surplus no longer increases the number of disputes, because home's fear of a dispute with the increased accuracy is now equal to the increased chance of foreign filing a dispute for a given case. Meanwhile, an increase in accuracy still increases the number of disputes. Intuitively $\frac{d(pp^*)}{d\gamma^*} = 0$ is achieved with lower q because of the direct impact of q on home's decision to renege. As q further increases, we reach the cutoff where $\frac{d(pp^*)}{d\gamma^*} < 0$ and $\frac{d(pp^*)}{dq} = 0$ and the number of disputes is maximized for q. For q close to 1, we have $\frac{d(pp^*)}{d\gamma^*} < 0$ and $\frac{d(pp^*)}{dq} < 0$

Notice that

$$\frac{d(pp^*)}{d\gamma} = p^*\frac{dp}{d\gamma} = -p^*f(\bar{\varepsilon}) < 0$$

so an increase in home's loss is always increasing in the number of disputes.

Lastly, consider the effects on disputes of a decrease in home's payoff and increase in

foreign's payoff, so there is the same joint surplus but with a higher probability of home reneging:

$$\frac{d(pp^*)}{d\gamma^*} + \frac{d(pp^*)}{d\gamma} = \frac{dp^*}{d\gamma^*}\left(p - \frac{f(\bar{\varepsilon})p^*c}{(1-qp^*)^2}\right) + p^*f(\bar{\varepsilon}).$$

We can interpret this as an increase in conflict holding surplus fixed. For low values of q, an increase in conflict unambiguously increases the number of disputes and the cutoff q such that $\frac{d(pp^*)}{d\gamma^*} + \frac{d(pp^*)}{d\gamma} = 0$ is greater than the cutoff such that $\frac{d(pp^*)}{d\gamma^*} = 0$.

A.3 The Probability of Compliance

Define p^C as the probability that cooperation is sustained $p^C \equiv (1-p)+p(p^*q)$. Naturally, the probability of compliance is increasing in court accuracy:

$$\frac{dp^C}{dq} = (-1+p^*q)\frac{dp}{dq} + pq\frac{dp^*}{dq} + pp^* > 0.$$

Each of the three terms in the sum is positive. The first term is an increase in compliance from the decrease in home reneging, the second term is the increase in compliance from the increase in foreign disputes, and the final term is the direct increase from accurate rulings.

An increase in foreign payoff, holding all else equal, also increases compliance.

$$\frac{dp^C}{d\gamma^*} = -(1-p^*q)\frac{dp}{d\gamma^*} + pq\frac{dp^*}{d\gamma^*} > 0$$

and recall that $\frac{dp^*}{d\gamma^*} > 0$ and $\frac{dp}{d\gamma^*} < 0$, as the increase in foreign payoff both increases the chance of foreign disputing home reneging and a decrease in the change of home reneging.

An increase in home payoff has the effect

$$\frac{dp^C}{d\gamma} = -(1-p^*q)\frac{dp}{d\gamma} < 0$$

and so unambiguously decreases compliance through the increase in home cheating.

A.4 The Contract Choice

Let C be the random variable representing compliance and D be the random variable for disputes. Then the joint surplus is $(\bar{\Gamma}+\varepsilon+\varepsilon^*)C-2cD$. The expected joint surplus including disputes is then $(\bar{\Gamma}+\bar{\varepsilon}_{C=1})p^C - 2cpp^*$, where $\bar{\varepsilon}_{C=1} \equiv E[\varepsilon+\varepsilon^*|C=1]$.

The effect of increasing accuracy on expected joint surplus is thus $\bar{\Gamma}\frac{dp^C}{dq} + \frac{d(\bar{\varepsilon}_{C=1}p^C)}{dq} - 2c\frac{d(pp^*)}{dq}$. The first term is the effect of compliance on the realization of the expected joint

surplus, the second term is the effect of accuracy on the realization of the shocks, and the final term is the effect of accuracy on dispute costs. We proceed to sign the expression.

The first term, the effect of accuracy on compliance, is unambiguously positive. For the third term, notice that $d(pp^*)/dq$ is initially increasing and then decreasing. At the extreme of no accuracy, there is no compliance and no disputes, and at the extreme of perfect accuracy, there is full compliance and no disputes. In between, disputes exist. For policies where the change from $q(0)$ to $q(1)$ decreases disputes, there is no tradeoff between compliance and dispute costs, so the direct contract will be chosen. The cases of more immediate interest are those where the increased accuracy is in the region of increasing $\frac{d(pp^*)}{dq} > 0$, so we will focus on these cases:

$$\text{Assumption: The interval } [q(0), q(1)] \text{ satisfies } \frac{d(pp^*)}{dq} > 0, \frac{d(pp^*)}{d\gamma} + \frac{d(pp^*)}{d\gamma^*} > 0$$

From our results on the probability of disputes, notice that if $q = 0$, then $\frac{d(pp^*)}{dq} > 0$ and $\frac{d(pp^*)}{d\gamma} + \frac{d(pp^*)}{d\gamma^*} > 0$ so eventually a cutoff is reached such that the effect of disputes ceases to positive. We again interpret the later expression as the effect of increase in conflict over a given surplus, such that the number of disputes increases.

As for the term $\frac{d(\bar{\varepsilon}_{C=1}p^C)}{dq}$, at the extreme of full compliance, then all the shocks are realized, so $\varepsilon + \varepsilon^*$ is zero. As accuracy begins to increase, home will fail to cheat only for the lowest shocks, and foreign will dispute only for the highest shocks. The lower shocks for home will be surely realized, while others will rarely be realized. For foreign, all shocks will be realized when home has a low shock, and some high shocks will be realized at a low probability when foreign wins a dispute. Thus, under the assumption of symmetric shock distributions, initially only low total shocks are realized. Thus, $\bar{\varepsilon}_{C=1}p^C < 0$ for low q and $\frac{d(\bar{\varepsilon}_{C=1}p^C)}{dq} > 0$ as all shocks are realized.

The increased q then represents a tradeoff between the increased compliance and the costs of disputes. A higher surplus (holding home's loss fixed) then shifts this tradeoff in the favor of the direct contract (property rule) while a higher home loss (holding surplus fixed) shifts the tradeoff toward an indirect contract (liability rule).