

# Environmental Regulation in the Shadow of International Trade Law: Does Democratic Accountability Work?\*

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## Abstract

Is environmental regulation but a smokescreen for protectionism, or does international trade law invalidate legitimate policies that preserve environmental quality? I analyze a game-theoretic model to examine the positive and normative implications of international trade law for environmental regulation. The model has two new elements that drive the results. First, I explicitly model the dual uncertainty surrounding the negative externality and the value that the government assigns to profits made by special interests. Second, I consider democratic accountability by allowing the citizens to choose which policy instruments the government can use. Contravening the conventional wisdom, the results show that international trade law could increase the level of environmental regulation if the citizens believe the government is captured by special interests. Additionally, international trade law can be made unambiguously beneficial to the citizens as long as it is not too aggressive. Consequently, international trade law improves the contracting opportunities that exist between citizens and government in democratic societies.

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# 1 Introduction

One of the most important debates surrounding multilateral trade negotiations concerns the effect of international trade law on environmental regulation. For free traders, many environmental regulations are but a smokescreen for transfers to special interests (Krueger 1999). For environmentalists, international trade law that could potentially invalidate these policies is a fundamental challenge to core societal values (Esty 2001). The underlying issue is elusive because many regulations both improve environmental quality and protect domestic industries from foreign competition as quality non-tariff barriers to trade. Environmental regulations usually have complex effects, so it is difficult for citizens to evaluate their true merits (Kono 2006). Is it possible to liberalize trade while maintaining adequate environmental regulations in an era of unprecedented biophysical deterioration?

It appears that the only issue on which scholars agree is that international trade law does constrain environmental regulation. Some follow Gill (1995) in emphasizing that international trade law constitutes “disciplinary neoliberalism” that erodes legitimate environmental regulations (Conca 2000; Eckersley 2004; Humphreys 2006). Others believe most environmental regulations that international trade law invalidates are actually hidden protectionism that democratic governments use to “obfuscate” special-interest politics (Bhagwati 2000; Subramanian 1992). For Kono (2006, 382), the problem is so fundamental that we must even “question the claim that democracy leads to efficient policies.” Yet others argue that the World Trade Organization (WTO) has often struck a successful balance between economic and environmental aims (DeSombre and Barkin 2002; Neumayer 2004; Young 2005).

If the conventional wisdom is correct, we should see an increasingly dramatic conflict between trade and the environment. Indeed, if the multilateral trade regime is an important driver of liberalization (Goldstein, Rivers, and Tomz 2007), and an essential effect of international trade law is to constrain environmental regulation, we should certainly not see an expansion of environmental regulation. Yet we see exactly this. First, virtually all industrialized countries have chosen to maintain or exceed their previously stringent levels of environmental regulation (Drezner 2001; Holzinger, Knill, and Sommerer 2008; Heichel, Pape, and Sommerer 2005; Vogel 1995, 2003). Second, many developing countries now imposing and enforcing new environmental regulations (Dasgupta et al. 2002, 2006; Mani and Wheeler 1998). Third, many countries are now experimenting with innovative economic instruments that expand the scope of environmental regulation while

improving its quality (Khanna 2001; Stavins 1998, 2005). Surprisingly, international trade institutions seem to ignore or tolerate the rapid expansion of environmental regulation (Young 2005).

To address this empirical anomaly, I construct a simple game-theoretic model of environmental regulation in the shadow of international trade law. Citizens consume an imported good that could produce domestic or altruistic negative externalities, such as toxic waste or dolphin deaths. A government has relevant information about the magnitude of these negative externalities, but it also prefers to protect special interests in exchange for political support, such as campaign contributions or endorsements (Grossman and Helpman 2001; Stigler 1971). If international trade law applies, there is a dispute resolution mechanism that allows the exporter to litigate environmental regulation enacted by the government.

The model has two new elements that drive the central analytical results. First, I explicitly model the dual uncertainty surrounding both the negative externality and the value that the government ascribes to profits made by special interests. Previous work has focused either on the environment or protectionism, but such analysis is partial at best. In my model, the citizens are uninformed on both counts. Second, I allow citizens to exercise democratic accountability by rewarding or punishing a government for banning the imported good. Previous research builds on the assumption that a government simply aggregates societal preferences and then decides on environmental regulation, but modern constitutional democracies enable complex contractual arrangements between the citizens and the government (Keohane, Macedo, and Moravcsik 2009; Maskin and Tirole 2004). While international trade law does directly constrain the government, it could also indirectly shape the domestic conditions under which the government enacts environmental regulations in the first place.

The results indicate that the effect of international trade law on domestic environmental regulation is contingent. First, if the citizens believe the government is not easily captured by special interests, international trade law indeed reduces the level of environmental regulation, as exporters can adjudicate what appears to be hidden protectionism. Yet international trade law can improve the average quality of environmental regulation because the government now has stronger incentives to avoid spurious policies that produce few real benefits to the society.

Second, if the citizens believe the government is too sensitive to special interests, international trade law could increase the level of environmental regulation. An international dispute resolution reduces the probability of hidden protectionism, so uninformed citizens can trust that the government

imposes appropriate environmental regulations. Unforeseen by virtually all participants in the trade-environment debate, international trade law could allow new regulations where they are needed the most. Equally striking, this effect is most pronounced if international trade law is particularly intrusive. If citizens are to delegate authority to a potentially captured government, they must have robust guarantees that hidden protectionism is not possible.

In light of these results, the relationship between international trade law and environmental regulation appears in a rather different light than previously envisioned. Surprisingly, the multilateral trade regime could be an important reason why both industrialized and developing countries have enacted new environmental regulations. If international trade law leads citizens to believe that the government cannot use environmental regulation for special-interest purposes, it is easy to understand why the level of environmental regulation remains high or increases while its average quality improves. This effect should be most pronounced in developing countries that have inadequate capabilities for good governance.

Although I have cast the argument in terms of environmental regulation for clarity and parsimony, the results apply to a wide range of regulatory policies that could constitute quality non-tariff barriers to trade. The scope of the theoretical argument includes other contentious issues, such as consumer safety and health standards, that are central to understanding the political economy of international trade. The analysis has several broader implications for the interactions between globalization, liberalization, and democratic accountability. Most importantly, it reveals the conditions under which international institutions can help states simultaneously solve seemingly intractable problems, contravening the conventional wisdom on inevitable tradeoffs between liberalization and regulatory sovereignty.

The article proceeds as follows. I first introduce the puzzle and review the literature. I then analyze and solve a model of domestic environmental regulation in democratic countries. Against this backdrop, I characterize the positive and normative implications of international trade law. A discussion of implications for the trade-environment debate and the efficiency of democratic politics follows. Before offering concluding remarks, I summarize the most important empirically testable hypotheses.

## 2 The Puzzle

Environmental regulation under international trade law is complex because the true motivation behind any given policy is difficult to evaluate. In con-

trast to such traditional trade policies as tariffs and quotas, it is hard to provide evidence of protectionism or lack thereof. International lawyers can perhaps challenge some environmental regulations because there are alternative policies that produce equivalent benefits but are clearly less distortionary. But often an environmental regulation does not explicitly discriminate against foreign producers, yet the compliance cost is conveniently higher for foreign competitors (Neumayer 2001; Vogel 1995). Such environmental regulations could both improve environmental quality and benefit special interests, so should they be upheld or invalidated under international trade law? The problem is particularly important now that multilateral trade negotiations focus on non-tariff barriers to trade (Blackhurst 1981; Jackson 1992).

The issue is complicated by the fact that citizens do not usually have enough information to evaluate the merits of alternative environmental regulations (Lupia and McCubbins 1998). Referring specifically to trade and environment, Kono (2006, 370) writes that citizens have “neither the time nor the expertise for such evaluations.” If they had the requisite information, they could punish a government for catering to special interests – and thus increasing consumer prices – while rewarding it for preserving environmental quality. But most citizens are uninformed, so few democracies use referenda or other forms of direct democracy to enact environmental regulations. These policies have complex consequences, so democratic governance is based on delegation to representatives subject to constitutional and electoral constraints (Ferejohn 1986; Keohane, Macedo, and Moravcsik 2009; Lupia and McCubbins 2000; Maskin and Tirole 2004).

To appreciate these difficulties, consider the aflatoxin standard for cereals, fruits, nuts, and vegetables that the European Union has imposed. Aflatoxin causes cancer, so Brussels has imposed a stringent standard citing the “precautionary principle,” according to which regulation is warranted unless there is evidence that the harm caused is negligible (Neumayer 2001; Young 2003). Otsuki, Wilson, and Sewadeh (2001) estimate that compared to the less stringent recommendation of the United Nations *Codex Alimentarius*, the European standard saves approximately two European lives at a cost of 670 million dollars in lost African export revenues. A trade diversion of such magnitude is accompanied by large increases in consumer prices, so European consumers also pay a high price for this ineffective regulation. But few Europeans know what aflatoxin is, or that it is regulated. Influential agricultural interests apparently have few incentives to inform them about it.

The extant literature has debated the effect of international trade law

on environmental regulation. For free traders, the problem is that if governments can freely enact environmental regulations, international trade liberalization cannot succeed because governments use environmental regulations to protect special interests (Bhagwati 2000; Biermann 2001; Subramanian 1992). For instance, wrote Krueger (1999, 914) in anticipation of the Doha Development Round, “[p]erhaps the issue that should be of greatest concern to developing countries is the push currently under way in some developed countries to achieve labour or environmental standards enforceable through the WTO.” Indeed, survey research by Henson and Loader (2001) shows that many developing countries consider sanitary and phytosanitary standards the most important impediment to agricultural exports to industrialized countries.

In contrast, environmentalists worry about the possibility that international trade law prevents badly needed environmental regulations. Eckersley (2004, 26) claims that the WTO “does serve to cramp the scope and operation” of multilateral environmental agreements. She calls this effect the “big chill,” as states refrain from international environmental cooperation because they fear sanctions under international trade law. Both Conca (2000) and Neumayer (2001) concur that international trade law threatens to cause a regulatory chill. These concerns are sometimes raised in conjunction with other objections to globalization and liberalization, as emblematic of “disciplinary neoliberalism” that deprives states of their regulatory sovereignty (Gill 1995).

It appears that the WTO is at least trying to strike a delicate balance between toothless and overly aggressive interpretation of international trade law (Neumayer 2004). The multilateral trade regime gained a reputation for hostility towards environmental concerns in the *Tuna Dolphin* case (1991), the first major dispute resolution case on environmental regulation. The dispute settlement panel invalidated an American important ban on tuna products that result in dolphin deaths (DeSombre and Barkin 2002). However, the ruling was ultimately overturned after a strong negative reaction by the public (Kelemen 2001). Recently, many scholars have argued that the WTO has improved its environmental credentials (DeSombre and Barkin 2002; Frankel 2008; Thomas 2009; Young 2005). In the *Shrimp Turtle* case (1999), the United States promptly revised environmental regulations that banned imports of shrimp caught using techniques killing sea turtles after an unfavorable ruling, and the Appellate Body declared that the revised regulations were in compliance with international trade. In *Retreated Tyres* (2007), a dispute resolution panel upheld a Brazilian import ban on retreated tyres. According to Thomas (2009, 55), *Retreated Tyres* could prove particularly

important because it emphasized Article XX (b) of the GATT, according to which environmental regulations are legitimate if they are “necessary to protect human, animal or plant life or health.”

Notably, this debate is characterized by an exclusive focus on the *magnitude* of the effect of international trade law on environmental regulation. Both free traders and environmentalists seem to agree that international trade law reduces environmental regulation, either as a deterrent or by actually invalidating illegal policies. The underlying logic is that a democratic government aggregates preferences, benevolently or not, and enacts environmental regulations accordingly. If some environmental regulations violate international trade law, the government is less likely to enact them because the it is afraid of sanctions. Consequently, the number of environmental regulations must decrease, so scholars can focus on debating the normative merits of those environmental regulations that are vulnerable.

I will argue that this approach is misleading because it omits the interaction between the obfuscation problem and democratic accountability. If citizens can choose what competencies a democratic government has to enact environmental regulation, either through formal constitutional restrictions or through electoral incentives, they can increase or decrease the costs and benefits of enacting environmental regulation to the government. Indeed, suppose the citizens of a democratic society learn about international trade law and believe it reduces the risk of “regulatory capture” by special interests (Stigler 1971). They now have good reasons to believe that the government will deliberately avoid spurious regulations because they are incompatible with international trade law. If this effect is strong enough, it could be that international trade law increases both the number and the average quality of environmental regulations.

### **3 A Model of Domestic Environmental Regulation**

I consider the following model of domestic environmental regulation. A single democratic country imports a single indivisible good. A continuum of citizens *cum* consumers value the good, but it produces a negative externality, such as dolphin deaths or toxic waste, and the exact cost is unknown (Melser and Robertson 2005). The government knows the magnitude of this negative externality, but unfortunately it also values profits made by special interests (Grossman and Helpman 2001). The problem for the citizens is therefore to discipline the government so that it protects the citizens without serving the special interests (Maskin and Tirole 2004).

Formally, the sequence of moves is as follows. First, all citizens simultaneously vote on whether the government can ban the imported good. Second, if the government can ban the imported good, it chooses whether to do so. Finally, if the government cannot or does not ban the good, each citizen chooses whether to purchase it or not. The interpretation is that the citizens can collectively choose how much discretion the government should have in regulating imports. If the citizens believe the government abuses discretion to serve special interests, they should severely punish the government for enacting policies. If the citizens believe the government worries about the negative externality, they should permit the ban. This interpretation accords with the idea that the defining feature of democratic politics is electoral accountability. Under uncertainty, the citizens cannot punish the government based on its true intentions, so they must use their prior information to give proper incentives to the government. Notably, all results hold if the citizens engage in retrospective voting instead of choosing *ex ante* what the government can and cannot do (Fiorina 1981).

For simplicity, the citizens have identical preferences. They value consumption and detest the negative effect, so the payoff function for any given citizen is given by

$$I = \begin{cases} c - \mathbf{s} \cdot n & | \mathbf{p} = 1 \\ -\mathbf{s} \cdot n & | \mathbf{p} = 0 \end{cases}, \quad (1)$$

where  $c > 0$  denotes the consumption value,  $n > 0$  denotes the unit cost of the negative externality, and  $\mathbf{s} \in [0, 1]$  denotes the proportion of citizens that purchase the good. Note that a single consumer's decision to purchase the good has a negligible effect on the negative externality. For instance, a single can of tuna hardly causes any dolphin deaths, but one million cans could cause many. This assumption simplifies the analysis, but all results hold even if the negative effect is fully internalized by all citizens, as long as it is subject to uncertainty. Consequently, the results apply equally to altruistic environmental regulation, such as rainforest conservation, and harmful consumption effects, such as pesticides.<sup>1</sup> The indicator  $\mathbf{p}$  is set to  $\mathbf{p} = 1$  if there is no ban and the citizen in focus purchases the good and to  $\mathbf{p} = 0$  otherwise. Under complete information, a ban is therefore preferred by the citizens if and only if  $c \geq n$ .

The government has otherwise identical preferences, but it also assigns value to special interests in expectation of political support, such as campaign contributions or endorsements (Grossman and Helpman 1996, 2001).

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<sup>1</sup>For a discussion, see Bhagwati (2000).

The payoff function is thus

$$G = \begin{cases} \mathbf{s} \cdot (c - n) + (1 - \mathbf{s}) \cdot \pi & | \mathbf{p} = 1 \\ \pi & | \mathbf{p} = 0 \end{cases}, \quad (2)$$

where  $\pi > 0$  denotes profits to the special interests. The interpretation is that if the citizens do not purchase the imported good, they choose a domestic “safe choice” supplied by import-competing industries. As the proportion of consumers that purchase the good increases, profits to special interests grow. By banning the imported good, the government can maximize these profits.

The information structure of the model is as follows. Neither the citizen’s payoff  $I$  nor the government’s payoff  $G$  is common knowledge, but the prior probability distributions are commonly known:

1. The consumption value  $c$  is drawn from a continuously differentiable prior probability distribution  $C(c)$  on the real line.
2. The negative effect  $n$  and the profits  $\pi$  are drawn from a continuously differentiable joint prior probability distribution  $F(\pi, n)$  on pairs of non-negative real numbers.

Nature reveals the value  $c$  to the citizen and the pair  $(n, \pi)$  to the government. Both are revealed only after the citizen has chosen the set of policy instruments available to the government. The idea is that the set of policy instruments available to the government are chosen for the long term while the decision to ban any particular import is made for the short term. Let  $\rho$  denote the probability measure and  $E$  the expectation operator. I assume throughout that all conditional and unconditional expectations and variances are finite.

Importantly, the randomly determined elements of the pair  $(n, \pi)$  could be correlated or independent. This approach ensures that the relationship between the environmental and protectionist implications of environmental regulation is not determined. The results hold in the difficult case of environmental regulations that must discriminate to be efficacious and in the easy case of environmental regulations that work even if they do not discriminate. This generality is important because the relationship between environmental and discriminatory effects depends on the issue area in a complex fashion.

Why cannot the citizens obtain accurate information on the pair  $(n, \pi)$ ? The assumption is that the prior probability distribution contains all information available to the citizens at a low enough cost. Importantly, the cost

of information acquisition is therefore the only justification for the existence of the government. The government is potentially useful because it can obtain information at a lower cost, and then use it to protect the citizens of a society. Under complete information, the citizens could instead vote on the ban without any government discretion, so that special-interest politics would have no role (Maskin and Tirole 2004).

The model can be generalized by adding a noisy signal about the effect of environmental regulation that the citizens observe if the government enacts a policy, perhaps because environmentalists or economists discuss it in public (Lupia and McCubbins 2000; Milner 1997). The citizens could condition their support for the government on the signal, so democratic accountability improves. Adding another layer of complexity does not generate new substantive results, however, so it is better to proceed on the premise that all information that the citizens have is given by the prior probability distribution  $F(\pi, n)$ .

The equilibrium concept that I use is the perfect Bayesian equilibrium in weakly undominated strategies. The citizens first choose the set of policy instruments available to the government based on prior information and the equilibrium response of the government. In weakly undominated strategies, voting will be sincere. If the government can ban the good, it does so depending on the values  $(n, \pi)$ . Finally, each citizen decides whether to purchase the good if it is available.

The model can be solved backwards. First, I solve for the consumption decision with and without a ban. Second, I solve for the choice of the government if it can ban the good. Finally, I compare the expected payoffs to the citizens. The game has a unique equilibrium outside a set of measure zero.

Consider first the citizens. Each citizen must choose based on its prior information and the revealed consumption value  $c$ . She rationally discounts the negative externality and thus purchases the good if and only if

$$c \geq 0, \tag{3}$$

which determines a unique cutoff strategy regardless of whether the government could ban the good or not. The negative effect  $n$  does not enter this decision because the effect of any individual citizen's consumption decision is negligible. Finally, given that the citizens are identical, the proportion of citizens that purchase the good must be either  $\mathbf{s} = 0$  or  $\mathbf{s} = 1$ .

Suppose now the citizens authorize the government to ban the good. Given that the government does not know the consumption value  $c$ , it assigns

a probability  $\rho(c \geq 0)$  on the citizen purchasing good if there is no ban, as zero is the equilibrium cutoff that the uninformed citizen uses if it has allowed the government to sometimes enact the ban. Expected utility is linear in probabilities, so the ban is profitable to the government if and only if

$$\pi \geq E(c \mid c \geq 0) - n. \quad (4)$$

This expression identifies a unique cutoff  $k^* = \pi + n$  for the government. Given the decision rule that the consumer uses, the government bans the good if and only if the sum of special-interest profits  $\pi$  and the negative externality  $n$  exceeds the loss of consumption value in expectation.

The citizens allow the ban if and only if the expected value without the possibility of a ban

$$\rho(c \geq 0) \cdot E(c - n \mid c \geq 0) \quad (5)$$

does not exceed the expected value with the possibility of a ban

$$\rho(\pi + n < k^*) \cdot \rho(c \geq 0) \cdot E(c - n \mid \pi + n < k^*, c \geq 0). \quad (6)$$

The impact of a ban is to prevent the consumption of a good for which profits and negative effects fulfill  $\pi + n \geq k^*$ . This effect is harmful to the citizen if this condition is most likely met when the negative effect  $n$  is small but the profits to special interests are large, and beneficial otherwise.

The unique equilibrium of the game can now be summarized as follows. First, the citizen uses the zero cutoff  $c \geq 0$  for purchasing the good. If the government is allowed to enact the ban, it uses the cutoff  $k^*$  for the sum of profits to special interests if the citizen does not purchase the good and the negative externality. The citizen thus permits the ban if and only if the possibility of a ban increases its expected payoff.

What remains is to characterize the conditions under which the citizen prefers to give the government free hands. The analytical challenge is to obtain a precise enough characterization for general probability distributions.

**Proposition 2.** *For any prior probability distribution  $C(c)$  on the consumption value, the citizen allows (not) a ban if the expectation of the negative effect  $E(n)$  is high (low) enough and the expectation of the special-interest profits  $E(\pi)$  is low (high) enough.*

Consider first the possibility that the citizen prefers not to allow the ban.

The ban is useful because it solves the free-rider problem, but harmful because it allows the government to cater to special interests. This intuition implies that if the negative effect is small enough or special-interest profits are important for the government, government intervention is unambiguously harmful. In these circumstances, the government rarely imposes bans to remove negative externalities, but it imposes many bans appear to cater to special interests. Thus, the loss of consumption value exceeds the benefit of reduced negative externalities. But if the expected cost of the negative effect is high enough and the government has interests that align well with those of the citizen, the ban is desirable.

To summarize, in the absence of international trade law, environmental regulation is determined as follows. If special-interest politics clearly dominate the negative externality, citizens do what they can to prevent the government from enacting spurious regulations. But if the negative externality is harmful enough, citizens grant the government the public authority to enact environmental regulation. Even though they are sometimes spurious, in expectation they will be useful.

## 4 The Shadow of International Trade Law

I model the effect of international trade law by allowing an exporting country to adjudicate a ban by the government using an international dispute resolution mechanism, such as the Dispute Settlement Understanding of the WTO. The exporting country does so if the ban is discriminatory and not based on a negative externality because it then correctly infers that it is based on special-interest politics that are incompatible with international trade law.

Formally, consider the model in the previous section but suppose the exporting country is also an active player that makes strictly positive profits if the citizen purchases the good. Without loss of generality, I assume the exporting country moves in the model only if the government has enacted a ban. In that case, it chooses whether to challenge the ban. If it does not act, the ban stands. If it acts, a dispute resolution mechanism decides whether the ban is lifted so that the citizen can purchase the good.

In reality, international dispute resolution is a complex bargaining process in which the parties strive to obtain the best possible settlement through various threats, promises, and maneuvers to reveal information (Reinhardt 2001; Rosendorff 2005). The outcome is probabilistic and usually results in an informal settlement or even additional bargaining after a decision is made

(Busch and Reinhardt 2003; Hudec 1993; Reinhardt 2001). To simplify, I omit these considerations and assume that both the exporting country and the dispute resolution mechanism learn the true negative externality  $n$  and special-interest profits  $\pi$  at a low enough cost  $\varepsilon \rightarrow 0$ .

To be sure, this information structure endows the dispute resolution mechanism with impressive capabilities. In reality, both the negative effect and the special-interest profits are imperfectly observable to all concerned parties (Kono 2006; Neumayer 2001; Reinhardt 2001). However, all that matters for the results is that the dispute resolution mechanism has more accurate information than the citizens, and that it has no interest in preventing regulation if it believes the negative externality is potent enough or if the ban is not discriminatory. These substantively plausible assumptions will be discussed in some detail below.

The dispute resolution mechanism is calibrated according to the prevailing practice in international trade law to remove the ban if and only if the negative effect  $n$  is low but special-interest profits  $\pi$  are high. A low negative effect implies that the ban is not environmentally justified while high special-interest profits  $\pi$  imply that it is discriminatory, as high profits are otherwise impossible in a competitive market economy. Formally, if  $\pi - n \geq m^*$  and the exporting country challenges the ban, the dispute resolution mechanism removes it so that the citizen can purchase the good if she prefers to do so. Thus, the cutoff  $m^*$  tells us how demanding international trade law is. Since both the negative effect and the special-interest profits are relevant, this formalism can capture cases in which an environmentally justified regulation is inherently discriminatory. This assumption is not necessary for the results, however, and it is indeed possible to condition litigation only on low negative externalities or high special-interest profits.

What is the effect of international trade law? Consider the equilibrium of the modified game. To begin with, note that international trade law has no effect in the subgame in which the citizens have not given the government discretion over the ban in the first place. The expected payoff to the citizens given by (3) remains unaltered, as does the expected payoff to the government.

Consider now the effect of international trade law in the subgame in which the government does hold the authority to ban the good. To examine how the shadow of international trade law affects equilibrium regulation, fix the minimum cutoff for intervention  $m^*$  above which the dispute resolution mechanism lifts the ban upon request by the exporting country. Given that the exporting country never prefers to uphold the ban, it thus successfully challenges the ban if and only if  $\pi - n \geq m^*$ . The citizens only observe

whether there is a ban, so it is without loss of generality to simply assume the government never imposes a ban if  $\pi - n \geq m^*$ . The condition for imposing the ban, previously given by (4), is now replaced with a dual condition:

$$m^* + n > \pi > E(c \mid c \geq c^*(\mathbf{1})) - n. \quad (7)$$

The first condition states that the ban must not be vulnerable to adjudication while the second condition states that the ban must be profitable to the government.

Two cases must be considered. First, suppose the cutoff  $m^*$  is high so that the dispute resolution mechanism is averse to banning legitimate environmental regulation. International trade law turns out to unambiguously benefit the citizens, as it prevents bans by the government when the negative effect  $n$  is low but special-interest profits  $\pi$  are high. Let us summarize this reasoning as follows:

**Proposition 2.** *If the cutoff  $m^*$  above which the ban is lifted in the shadow of international trade law is high enough, the expected payoff to the citizens in the subgame with governmental discretion over the ban increases.*

Interestingly, international trade law benefits the citizens because it offers the opportunity to audit a government that is to ban the imported good. If the dispute resolution mechanism is not too aggressive, it has an unambiguously beneficial effect because it rarely makes a false negative error that would prevent a ban when it is really needed. The dispute resolution mechanism disciplines the government, so the government can credibly commit to banning the good only if the negative effect is substantial enough.

Second, suppose the cutoff  $m^*$  is set low, so that the dispute resolution is aggressive and upholds only exceptionally legitimate environmental regulations. Now the dispute resolution mechanism is aggressive and removes environmental regulation:

**Proposition 3.** *If the cutoff  $m^*$  above which the ban is lifted in the shadow of international trade law is low enough, the expected payoff to the citizens in the subgame with governmental discretion over the ban approximates that obtained when the government cannot ban the import.*

If the dispute resolution mechanism is aggressive enough, it constitutes an effective counterforce to the ban as a policy instrument. The government can only ban drastic negative effects, which are unlikely to ever occur. This

is the problem that those worrying about a big chill caused by international trade law in environmental regulation emphasize (Eckersley 2004). However, as the two previous propositions show, the big chill depends on specific rules used by the dispute resolution mechanism, so the problem can be avoided if that is what powerful states desire.

International trade law can improve the quality of environmental regulation, but what about the observable effect on the frequency and nature of environmental regulation? The conventional wisdom is that international trade law must constrain environmental regulation. To investigate the validity of this argument, let us first consider the situation in which there was a possibility of a ban in the absence of international trade law. The conventional wisdom holds here:

**Proposition 4.** *Suppose the citizens permit the ban in the absence of international trade law. The effect of international trade law on the probability that the government enacts a ban is negative.*

As I have shown above, international trade law excludes a subset of bans that the government desires. Thus, if the government used to freely enact bans because the citizens expected this to be beneficial in the long run, international trade law indeed decreases the frequency of bans.

But the conventional wisdom fails if there was previously no ban:

**Proposition 5.** *Suppose the citizens do not permit the ban without international trade law. If the cutoff  $m^*$  is high enough, international trade law has no effect. If the cutoff  $m^*$  is low enough, the citizens permit the ban. This results in a positive probability of a ban.*

If international trade law is intrusive enough, it is beneficial for the citizens because they can be certain that only large negative effects could possibly prompt a ban that survives international dispute resolution. In this case, they allow the ban because they can but win, so the frequency of bans actually increases. Paradoxically, the dispute resolution is designed to aggressively prevent certain bans, but this prompts an increase in the overall frequency of the bans. Because international trade law helps the citizens hold the government accountable, it reduces the influence of special interests, so citizens can give the government more discretion. I will examine the plausibility of this counterintuitive result in the following section.

I have thus far focused on citizens' expected payoff, which can be increased using the dispute resolution mechanism. But what about the gov-

ernment that also cares about the special interests?

**Proposition 6.** *If the citizens did not allow the ban without international trade law, the government's expected payoff increases with international trade law. If the citizens allowed the ban without international trade law, the government's expected payoff decreases with international trade law.*

The government's preferences regarding environmental regulation under international trade law permit a straightforward characterization. If the citizens were previously so suspicious as to preclude the ban, international trade law is a contracting opportunity that benefits both the citizens and the government. The citizens can now trust that harmful bans are not imposed while the government can both protect the citizens and sometimes even cater to special interests. This is clearly a win-win situation. In contrast, if the ban was previously possible, international trade law binds the government. It loses the opportunity to ban goods when special-interest pressures are strong, and there is no corresponding informational benefit because the citizens are better able to identify special-interest politics and purchase the good anyway.

The results can be summarized as follows. If the problem of special interests was not too significant in the absence of international trade law, citizens unambiguously benefit from a relatively toothless dispute resolution mechanism that does not prevent the government from pursuing legitimate social goals. But if the problem of special interests led the citizens to deprive the government of the authority to enact environmental regulations, citizens prefer an aggressive dispute resolution mechanism that might accidentally remove legitimate environmental regulations. Paradoxically, this aggressive dispute resolution mechanism results in an expansion of environmental regulation.

## 5 Discussion

The extant literature builds on the premise that governments freely set environmental regulations to promote public or special interests, and international trade law either invalidates or upholds them. The analysis challenges this assumption. The policy instruments available to a government are determined by constitutional constraints and electoral incentives enacted by uninformed citizens. Consequently, international trade law can encourage environmental regulation if it leads citizens to believe that the government

cannot abuse environmental regulations to engage in hidden protectionism.

Since the result depends crucially on the assumption that citizens can constrain policy formation by the government, it is useful to consider some real examples of such constraints. On the one hand, preferences and public opinion indirectly influence environmental regulation because politicians must defend their choices in competitive elections (Wittman 1995). As Vogel (2003) demonstrates, an essential reason why the European Union has recently replaced the United States as the frontrunner in innovative environmental regulation is that salient regulatory failures, such as the mad cow disease, have led European publics to demand new environmental regulations as protection against risk. By contrast, in the United States willingness to tolerate risk has been an important ingredient of the deregulation drive initiated by the Reagan administration (Young 2003). However, even in the United States, public opinion has often undermined attempts to dismantle environmental regulations. For instance, many scholars emphasize that the *Tuna Dolphin* decision against the United States was ultimately overturned because the public response was so negative (DeSombre and Barkin 2002; Kelemen 2001).

Citizens have also found ways to constitutionally constrain the government. In the United States, one of the most salient features of the federal structure is that it “preserves markets” by preventing individual states from engaging in internal protectionism (Weingast 1995). In environmental regulation, the most salient exceptions to this rule are derivative of increased demand for pollution abatement. In 1970, the State of California was granted a special permission to set its own air quality standards, while other states must choose between federal and Californian standards (Vogel 2000). Although all major federal environmental legislation must be approved by the House and the Senate, the Environmental Protection Agency can be sued for excessive or lacking regulations. For example, in April 2007, the Supreme Court ruled that carbon dioxide from new automobiles should be regulated.<sup>2</sup> In September 2009, the Obama administration ordered that the Environmental Protection Agency should implement similar regulations for large stationary sources of carbon dioxide.<sup>3</sup>

In the European Union, the Directorate General for Competition of the Commission collaborates with a network of national competition agencies to investigate and challenge environmental and other regulations that distort

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<sup>2</sup>“Warming Ruling Squeezes Bush From Both Sides.” *MSNBC* April 2, 2007.

<sup>3</sup>“E.P.A Moves to Curtail Greenhouse Gas Emissions.” *New York Times* September 30, 2009.

competition in member states.<sup>4</sup> The internal market is ultimately protected by the European Court Justice that has historically not hesitated to invalidate spurious regulations. Nevertheless, as Kelemen (2001) and Vogel (1995) show, it has carefully avoided invalidating popular environmental regulations that do not have unacceptable discriminatory or distortionary effects.

Is it plausible that uninformed citizens can really influence such constraints? Although many citizens probably do not pay much attention to environmental regulation or international trade in daily life, there are at least two reasons to believe that their preferences are ultimately quite important. First, it is not necessary that all citizens are equally worried about the environment or international trade. As long as there is a “critical mass” of somewhat interested but partially informed citizens, they can influence environmental regulation. For example, Krosnick (1990) has shown that in the United States, the relevant “issue public” for any particular social problem comprises a small number of the national population. This empirical stylized fact does not contravene the assumptions of the model unless the issue public is not so marginalized that politicians simply ignore it. For salient problems, such as rainforest conservation or global warming, this is certainly not the case.

Second, ordinary citizens need not engage in complex strategic reasoning to construct optimal incentives for the government. As Lupia and McCubbins (1998) show using experimental techniques, they can use various informational cues and shortcuts to assess the performance of the government. Consequently, if international trade law alleviates the fear of spurious environmental regulations among politicians and other opinion leaders, they have fewer incentives to publicly criticize environmental regulations that they do not fully understand. Even if many citizens pay little attention to any particular trade or environmental issue, their views are influenced by a number of active participants that nevertheless lack the expertise to adequately judge the merits of environmental regulations.

## 6 Interpretation

In light of the results, it is not surprising that industrialized countries continue to enact new environmental regulations that are less and less discriminatory. While international trade law undoubtedly deters environmental regulation in some issue areas, it encourages democratic governments to

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<sup>4</sup>“European Commission: Competition.” [[http://ec.europa.eu/competition/index\\_en.html](http://ec.europa.eu/competition/index_en.html)].

expand the scope of environmental regulation in others. And where international trade law invalidates existing command-and-control environmental regulations, it is often the case that less distortionary policy substitutes exist. The theory can therefore explain high levels of environmental regulation without downplaying the importance of international trade law or the importance that citizens and politicians attach to preserving free economic exchange. Indeed, the United States and the European Union have some of the most stringent environmental regulations in the world, but they have also made internal and external economic liberalization a central political priority. (Scharpf 1999; Vogel 1995, 2003; Weingast 1995).

What about developing countries? Interestingly, there is evidence that good governance is an important determinant of environmental regulation. While the conventional wisdom was that developing countries cannot enact environmental regulations for competitiveness reasons, Dasgupta et al. (2006) show that governance and vulnerability indices are substantively strong and statistically significant predictors of atmospheric concentrations of suspended particulate matter across a range of econometric specifications. These governance indices are increasing in the income of a country. On an ascending scale from 1 to 6, “low income” countries have a mean of 2.89 while “lower middle income” countries have a mean of 3.41 and “upper middle income” countries have a mean of 4.24 (Dasgupta et al. 2006, 1600). Controlling for *per capita* income, environmental governance capabilities have a positive independent effect on environmental regulation. To the extent that good governance reduces the influence special interests, this evidence is compatible with the notion that citizens of developing countries, most of which are democracies, only reward the government for environmental regulation if they can trust the government. If international trade law imposes expedient constraints on the government, it could prove particularly helpful in reassuring the citizens that the government is trustworthy. This contravenes the standard notion that trade liberalization has a negative effect on environmental regulation in poor countries (Eckersley 2004; Humphreys 2006; Porter 1999).

The trade-environment linkage in global governance now appears in a rather different light than previously thought. One of the defining features of the trade-environment debate in the WTO is the continuous adjustment of the governing principles through precedents and deliberation in the Committee on Trade and Environment. The existence of a real tradeoff shows that such oscillation is inevitable and often desirable, as citizens in different countries assess the relative importance of lower consumer prices and improving or maintaining environmental quality. *Shrimp Turtle* and *Retreated*

*Tyres* bolstered the environmental credentials of the WTO, alleviating some of the earlier fears raised by *Tuna Dolphin* that the WTO might invalidate popular environmental regulations. Such continuous adjustment is important because too aggressive international trade law is often more harmful than no international trade law while too lax international trade law has no effect on protectionism.

One of the most surprising results of the analysis is that intrusive international trade law could sometimes have the largest positive effect on environmental regulation. This result is particularly important in light of the fact that developing countries have expressed a strong preference for a dispute resolution mechanism that prevents “green protectionism” by industrialized countries (Bhagwati 2000; Biermann 2001; Krueger 1999; Neumayer 2001). The analysis here suggests that developing countries could benefit from such a dispute resolution mechanism in other ways as well. If their governments, as nascent or fragile democracies, have particular difficulties in committing to good governance, intrusive international trade law could prove helpful in building trust among citizens so that informed environmental regulation is possible. To my knowledge, the extant literature has not recognized this possibility.

If international trade law has beneficial effects, why is the trade-environment debate so contentious? The reason might be that there is a distributional conflict over the design of international trade law. Countries where special interests are influential might desire aggressive dispute resolution mechanisms. Countries where special interests are less influential desire less aggressive dispute resolution mechanisms because they wish to maintain effective environmental regulations. A similar cleavage exists between countries that worry a great deal about environmental deterioration and those that are less concerned. In the past few decades, the European Union has become the most important proponent of greening world trade, while the United States has worried about protectionism (Davis 2004; Neumayer 2004; Vogel 2003). Both perspectives are legitimate, but progress in bridging the trade-environment gap depends crucially on political fundamentals (Esty 2001). Finally, exporters of pollution-intensive goods obviously have a particularly strong preference for minimizing trade distortions. This distributional conflict seems quite real, so there is no silver bullet to improve the quality of trade-related environmental regulation beyond what has already been achieved.

## 7 Are Democratic Politics Efficient?

Can the present analysis influence the broader issue of democratic accountability with uninformed citizens and complex policies? A direct implication of the analysis is that being uninformed is only a problem if the issue at hand poses real tradeoffs. If the government is only interested in special-interest politics, or alternately the negative externality is negligible in expectation, the citizens should never permit environmental regulation. And if the government maximizes social welfare, environmental regulation is unproblematic from a domestic perspective. The issue is complicated only if the uninformed citizens cannot fully anticipate how the informed government will decide on a given instance.

This implication is important for the debate on democratic efficiency in trade and other economic policy. For example, in an important recent article, Kono (2006) shows that democracies have substituted quality non-tariff barriers for tariffs. He interprets his findings as “optimal obfuscation,” or democratic policymakers using obscure and complex policy instruments to protect special interests. If this interpretation were valid, his results would cast a dark shadow on the claim that democracies are efficient (Wittman 1989). But the interpretation is invalid. If the citizens know that complex policies are but a smokescreen, they need not understand them. They can simply proscribe them. Consequently, a more plausible interpretation of the results that Kono (2006) reports is that quality non-tariff barriers have other effects, perhaps related to the environment or health and safety issues, but the citizens cannot tell the useful ones apart from the phony ones. The fact that the citizens let the government use such policy instruments implies that they expect them to be beneficial on average. Democratic politics thus produces efficient results, albeit only in a second-best sense.<sup>5</sup>

It is important to emphasize that this result is based on minimal informational requirements for the citizens. While Mansfield, Milner, and Rosendorff (2002, 489) showed that international trade agreements can benefit voters in democracies, they simply assumed that the dispute resolution mechanism sends an informative signal to them if the government is trying to maintain high tariffs. In contrast, the model given here explains how

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<sup>5</sup>This conclusion is not modified by the regression analysis on environmental regulation and quality that Kono (2006) conducts. While his core analysis of tariffs and quality non-tariff barriers is based on a formal model and allows modest causal inference, his additional analysis that relates environmental quality to regulation fails to acknowledge that both quality and regulation are equilibrium outcomes, so it is incorrect to argue that environmental quality should have a direct monotonic effect on regulation.

democracies can benefit from international trade law even if information is costly and the issues in focus are enormously complex. Given that tariffs are increasingly irrelevant as barriers to trade, the theoretical result is particularly important in the contemporary world economy.

Is there a role for international institutions in improving democratic accountability mechanisms in general? In the model, if international trade law is properly designed, the dispute resolution mechanism can audit the government. It is obviously possible to design international institutions so that they promulgate “disciplinary neoliberalism” and ruthlessly dismantle valuable societal regulations (Eckersley 2004; Gill 1995), as critics of liberal international institutions have maintained, but why should citizens worrying both about trade liberalization and environmental quality, as is true for all democracies, do such a counterproductive thing? Instead, the citizens need international institutions and law to ensure that the government can enact regulations if and only if the benefits are substantial enough. This auditing opportunity constrains the government, so international institutions bolster sovereignty and improve social welfare. Consequently, international institutions could “enhance democracy” indirectly by allowing governments to credibly commit to beneficial policy implementation (Keohane, Macedo, and Moravcsik 2009).

An important caveat to this optimistic view is that the international institutional designs to enhance democracy might turn out to be rather complex. For instance, in the present context, international trade law could also have countervailing dynamic effects that should be accounted for. If a dispute resolution mechanism reduces the propensity of a government to enact environmental regulations, it could accelerate the fading away of uncompetitive special interests. The government loses a policy instrument that is valuable because it allows protection, so it should be more difficult for it to maintain high levels of protection (Bailey, Goldstein, and Weingast 1997). In contrast, if international trade law increases the propensity of a government to enact environmental regulations, it should increase the durability of uncompetitive special interests. As I have shown above, even though international trade law creates valuable contracting opportunities between the citizens and the government, it could have the negative dynamic effect of increasing protectionism. If this dynamic effect turns out to be strong enough, international trade law could even have the paradoxical effect of creating protectionist constituencies. Unfortunately, the extant literature on international political economy largely ignores such dynamic effects (Lake 2009).

## 8 Testable Hypotheses

The analysis produces a number of testable hypotheses that can be summarized as follows.

**Hypothesis 1.** *Consider a democratic country that is not a member of international trade institutions. If special interests are powerful enough, a government enact few environmental regulations. If special interests are weak enough, a government enacts more environmental regulations as the power of special interests increases.*

If international trade law cannot discipline political leaders, a democratic government does not enact environmental regulation if interested citizens believe the government is captured and thus threatens it with punishment. As a result, there will be few environmental regulations. If this is not the case, however, the frequency of environmental regulation increases with special-interest pressures. As long as the citizenry expects positive benefits, the government can enact a ban, which it enacts if the expected benefits are high enough. Thus, there is a non-monotonic albeit single-peaked relationship between the power of special interests and environmental regulation enacted by a democratic government.

**Hypothesis 2.** *Consider a democratic country that is not a member of international trade institutions. The government enacts more environmental regulations as domestic and imported goods produce more negative externalities.*

The primary benefit of environmental regulation is to deter negative externalities that the citizens cannot prevent because they are uninformed and face a collective-action problem, so negative externalities increase the propensity to regulate in a democratic society.

**Hypothesis 3.** *For democracies with powerful special interests, joining an international trade institution increases the level of environmental regulation. For democracies with weak special interests, joining an international trade institution decreases the level of environmental regulation.*

This convergence can be subjected to an empirical test by examining how joining an international trade institution affects environmental regulation in different countries. A useful starting point is to compare developed and

developing democracies because this categorization is meaningful in light of differences in corruption and other governance indicators. Please note, however, that this hypothesis does not imply that environmental quality decreases in countries that previously chose high regulations. The bans that are no longer admissible are those that produce few if any environmental benefits.

**Hypothesis 4.** *Joining an international trade institution improves the quality of environmental regulation.*

This hypothesis is a strong test of the theory because it contravenes the conventional wisdom and applies to *all* countries that join international trade institutions. If international trade institutions are designed to promote trade without deliberately dismantling valuable environmental regulations, they mitigate fears of special-interest politics and enable governments to effectively use their informational advantage.

**Hypothesis 5.** *The predicted effects are the stronger the more democratic a country is.*

In autocratic countries, the government is not similarly accountable to the citizenry as it is in a democracy. The conditional effects predicted by the three previous hypotheses depend on the incentives that the citizens have to permit regulation and the government's reaction to obtaining such a permit. In autocracies, the government can maximize its own political support without such accountability issues, so environmental regulation is not based on implicit or explicit contracts between the electorate and the government.

**Hypothesis 6.** *The predicted effects are the stronger the more powerful the dispute resolution mechanism of an international trade institution is.*

There is substantial variation in the dispute resolution provisions of different international trade institutions (McCall Smith 2000). A strong dispute resolution mechanism has a larger effect on behavior, because the cost of non-compliance and the likelihood of successful litigation are higher. Notably, this also applies to the contingent positive effect of international trade law on environmental regulation.

**Hypothesis 7.** *The predicted effects are stronger the more accessible the dispute resolution mechanism is to exporters of goods that could produce neg-*

*ative environmental effects.*

The results obtained above depend crucially on the ability of exporters to adjudicate environmental regulations that do not seem to be based on real negative effects. But if exporters, usually developing countries, are unable to use the dispute resolution mechanism, there is very little they can do to constrain such regulations. Indeed, Busch and Reinhardt (2003) find that lack of legal capacity is a key reason why developing countries have not utilized international trade law to combat discriminatory policies.

## 9 Conclusion

The debate on international trade law and environmental regulation is representative of the broader discussion concerning sovereignty and democratic accountability in an era of economic and political globalization. Yet there are few systematic theoretical treatments or comprehensive empirical assessments that help evaluate the validity of such treatments. This article contributes to the debate by providing a rigorous but simple theoretical account that produces a range of new empirically falsifiable hypotheses.

The analysis has positive and normative implications that should prove useful in understanding the trade-environment linkage. From a positive perspective, the key result is that the effect of international trade law on environmental regulation is contingent. If environmental regulation is rarely enacted because the citizens distrust a government prone to special-interest politics, international trade law has the effect of encouraging new regulation. The citizens understand that the dispute resolution mechanism prevents phone policies that produce net costs to the society, so they can now endow the government with the authority to exercise discretion in a way that was previously inadmissible. In contrast, if the extant level of regulation is high because the citizens believe the government protects them from negative effects, international trade law most likely reduces the level of regulation. But even here, the quality of environmental regulation improves as long as the international trade institutions focus on deterring protectionism and do not seek to cause environmental deterioration *per se*. This does not seem too implausible, as no society benefits from environmental deterioration.

From a normative perspective, the contracting approach that I have adopted shows that neither disciplinary neoliberalism nor optimal obfuscation – the two specters that seem to haunt citizens depending on where the observer stands – are a probable consequence of dispute resolution in

international trade institutions. Citizens stand to benefit from international trade institutions, as they can indirectly audit the government and hold the government responsible for the consequences of environmental regulation. The synergies between international trade law and environmental regulation, previously unacknowledged by all too many pundits, are quite natural from a contracting perspective. The obstacles to adequate environmental regulation and trade liberalization often relate to special interests, so any opportunities for the citizens to hold the government accountable should be welcome.

The analysis is one of the first in this line of inquiry, so it is in many ways incomplete. I wish to focus attention on two extensions that are of particular substantive interest. First, the analysis has omitted international negative externalities. I have examined imported goods that either produce domestic negative externalities, as is the case with the use of lead in toys or asbestos in construction, or for altruistic reasons, as is the case for dolphin deaths or rainforest destruction in other countries. Alternatively, environmental regulation can be warranted because of an international collective-action problem. Here, the government has less incentive to unilaterally reduce the consumption of a good even under complete information, so the issue is further complicated by an enforcement problem (Bhagwati 2000; Fearon 1998).

Another important issue that I have not addressed is the use of soft policy instruments, such as eco-labels (Melser and Robertson 2005). If the government can inform the citizens of whether it thinks the good is “bad” or “good,” the set of contracting opportunities expands. The government cannot be fully credible because it has an incentive to promote goods that are environmentally detrimental as long as they produce enough special-interest profits, and the citizens cannot fully evaluate the requirements for obtaining any particular eco-label. But the government will nevertheless have some credibility, because its announcements do allow the citizens to update their beliefs. The mathematical complications that arise are formidable, however, as the consumption decision is now endogenous to the government’s choice to ban the imported good or reveal information.

I have refrained from examining the exact implications of the correlation between the negative externality and special interest profits. These implications are important because technologically advanced producers in industrialized countries obtain maximal rents from regulatory protection exactly when the negative externality from the imported good is highest. Such correlations could complicate the inference that the citizens must make to obtain information from a ban, and they could reduce the value of interna-

tional trade law because special interests and negative environmental effects go hand-in-hand. But they do not alter the fundamental result that the citizens have the means to discipline the government and international trade law can improve democratic accountability even further.

The analysis emphasizes that the scholarly trade-environment debate should acknowledge the importance of genuine disagreements on what appropriate environmental regulation is. Different countries are vulnerable to different effects and their citizens ascribe different values to the environmental services that they enjoy. If information asymmetries are the primary reason for the political failures that underpin my theoretical analysis, distributional conflict could be the most important reason why the trade-environment debate cannot be resolved once and for all. If states could agree on what environmental regulation should be, and under which conditions under environmental protection overrides trade, they might not be able to solve all problems, but they could certainly design better international institutions (Koremenos, Lipson, and Snidal 2001).

Social scientists are far from having developed the requisite theoretical basis for understanding the linkages between trade and environment. While theoretical, my analysis calls for systematic empirical tests of falsifiable hypotheses. The analysis has several empirical implications, among which the contingent effect of international trade law is perhaps the most important one. Testing these hypotheses against data is probably not enough to settle the debate, but they could point theoretically and empirically oriented scholars to the right direction.

## Appendix

### Proof of Proposition 1

Note that  $(n, \pi) \geq (0, 0)$ . With  $E(n)$  low enough and  $E(\pi)$  high enough, the expected value (5) strictly exceeds (6). With  $E(n)$  high enough and  $E(\pi)$  low enough, the expected value (6) strictly exceeds (5). ■

### Proof of Proposition 2

Let  $m^*$  be high enough. Now (5) remains unaltered while the government continues to use the previous cutoff  $k^*$ , except that it cannot ban the imported good if  $\pi - n \geq m^*$ . But (6) is replaced by the following expression:

$$\rho(\pi + n < k^* \vee \pi - n \geq m^*) \cdot \rho(c \geq 0) \cdot E(c - n \mid \pi + n < k^* \vee \pi - n < m^*, c \geq 0).$$

With  $m^*$  high enough, we have

$$E(c - n \mid \pi + n \geq k^*, \pi - n \geq m^*, c \geq 0) > 0.$$

But this is the only case in which a previously possible ban is no longer enacted by the government, so the only effect of international trade law is to allow consumption that is profitable in expectation, so the claim follows. ■

### Proof of Proposition 3

Let  $m^*$  be low enough. Now the modified expression

$$\rho(\pi + n < k^* \vee \pi - n \geq m^*) \cdot \rho(c \geq 0) \cdot E(c - n \mid \pi + n < k^*, \pi - n < m^*, c \geq 0)$$

approximates (5) to arbitrarily high precision. ■

### Proof of Proposition 4

The consumer's decision rule for purchasing continues to be  $c \geq 0$  and the government's cutoff  $k^*$  is unaltered. Thus, the only effect of international trade law is to prevent bans when  $\pi - n \geq m^*$  and  $\pi + n \geq k^*$ . ■

### Proof of Proposition 5

With  $m^*$  high enough, (6) approximates the citizens' payoff in the subgame with the possibility of a ban under international trade law to arbitrarily high

precision. But since the citizens did not allow a ban without international trade law, (6) must be strictly lower than (5).

With  $m^*$  low enough, the conditional expectation of consumer utility given that the government bans the good in the subgame with the possibility of a ban and the consumer purchases the good is

$$E(c - n \mid \pi - m^* \leq n, \pi + n \geq k^*, c \geq 0).$$

With  $m^* \rightarrow -\infty$ , this expression must be strictly negative. ■

### Proof of Proposition 6

Suppose first the citizen did not allow the ban without international trade law. In that case, the expected payoff to the government is

$$\rho(c < 0) \cdot E(\pi) + \rho(c \geq 0) \cdot E(c - n \mid c \geq 0).$$

If the ban is allowed under international trade law, the first term remains unchanged while the second term is replaced with

$$\begin{aligned} &\rho(\pi + n < k^* \vee \pi - n \geq m^*, c \geq 0) \cdot E(c - n \mid \pi + n < k^* \vee \pi - n \geq m^*, c \geq 0) + \\ &\rho(\pi + n \geq k^*, \pi - n < m^*, c \geq 0) \cdot E(\pi \mid \pi + n \geq k^*, \pi - n < m^*, c \geq 0), \end{aligned}$$

a strictly higher value given that  $k^*$  is optimal, so the claim follows.

Suppose now the citizen allowed the ban without international trade law. The only effect of international trade law is to prevent the ban in some circumstances where it increases the expected payoff to the government, so the claim follows. ■

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