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Efficient Enforcement in International Law

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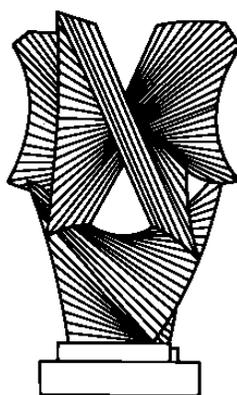
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Efficient Enforcement in International Law

Omri Ben-Shahar and Anu Bradford

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Efficient Enforcement in International Law

*Anu Bradford and Omri Ben-Shahar*¹

Abstract

Enforcement is a fundamental challenge for international law. Sanctions are costly to impose, difficult to coordinate, and often ineffective at accomplishing their goals. Rewards are likewise costly and domestically unpopular. Thus, efforts to address pressing international problems—such as reversing climate change and coordinating monetary policy—often fall short. This Article offers a novel approach to international enforcement and demonstrates the advantages of such an approach over traditional sanctions or rewards. It develops a mechanism of Reversible Rewards, which combines sticks and carrots in a unique, previously unexplored way. Reversible Rewards require that a sum of money be offered as a reward to the Target for its compliance (Incentive 1). Alternatively, the same amount of money can be used to pay for sanctions in case the Target turns down the reward (Incentive 2). This way, the money earmarked for the enforcement effort “works twice” and thus doubles the Target’s incentives to comply. Moreover, Reversible Rewards can be pre-committed in an enforcement fund to solve the problem of credibility. The Article demonstrates that, relative to sanctions or rewards used alone, Reversible Rewards reduce the costs of international enforcement and increase compliance with international rules.

¹ University of Chicago Law School. Helpful comments were provided by Lee Fennell, Victor Goldberg, Richard McAdams, Nathaniel Persily, Eric Posner, Paul Stephan, Lior Strahilevitz, Pierre-Hugues Verdier, and workshop participants at Chicago, Harvard, UVA, and the American Law and Economics Association Annual Meeting of 2010. We are grateful to Taimoor Aziz, Josh Bushinsky, and James Kraehenbuehl for excellent research assistance.

Table of Contents

I. Introduction.....	1
II. Costly Enforcement.....	4
A. The Prevalence of Sanctions and Rewards	4
1. Sanctions.....	4
2. Rewards.....	6
3. Sanctions versus Rewards	7
B. The Costs of Sanctions	9
C. The Cost of Rewards.....	14
III. Theory: Reversible Rewards.....	15
A. Simple Model of Enforcement.....	16
B. Reversible Rewards: Why they Work.....	17
1. The Double Effect.....	17
2. Credible Commitment.....	18
3. Limits of Reversible Rewards.....	20
IV. Applications of Reversible Rewards.....	21
A. Enforcement Conflicts	21
1. Currency Manipulation.....	22
2. Climate Change.....	24
B. Sanctions	27
1. Available Sanctions.....	28
2. Cost of Sanctions.....	29
C. Rewards.....	31
1. Available Rewards.....	31
2. Cost of Rewards.....	33
D. Reversible Rewards.....	35
1. How Reversible Rewards Work.....	35
2. The Benefits of Reversible Rewards.....	36
3. Challenges of Reversible Rewards.....	39
V. Conclusion: the Path for Broader Applications	43

I. INTRODUCTION

Economic sanctions form a core strategy of the United States' foreign relations.² In the recent past, the US government imposed economic sanctions against Iraq, Iran, North

² See Gary Clyde Hufbauer, et al, *US Economic Sanctions: Their Impact on Trade, Jobs, and Wages* (Peterson Inst Intl Econ Working Paper, Apr 1997), online at <http://www.piie.com/publications/wp/print.cfm?researchid=149&doc=pub> (visited Oct 18, 2011) (describing economic sanctions as a “weapon of choice to enforce a myriad of US foreign policy goals” and a “fixture of US foreign policy at least since President Carter”).

Korea, and Libya in efforts to halt their development of nuclear weapons, and against South Africa to discourage its practice of apartheid. The use of sanctions is also repeatedly proposed against China—whether to force it to further open its markets to foreign trade and investment, protect intellectual property rights, forgo currency interventions, respect human rights, or reduce greenhouse gas emissions.³

Despite their frequent use, sanctions are controversial, costly, and usually ineffective.⁴ Obviously, sanctions must entail economic and political costs to the state on which they are imposed (Target). The problem is that sanctions are also costly to the state imposing them (Sender).⁵ Take trade embargos, for example. By preventing domestic firms from trading with the Target, embargos both hurt exporters and curtail the flow of cheap imports.⁶ These costs dilute domestic support for sanctions and, consequently, often deter a government from pursuing them in the first place. Humanitarian costs associated with economic embargos further diminish public support for the sanctioning regime.

Alternatively, the Sender may try to influence the Target's behavior through rewards. But such rewards are also costly and often hard to justify to domestic constituents. They are also difficult to coordinate in the international arena where other beneficiary states have an incentive to free ride on the reward effort.

The challenge, then, is to devise incentive schemes that would have the maximum effect on the behavior of the Target at an economically and politically feasible cost to the Sender. This Article develops such a new enforcement method—"Reversible Rewards." It offers a solution to two problems that undermine existing efforts to enforce international law: *high costs* and *low credibility* associated with both a threat of sanctions and a promise of rewards. Under the conditions that we specify, Reversible Rewards can be both more effective and less costly than any enforcement mechanism based on either sanctions or rewards alone.

Reversible Rewards combine both sanctions and rewards in the following way: a sum of money is offered to the Target as a reward for its compliance. If the Target turns down the reward and continues its violations, the same amount of money is used for the second purpose: to reimburse the Sender for the cost of levying sanctions on the Target. That is, the money that was initially earmarked to reward the Target is now reversed to reward the Sender for punishing the Target.

³ See, for example, Currency Exchange Rate Oversight Reform Act of 2011, S 1619, 112th Cong, 1st Sess (Sept 22, 2011), in 157 Cong Rec S 6378 (Oct 11, 2011); American Clean Energy and Security Act of 2009, HR 2454 §§ 765–69, 111th Cong, 1st Sess (May 15, 2009); Adrian U-Jin Ang and Dursun Peksen, *When Do Economic Sanctions Work?: Asymmetric Perceptions, Issue Salience, and Outcomes*, 60 Pol Rsrch Q 135, 135–36 (2007); Wayne M. Morrison, *The China-U.S. Intellectual Property Rights Dispute: Background and Implications for China-U.S. Economic Relations*, Cong Rsrch Serv Report 94-469 E **1–3 (May 24, 1996).

⁴ David A. Baldwin, *Economic Statecraft* 57 (Princeton 1985) (noting that "[i]t would be difficult to find any proposition in the international relations literature more widely accepted than those belittling the utility of economic techniques of statecraft").

⁵ See Hufbauer, *US Economic Sanctions* (cited in note 2).

⁶ See Joanmarie M. Dowling and Mark P. Popiel, *War by Sanctions: Are We Targeting Ourselves?*, 11 Currents: Intl Trade L J 8, 9 & n 25 (Winter 2002), citing Jeong Hwa Pires, *North Korean Time Bomb: Can Sanctions Defuse It? A Review of International Economic Sanctions as an Option*, 24 Ga J Intl & Comp L 307, 335–36 (1994) (explaining that one of the primary reasons sanctions fail is that they are often more costly to the sender nations than to the target).

To illustrate this effect, consider the following simplified scenario. State A wants to stop an objectionable behavior (for example, pollution) by its neighbor, State B. This behavior conveys a benefit of \$1000 to State B and a harm of \$1000 to State A. State A can retaliate, but it would cost \$1000 to coerce State B to cease the behavior. State A can also offer a reward to State B to stop polluting, but it would, again, cost \$1000 to induce State B to agree. Under our proposed Reversible Reward scheme, State A does not need to spend the full \$1000. Half—\$500—would be enough. State A needs to offer \$500 to State B as a reward for its compliance. If State B declines the reward, the same \$500 would be used to finance State A’s retaliation against State B. Although the retaliatory sanction is only half the full sanction necessary to stop the disruption, this scheme would nevertheless succeed. The choices that the State B faces—continue versus cease pollution—present a difference of \$1000, exactly enough to lure State B to comply. To put it differently, State B’s payoff of \$500 from non-compliance (consisting of the benefit of polluting minus the half-sanction) does not exceed its payoff of \$500 from compliance (consisting of a reward). Here, at a cost of \$500—half the amount necessary for an effective sanction or effective reward—State A induces the desired change in State B’s conduct.

The primary advantage of Reversible Rewards lies in their “double effect”: any amount of money earmarked for the purpose of enforcement “works twice” and thus furnishes double the incentive to comply. The Target’s failure to comply would cost it not only the forgone reward but also the ensuing sanction. As the Target faces the prospect of losing twice, the deterrent effect of enforcement funds is doubled relative to the same money used for a simple sanction or a simple reward. As a result, this dual use of the funds substantially reduces the Sender’s costs of deterring the Target.

To commit credibly to this dual enforcement scheme, the Sender may deposit the Reversible Reward into an irrevocable fund. The Sender would stipulate that the funds can only be used for either rewarding or sanctioning the Target and not be recouped otherwise. The upfront sinking of the enforcement funds makes the marginal cost of subsequently carrying out the enforcement effort zero, lending credibility both to the Sender’s promise of rewards and to its simultaneous threat of sanctions.

The two features of the Reversible Rewards scheme—the double effect and the pre-commitment effect—can be combined or uncoupled. For example, the double effect can be accomplished without a pre-commitment. Indeed, in many areas of the law incentives are sometimes created by the dual use of sticks and carrots. If an employee excels, she is promoted, whereas if she fails to perform, she is demoted. A firm that sells a valuable product earns a nice profit, whereas a firm that sells a defective product is liable in tort. In international law, rewards and sanctions are traditionally used as alternatives, without taking advantage of the double effect that their combined use would generate. We show how the dual use of rewards and sanctions through Reversible Rewards can lower the Sender’s enforcement costs and generate compliance in situations where simple sanctions or simple rewards would fail.

Similarly, the pre-commitment effect does not need to be tied to Reversible Rewards but could simply be used to lend credibility to sanctions and rewards. Building prisons is a way to pre-commit sanctioning costs; depositing funds into trust accounts is a way to pre-commit rewards. In international law, leveraging the pre-commitment device is not as common as it is in private and commercial law. This Article discusses ways in which pre-

commitment contracts could become a more common artifact of international enforcement, mitigating the concern that international enforcement suffers from lack of credibility.

We use a simple framework to demonstrate the advantage of Reversible Rewards over simple sanctions or simple rewards. We specify when and why Reversible Rewards are cheaper instruments to generate compliance. However, we also recognize that the practical application of this mechanism is limited. Simple sanctions always dominate Reversible Rewards when a threat of sanctions is credible and thus need not be carried out. Simple sanctions are also often superior to Reversible Rewards when the Sender has to deter numerous Targets engaged in an identical violation. Accordingly, we conclude that Reversible Rewards are better suited to deter unique violations by specific Targets as opposed to systematic and generic violations by multiple Targets.

We then examine settings in which Reversible Rewards can be implemented to enhance compliance with international law. We expect Senders to utilize Reversible Rewards against selected Targets that are least likely to be deterred with simple sanctions. The first application focuses on the ongoing conflict between the US and China pertaining to China's exchange rate policy. We use it to capture a bilateral scenario in which both sanctions and rewards are available but—if used alone—are too costly for the Sender to implement. The second application explores the reach of Reversible Rewards to a multilateral cooperation problem such as climate change, where a group of states seeks to overcome a collective action problem and induce free riders to comply with emissions targets. In both cases, we show that the Sender (or a coalition of Senders) is able to induce compliance at a substantially lower cost than conventional enforcement mechanisms would suggest.

Part I discusses the limitations of traditional sanctions and rewards, focusing on the costs they impose on the Sender. Part II demonstrates how Reversible Rewards can lower these enforcement costs. Part III illustrates the benefits of Reversible Rewards through applications. The Conclusion discusses the broader possibilities and limits of Reversible Rewards to enhance compliance with international law.

II. COSTLY ENFORCEMENT

This Part explains when and why states resort to sanctions and, conversely, when and why they use rewards to persuade other states to modify their behavior. It also discusses the various costs involved in both enforcement strategies, exposing the key shortcomings that these traditional tools of economic coercion and inducement impose on credible enforcement of international law.

A. The Prevalence of Sanctions and Rewards

1. Sanctions.

The US has resorted to economic sanctions more frequently than any other country in the world.⁷ Alternatives, ranging from diplomacy to military action, are either less effective or too risky and controversial.⁸ In 1919, President Woodrow Wilson set the tone that would subsequently be followed by numerous American leaders:

A nation boycotted is a nation that is in sight of surrender. Apply this economic, peaceful, silent, deadly remedy and there will be no need for force. It is a terrible remedy. It does not cost a life outside the nation boycotted, but it brings a pressure upon the nation which, in my judgment, no modern nation could resist.⁹

Traditionally, the perception has been that economic sanctions are a cheap and easy option relative to the potential use of military force, because they do not involve direct government spending nor do they require the President to send troops into combat.¹⁰ Thus, they form a “middle path between violence and talk.”¹¹

Sanctions were a major tool used by the US for conducting international relations during the Cold War.¹² While most Cold War sanctions have been repealed, the 1962 sanctions against Cuba remain in force today.¹³ Currently, the US has sixty-nine laws authorizing economic sanctions against twenty countries.¹⁴

Economic sanctions take many forms. They consist of *trade sanctions* (that is, export and import restrictions), *financial sanctions* (withdrawal of credit or financial assistance to

⁷ See Gary Hufbauer, *The Snake Oil of Diplomacy; When Tensions Rise, the U.S. Peddles Sanctions*, Wash Post C01 (July 12, 1998). See also Gary Clyde Hufbauer, et al, *Economic Sanctions Reconsidered* 9–41 (Peterson Inst Intl Econ 3d ed 2009); sources cited in Richard D. Farmer, *Costs of Economic Sanctions to the Sender*, 23 World Econ 93, 95–96 (2000).

⁸ See Hufbauer, *Snake Oil of Diplomacy* (cited in note 7) (noting that the American affinity for sanctions has been influenced by the perception that military force is too costly and diplomacy too feeble to address the problem of global misdeeds). See also Richard N. Haass and Meghan L. O’Sullivan, *Introduction*, in Richard N. Haass and Megan L. O’Sullivan, eds, *Honey and Vinegar: Incentives, Sanctions, and Foreign Policy* 1, 2 (Brookings 2000) (noting that “[a]lthough military action will remain an essential foreign policy tool, its application is expensive and by no means certain of achieving its goals”).

⁹ See Hufbauer, et al, *Economic Sanctions Reconsidered* at 1 n 1 (cited in note 7).

¹⁰ See Richard B. Cheney, *Defending Liberty in a Global Economy*, in Solveig Singleton and Daniel T. Griswold, eds, *Economic Casualties: How U.S. Foreign Policy Undermines Trade, Growth, and Liberty* 19, 24 (Cato Inst 1999).

¹¹ Richard W. Parker, *The Problem with Scorecards: How (and How Not) to Measure the Cost-Effectiveness of Economic Sanctions*, 21 Mich J Intl L 235, 236 (2000).

¹² See Andreas F. Lowenfeld, *Trade Controls for Political Ends: Four Perspectives*, 4 Chi J Intl L 355, 357–60 (2003) (discussing the use of export controls by the US as a method of gaining leverage over Soviet satellite states).

¹³ See Cuban Assets Control Regulations, 31 CFR §§ 515.101–515.901. See also Presidential Memorandum, Continuation of Authorities under the Trading with the Enemy Act (Sept 2, 2010), online at <http://www.whitehouse.gov/the-press-office/2010/09/02/presidential-memorandum-continuation-authorities-under-trading-with-enem> (visited Oct 18, 2011) (extending sanctions against Cuba found in 31 CFR § 515 for one year).

¹⁴ See US Department of the Treasury, *Sanctions Programs and Country Information* (Oct 13, 2011), online at <http://www.treasury.gov/resource-center/sanctions/Programs/Pages/Programs.aspx> (visited Sept 26, 2011).

the Target), or *asset sanctions* (freezing of assets that Target holds in the Sender country). Sanctions can be unilateral (for example, imposed by the US alone) or multilateral (for example, authorized by the UN or imposed by a “coalition of the willing”). While in the past sanctions were primarily inflicted for national security purposes, states have more recently resorted to sanctions to address a broader set of policy issues, including drug trafficking, human rights, and the environment.¹⁵

Expansive use of economic sanctions responds to the lack of effective third-party enforcement of international law and the resulting endemic problem of compliance with international rules. International norms relating to nuclear non-proliferation, terrorism, human rights, currency manipulation, or climate change are often underdeveloped, imprecise, or ineffective. There is no supranational authority to force states to sign onto international treaties. And even if states did sign onto such treaties, there is no international enforcement body that would enforce those treaties when states breach them. Thus, coercion through economic sanctions has become a common tool for conducting foreign affairs and enforcing international norms.

2. Rewards.

As an alternative to sanctions, or “sticks,” the Sender can employ rewards, or “carrots.” Rewards are commonly used as side payments to forge international cooperation.¹⁶ China received financial assistance as a side payment for its participation in the Montreal Protocol that regulates emissions of ozone-depleting substances.¹⁷ China also benefited from significant trade and technology benefits in the 1970s and 1980s in return for improved strategic cooperation with the US.¹⁸ In the past, the US has rewarded North Korea for its promise to dismantle its nuclear reactors and allow International Atomic Energy Agency inspectors access to its facilities. These rewards consisted of lifting existing trade barriers, providing supplies of fuel oil, and building light-water nuclear reactors.¹⁹ The US similarly pledged billions of dollars in aid to Egypt and Israel in return for their signing a peace treaty.²⁰

¹⁵ See Cong Budget Office, *The Domestic Costs of Sanctions on Foreign Commerce* *4 (Mar 1999), online at <http://www.cbo.gov/ftpdocs/11xx/doc1133/tradesanc.pdf> (visited Oct 18, 2011) (CBO Report). See also Hufbauer, *Snake Oil of Diplomacy*, Wash Post at C01 (cited in note 7).

¹⁶ See Scott Barrett, *Environment and Statecraft: The Strategy of Environmental Treaty-Making* 335–54 (Oxford 2003).

¹⁷ China is an Article 5 country under the Montreal Protocol, which entitles it to assistance from developed countries under the Multilateral Fund for the Implementation of the Montreal Protocol. Assistance takes the form of grants or concessional loans. See Multilateral Fund Secretariat, *Multilateral Fund for the Implementation of the Montreal Protocol: Policies, Procedures, Guidelines and Criteria* *65 (July 2011), online at <http://www.multilateralfund.org/Our%20Work/policy/Shared%20Documents/Policy64.pdf> (visited Oct 18, 2011).

¹⁸ See William J. Long, *Trade and Technology Incentives and Bilateral Cooperation*, 40 Intl Studies Q 77, 90 (1996).

¹⁹ See Daniel W. Drezner, *The Trouble with Carrots: Transaction Costs, Conflict Expectations, and Economic Inducements*, 9 Sec Studies 188, 214 (Autumn 1999).

²⁰ See id at 188.

Rewards are also commonly used to buy votes in international organizations. In 1961, the US agreed to pay Haiti for the construction of its airport facilities in return for securing Haiti's vote to expel Cuba from the Organization of American States.²¹ In the 1980s, the US offered aid to Argentina and Chile in an aid-for-vote deal to deny Nicaragua's access to credit from the Inter-American Development Bank. In the UN, the US has similarly bought votes, for instance, to persuade UN Security Council members to agree to the use of force in preparation for the Gulf War.²² Obviously, the US is not the only world power to resort to conditional rewards for political purposes. During the Cold War, the Soviet Union frequently offered military aid and trade concessions to buy votes in the UN. Similarly, China has offered trade deals to European countries in an effort to persuade them not to vote against China in the UN Human Rights Commission.²³

Rewards take many forms. They consist of traditional development aid, including loans, cash transfers, infrastructure investments, or debt forgiveness programs. The Sender can also offer to reduce existing barriers to trade and investment or transfer some technology to the Target. At times, rewards can take the form of military aid or other security guarantees. Sometimes the most important reward is diplomatic recognition, the granting of access to an international institution, or the promise of cooperation in an area of importance to the Target.²⁴

3. Sanctions versus Rewards.

In principle, rewards and sanctions should be equally effective tools to exert influence over the Target. If State A promises State B a reward of \$1000 for B's compliance or threatens B with a sanction of \$1000 for its non-compliance, then the opportunity cost of non-compliance for B is the same in both instances.²⁵

Yet there are circumstances when a Sender does not have a choice between rewards and sanctions. At times, a Sender cannot effectively resort to sanctions. One scenario involves a Target that is an important supplier of a product on which the Sender depends. In 1995, Europeans refused to join the US in its efforts to block investments in Iran's oil fields, indicating that they were running out of fuel sources, thus making sanctions infeasible.²⁶ For the same reason, Nigeria escaped sanctions that its trading partners were contemplating to inflict for its violation of human rights; Senders were simply unable to curtail trade with yet another oil producer.²⁷

Sanctions are similarly ineffective when the Target has no capacity to comply. For example, compliance with emissions standards might require access to clean technology, or cooperation with anti-terrorism goals might require enforcement capacity and

²¹ See id at 198.

²² See id at 198 & n 27.

²³ See id.

²⁴ See Haass and O'Sullivan, *Introduction* at 5-6 (cited in note 8).

²⁵ See David A. Baldwin, *The Power of Positive Sanctions*, 24 *World Pol* 19, 20 (1971).

²⁶ See Dianne E. Rennack and Robert D. Shuey, *Economic Sanctions to Achieve U.S. Foreign Policy Goals: Discussion and Guide to Current Law* *5 (Cong Rsrch Serv 1998), online at <http://www.au.af.mil/au/awc/awcgate/crs/97-949.pdf> (visited Oct 18, 2011).

²⁷ See id.

infrastructure that the Target may not have.²⁸ Supplying necessary technology or enforcement aid may be the only way to influence the Target's behavior. Finally, economic embargos are ineffective when the scope of economic activity between the Sender and the Target is limited in the first place: State A cannot deprive State B of something B does not have. In contrast, there is no upper limit to the amount of reward that A could extend to B.²⁹

Conversely, sometimes the Sender is not able to resort to rewards. It is often difficult, if not impossible, to assess what denuclearization of any given country is worth to that country and what kinds of rewards would therefore be appropriate to extend as a price for such a concession. Security benefits, in particular, are often non-fungible.³⁰ There may be no price that the Target is willing to accept for forgoing existential security guarantees that a certain arsenal of weapons offers to it. This leaves the Sender with no choice but to either endure the Target's behavior or pursue military sanctions.

Examples of Targets turning down offers of reward are numerous. North Vietnam refused to halt the war in Vietnam in return for President Lyndon Johnson's offer of a substantial aid package. President Reagan was similarly unsuccessful in persuading Iran to trade arms for hostages during the 1979–81 hostage crisis. China did not change its human rights policies in return for President Clinton's offers of freer trade.³¹ And even when the Target accepts a reward, there is no guarantee that rewards accomplish their goal of changing the Target's incentives. The US's efforts to engage Iraq through rewards is an example of a failed reward strategy. Iraq benefited from extensive credit guarantees and provision of military intelligence.³² Yet the rewards only accomplished minor changes in Iraq's policies, failed to halt Iraq's pursuit of nuclear and chemical weapons, and did not prevent its invasion of Kuwait in 1990.³³

Rewarding an unsavory regime also carries the risk that the Target may divert the resources to finance some reprehensible behavior.³⁴ A Sender may also fear that a reward would strengthen the Target's capabilities in future conflicts.³⁵ Rewarding rogue regimes could be particularly difficult to justify to the domestic audience that contests the moral rationale for bribing belligerent countries. Finally, the Target might be weary of promises for future rewards, recognizing that the Sender would be tempted to retract its obligation once compliance is achieved.³⁶ For example, Iran would likely be reluctant to destroy its

²⁸ See Thomas Bernauer and Dieter Ruloff, *Introduction and Analytical Framework*, in Thomas Bernauer and Dieter Ruloff, eds, *The Politics of Positive Incentives in Arms Control* 1, 21–22 (South Carolina 1999).

²⁹ See Baldwin, 24 *World Pol* at 35 (cited in note 25).

³⁰ See Bernauer and Ruloff, *Introduction and Analytical Framework* at 31 (cited in note 28).

³¹ See Drezner, 9 *Sec Studies* at 189 (cited in note 19).

³² See Kenneth J. Juster, *The United States and Iraq: Perils of Engagement*, in Haass and O'Sullivan, eds, *Honey and Vinegar: Incentives, Sanctions, and Foreign Policy* 51, 53 (cited in note 8).

³³ See generally Barry Rubin, *The Real Roots of Arab Anti-Americanism*, 81 *Foreign Aff* 73 (Nov/Dec 2002) (explaining that, despite decades of financial and military support for many regimes, the US has largely failed to foster good relations with the Middle Eastern public).

³⁴ See Richard N. Haass and Meghan L. O'Sullivan, *Conclusion*, in Haass and O'Sullivan, eds, *Honey and Vinegar* 159, 165 (cited in note 8).

³⁵ See Drezner, 9 *Sec Studies* at 201–02 (cited in note 19); Han Dorussen, *Mixing Carrots with Sticks: Evaluating the Effectiveness of Positive Incentives*, 38 *J Peace Rsrch* 251, 254 (2001).

³⁶ See Dorussen, 38 *J Peace Rsrch* at 257, 260 (cited in note 19).

nuclear infrastructure for a promise of future rewards that cannot be *ex ante* secured. Thus, rewards—even if less costly than the threat of sanctions that needs to be carried out—remain controversial, and have not, therefore, replaced sanctions as a favorite tool of US foreign policy.

In imposing sanctions or offering rewards to the Target, the Sender seeks to maximize its political gains and minimize its costs.³⁷ Next, we explore the various costs incurred by Sender when inflicting sanctions or offering rewards to the Target. While we recognize the possibility of military sanctions, our discussion focuses on economic sanctions. We also focus on economic costs and leave aside various political costs associated with sanctions and rewards alike.³⁸

B. The Costs of Sanctions

The US has traditionally preferred sticks to carrots in promoting its foreign policy goals. The reality of economic sanctions, however, shows that sanctions have not been as effective as previously presumed.³⁹ Decades of extensive economic isolation of Cuba have not led to a regime change. North Korea has similarly withstood economic sanctions and diplomatic exclusion to continue development of nuclear weapons. Sanctions against Iran have been equally discouraging—isolating Iran has not persuaded it to abandon its nuclear program.⁴⁰ And, importantly, while the benefits of sanctions have been elusive, the costs have often been certain and substantial.⁴¹

Domestic corporations, workers, and consumers pay the biggest price for Sender's economic sanctions. In imposing sanctions, the government forces its domestic firms to forfeit gains from trade with the Target.⁴² Consider, first, the effect of *export sanctions*. Firms subject to export controls are deprived of revenue when exports to or investment in

³⁷ See Hufbauer, et al, *Economic Sanctions Reconsidered* at 108 (cited in note 7). Empirical research also suggests conditions under which sanctions are more likely to be successful. One of those conditions is when senders avoid high costs to themselves. See Kimberly Ann Elliott, *Congressional Testimony: Evidence on the Costs and Benefits of Economic Sanctions* (Peterson Inst Intl Econ Oct 23, 1997), online at <http://www.piie.com/publications/testimony/print.cfm?researchid=294&doc=pub> (visited Oct 18, 2011).

³⁸ Political costs refer to the costs that failed sanctions impose on US leadership or “audience costs”—the domestic political price a government pays for backing down after threatening Target with sanctions. See Lisa L. Martin, *Credibility, Costs, and Institutions: Cooperation on Economic Sanctions*, 45 *World Pol* 406, 413 (1993).

³⁹ See generally Robert Pape, *Why Economic Sanctions Do Not Work*, 22 *Intl Sec* 90 (Autumn 1997). See also Richard N. Haass, *Sanctioning Madness*, 76 *Foreign Aff* 74, 75–78 (Nov/Dec 1997).

⁴⁰ See Miroslav Nincic, *The Logic of Positive Engagement: Dealing with Renegade Regimes*, 7 *Intl Studies Perspectives* 321, 322–23 (2006).

⁴¹ See Elliott, *Congressional Testimony* (cited in note 37).

⁴² See T. Clifton Morgan and Navin A. Bapat, *Imposing Sanctions: States, Firms, and Economic Coercion*, 5 *Intl Studies Rev* 65, 66–67 (Dec 2003). To ensure that firms comply with the sanctions regime, governments often attach notable penalties on firms that continue to trade with the Target. For instance, a firm violating the Iran and Libya Sanctions Act of 1996 (ILSA), Pub L No 104-172, 110 Stat 1541, as amended by Pub L No 107-24, 115 Stat 199 (2001), codified at 50 USC § 1701 (2006), was subject to prosecution under Trading with the Enemy Act, Pub L No 65-91, 40 Stat 411 (1917), codified at 50 USC App §§ 1–44 (2006), risking a \$1 million fine and potential jail time.

the Target are prohibited or export financing is cut off.⁴³ Infamous sanctioning episodes include the US's 1980–81 grain embargo against the Soviet Union (following the latter's military occupation of Afghanistan) and the 1981–82 pipeline embargoes against Poland and the Soviet Union (following the declaration of martial law in Poland). In the former case, the burden imposed on the Soviet Union was quite modest—having to pay an extra \$225 million for grain from other sources—whereas the lost exports cost the US \$2.3 billion.⁴⁴ In the latter case, the ban on exporting petroleum products cost \$2.2 billion to US companies and their subsidiaries.⁴⁵ Neither episode led to a change in the Target's behavior.⁴⁶

Sanctions further increase domestic firms' long-term costs of doing business abroad when these firms are labeled "unreliable suppliers," prompting trading partners to diversify their sources of supply to insure against supply disruptions.⁴⁷ Short-term sanctions may also have adverse effects after they are lifted, when Sender's firms lose subsequent sales of replacement parts, technology, and services to Target.⁴⁸ Sanctions also cost US firms market share as their foreign competitors capture their business during the time the export embargo is in force.⁴⁹ That market share may or may not be restored after trade is later normalized. Finally, a propensity to use economic sanctions can chill trade even before such sanctions are instituted, because clients may be apprehensive about investing in technology sold by the Sender for fear of a future sanctioning episode.⁵⁰

It is difficult to quantify the total costs of economic sanctions to the Sender. One frequently quoted study estimates that economic sanctions cost the US approximately \$15–\$19 billion dollars annually in lost export revenue.⁵¹ These sanctions translate to the loss of

⁴³ See William H. Lash III, *An Overview of the Economic Costs of Unilateral Trade Sanctions*, in Singleton and Griswold, eds, *Economic Casualties* 13, 14–15 (cited in note 10) (discussing how the export sector suffers even if government indirectly restricts exports by curtailing financing for international trade and investment such as by restricting the ability of private institutions to offer trade finance); CBO Report at *19 (cited in note 15).

⁴⁴ See Robert O'Quinn, *A User's Guide to Economic Sanctions*, 1126 Backgrounder (Heritage Foundation 1997), online at <http://www.heritage.org/Research/PoliticalPhilosophy/BG1126.cfm> (visited Oct 19, 2011).

⁴⁵ See Stefanie Ann Lenway, *Between War and Commerce: Economic Sanctions as a Tool of Statecraft*, 42 Intl Org 397, 399 (1988).

⁴⁶ See Martin, 45 World Pol at 406 (cited in note 38).

⁴⁷ See Hufbauer, et al, *Economic Sanctions Reconsidered* at 108 (cited in note 7).

⁴⁸ See Hufbauer, *US Economic Sanctions* (cited in note 2).

⁴⁹ See, for example, id (cited in note 2) (showing that foreign firms have replaced US firms in Cuba and that Canada, Australia, and Germany export more to China than they ought to given their size, income and geography). See also Dowling and Popiel, 11 Currents: Intl Trade L J at 12 n 100 (cited in note 6) (recounting that when Texaco sold a 42.9 percent stake in the Burmese Yetagun oil and gas field in late 1997, Patronas of Malaysia purchased 36.4 percent of that share).

⁵⁰ See Elliott, *Congressional Testimony* (cited in note 37); Hufbauer, *US Economic Sanctions* (cited in note 2). See also Dowling and Popiel, 11 Currents: Intl Trade L J at 11 (cited in note 6) (discussing how US sanctions have resulted in foreign companies' shifting to alternative supplies for mechanical parts and grain).

⁵¹ See Elliott, *Congressional Testimony* (cited in note 37) (discussing research showing an estimate of the costs of sanctions the US had in place in 1995 against twenty-six target countries). For a criticism of this estimate, see generally Parker, 21 Mich J Intl L 235 (cited in note 11). In contrast, David Richardson, in a 1993 study, estimated that the direct loss from sanctions on exports was \$29 billion. See CBO Report at *43 (cited in note 16).

200,000 jobs in the export sector.⁵² These figures fail to recognize, however, that some of the exports could be redirected to other markets, which would mitigate the losses on the export sector. At the same time, though, these estimates exclude service exports and investment flows that are also interrupted by sanctions.

Another category of economic sanctions consists of *import restrictions*. Domestic firms using foreign inputs in their production, or consumers buying imported goods, have to pay more when imports are restricted and alternatives are more costly. Import sanctions might also lead to trade retaliation or, even worse, a full-blown trade war. For instance, if the US restricts imports from China, the US is likely to violate its obligations under the WTO. The WTO may subsequently authorize China to retaliate against any US industry. The prospect of a WTO challenge has led the US historically to favor export controls over import controls.⁵³ Export restrictions are also likely to have a greater impact on the Target: Sender countries are often dominant suppliers of products whose exports they are restricting (for example, the US has often restricted the supply of military technologies where few alternative sources of supply have been available for the Target). In contrast, the Target can often divert its imports to alternative markets if any given Sender restricts the Target's imports into the Sender's domestic market.

In today's economy, most economic activities depend on access to finance. *Financial sanctions* and *asset freezes* therefore have an effect on trade similar to that of direct trade sanctions: they lead to contraction in trade by withholding investment, denying access to foreign exchange or by raising the cost of (or denying) credit.⁵⁴

The burden of economic sanctions on domestic firms has not gone unnoticed. The US business community launched a campaign called "USA Engage" in 1997 to highlight the costs of economic sanctions on US businesses in an effort to change the congressional presumption in favor of sanctions to one against them.⁵⁵ Given the counterproductive nature of sanctions, USA Engage has promoted alternative foreign policy tools that do not undermine American exports, overseas investment, and competitiveness. Responding to these concerns, the US Congress has several times sought to reform sanction policies and require more rigorous cost-benefit analyses before a decision to resort to sanctions is made.⁵⁶ While most sanction-reform bills have been unsuccessful, domestic backlash against expensive sanctions has led to the introduction of sunset provisions on agricultural

⁵² See Elliott, *Congressional Testimony* (cited in note 37); Hufbauer, *US Economic Sanctions* (cited in note 2).

⁵³ See Hufbauer, et al, *Economic Sanctions Reconsidered* at 94 (cited in note 7) (explaining that Ronald Reagan was reluctant to exercise his authority to control imports for foreign policy reasons because he feared that this power would later be misused for protectionist purposes).

⁵⁴ See id at 111.

⁵⁵ See Parker, 21 Mich J Intl L at 237 (cited in note 11).

⁵⁶ See Hufbauer, *Snake Oil of Diplomacy* (cited in note 7) (discussing the Hamilton-Lugar Bill, a sanctions reform bill that seeks "to establish an effective framework for consideration by the legislative and executive branches of unilateral economic sanctions," including increased executive branch consultation with Congress, public hearings, a cost-benefit analysis, a preference for targeted and multilateral measures whenever possible, presidential waivers for all legislatively imposed sanctions, and the sanctity of contracts), citing Enhancement of Trade, Security, and Human Rights through Sanctions Reform Act, S 1413, 105th Cong, 1st Sess (Nov 7 1997), in 143 Cong Rec S 11964 (Nov 7, 1997). See also Rennack and Shuey, *Economic Sanctions to Achieve U.S. Foreign Policy Goals* at 1 (cited in note 26).

embargos and to legislation vesting the President with the right to waive sanctions when he or she considers it necessary.⁵⁷

Because the cost of economic sanctions often falls disproportionately on a limited number of individual firms and communities, the government might agree to absorb some of these costs. Sanctions that impose costs on well-organized interest groups such as agricultural producers or other key export industries are particularly salient to the political process.⁵⁸ This is why the US compensated its farmers for the losses they incurred when participating in the grain embargo against the Soviet Union.⁵⁹ Furthermore, the export industries subject to sanctioning laws are often some of the most productive, sophisticated, and competitive sectors of the economy.⁶⁰ They are industries where current and future gains from trade are the greatest. Restricting opportunities for these very industries not only leads to immediate welfare losses but also impedes longer-term economic growth.⁶¹ The political process is also sensitive to the effect of sanctions on unemployment or other labor and capital adjustments.⁶² When the economy is booming, many displaced workers from the export sector are able to relocate to other jobs. But these opportunities are not available during economic downturns.

Besides the costs to firms and individuals, sanctions also entail direct implementation costs. The US government incurs administrative costs in monitoring and, at times, prosecuting firms that are subject to an economic embargo. These firms often have the incentive to circumvent the embargo by trading with the Target through offshore locations or third-country agents.⁶³ These costs can be even greater in instances where the US government needs to monitor behavior taking place outside US borders.⁶⁴

Sanctions can be inefficient not only because of their high costs but also because of their low success rate. A frequently cited study on the effectiveness of sanctions argues that they are at least partially successful in only 34 percent of cases.⁶⁵ While some might view these numbers as encouraging, the study also concludes that only one out of five sanctioning episodes leads to perceptible changes in the Target.⁶⁶ Further, economic sanctions have not precluded the need to resort to military force.⁶⁷

In today's integrated economy, unilateral sanctions are even less likely to be successful than they were in the past, because Targets have more opportunities to

⁵⁷ See Hufbauer, et al, *Economic Sanctions Reconsidered* at 110 (cited in note 7).

⁵⁸ See Farmer, 23 *World Econ* at 94 (cited in note 7).

⁵⁹ See Martin, 45 *World Pol* at 414 (cited in note 38).

⁶⁰ See Elliott, *Congressional Testimony* (cited in note 37).

⁶¹ See CBO Report at 9 (cited in note 15).

⁶² See Farmer, 23 *World Econ* at 94 (cited in note 7).

⁶³ See Morgan and Bapat, 5 *Intl Studies Rev* at 66 (cited in note 42); Lenway, 42 *Intl Org* at 398 (cited in note 45).

⁶⁴ This is the case when sanctions are extended to foreign corporations or in cases where the US seeks to freeze assets of terrorist organizations that are spread across multiple jurisdictions.

⁶⁵ See Hufbauer, et al, *Economic Sanctions Reconsidered* at 158 (cited in note 7).

⁶⁶ See Hufbauer, *Snake Oil of Diplomacy* (cited in note 7) (discussing South Africa as a notable success and Haiti, Cuba, Libya, Iran, Iraq, and China as notorious failures).

⁶⁷ See, for example, Elliott, *Congressional Testimony* (cited in note 37) (discussing how sanctions failed to prevent war in Iraq, the former Yugoslavia, Panama, and Haiti).

circumvent sanctions.⁶⁸ Unilateral sanctions by a single Sender against a given Target are rarely sufficient to change the Target's incentives to comply. If the US refuses to buy oil from Iraq, the import ban can hardly be effective if Iraq can divert that forgone trade to third countries.⁶⁹ Similarly, if the US prohibits its firms from selling anything but essential medicines to Iran, the measure is futile if other countries continue to supply Iran with comparable products at a comparable price.⁷⁰ In other words, unilateral trade sanctions often only alter trade routes and capital flows without affecting the total level of commerce.⁷¹ Libya provides an instructive example: when the US imposed a unilateral ban on oil imports from Libya in 1982, the United Kingdom increased its oil imports of Libyan oil by 350 percent.⁷²

In these instances, the Sender may seek to impose extraterritorial sanctions by curtailing economic exchange between third countries and the Target. This type of "secondary boycott" provision was included in the Iran and Libya Sanctions Act of 1996 (ILSA).⁷³ The Act targeted both US and non-US businesses investing in Iran. The European Union (EU) firmly criticized the sanctions and proclaimed that its companies would not comply with ILSA.⁷⁴ It also urged its member states to sanction companies following the ILSA and challenged the US's Act before the WTO.⁷⁵ A similar attempt to regulate the behavior of third country firms was included in the Helms-Burton Act imposing an embargo on Cuba.⁷⁶ There, international backlash was equally stern. The EU declared the extraterritorial provisions of the Act to be unenforceable within the EU and affirmed that any damages the US imposed under the Act would be recoverable.⁷⁷ Ultimately, the US had to back down by exempting the foreign firms from the scope of the sanctions.⁷⁸ As these

⁶⁸ See CBO Report at *x (cited in note 15). Empirical research on the effectiveness of sanctions point to a declining utility of the US's unilateral sanctions. While post-World War II, the US achieved at least partial success in over 50 percent of the instances it pursued sanctions, from 1970–90, the success rate dropped to 21 percent. In the past, the success of sanctions was not tied to the US's ability to persuade other countries to join the sanctions. In cases following the World War II, the success rate between US's unilateral and multilateral sanctions was almost the same (29 percent and 33 percent, respectively) whereas in the 1970s and 1980s, only 13 percent of the US's unilateral sanctions were successful. See Elliott, *Congressional Testimony* (cited in note 37).

⁶⁹ See Farmer, 23 *World Econ* at 96, 102 (cited in note 7).

⁷⁰ See Klaus Knorr, *The Power of Nations: The Political Economy of International Relations* 152 (Basic 1975) (noting that even if Target is dependent on its trade with Sender, its government can usually turn to other trade partners when faced with sanctions).

⁷¹ See Farmer, 23 *World Econ* at 102 (cited in note 7).

⁷² See Haass and O'Sullivan, *Conclusion* at 174 n 24 (cited in note 34).

⁷³ ILSA § 4, 110 *Stat* at 1542–43.

⁷⁴ See Eur Parl Res on Cuba, Art 5, 1996, OJ (C 96) 294 (expressing the council's opinion that ILSA is in conflict with international law).

⁷⁵ See *id.*

⁷⁶ See Cuban Liberty and Democratic Solidarity Act of 1996 (Helms-Burton Act), Pub L No 104-114, 110 *Stat* 785, codified at 22 *USC* §§ 1643(l)–(m), 6021–6091 (2006 & Supp 2009).

⁷⁷ See Council Regulation 2271/96, Arts 1, 6, 1996 OJ (L 309) 1.

⁷⁸ See Title III of the Helms-Burton Act § 306(b), 110 *Stat* at 821 (Title III includes a waiver that allows the US President to suspend the extraterritoriality provision of the Act). US Presidents have exercised this right to grant a waiver under Title III to alleviate the concerns of foreign sovereigns. See Shoshana Perl, *Whither Helms-Burton? A Retrospective on the 10th Year Anniversary*, 6 Jean Monnet/Robert Schuman Paper Ser 6 (Feb 2006), online at <http://aei.pitt.edu/8171/1/perlfinal.pdf> (visited Nov 15, 2011).

examples show, the US and its allies' policies are not always aligned. In many cases, the US is forced to buy its allies' cooperation through a mix of rewards and promises of cooperation in other foreign policy matters. These rewards, obviously, add to the costs of sanctions.

Thus, the combination of high costs involved in sanctioning and the low likelihood of obtaining tangible and lasting benefits through sanctions diminish their net value and reduce a Sender's incentives to employ them in the first place.

C. The Cost of Rewards

Sanctions have a simple advantage over rewards. When a mere *threat* of sanctions is successful in deterring the violation, the sanctions need not be carried out and thus cost nothing to the Sender. In contrast, rewards must be paid in full.⁷⁹ This is an important reason why domestic law enforcement normally resorts to sanctions and not rewards. There is not enough money to pay everyone for compliance. But in the international arena, this advantage of sanctions is questionable. Threats of sanctions are often not sufficient to induce compliance. When sanctions are imposed, they often have to be levied for a lengthy period of time by a large number of states and, even then, they often fail. Senders may therefore choose to resort to rewards instead. Rewards consist of a direct transfer of some benefit and can thus be cheaper for a state that wants to avoid the excess costs of sanctioning.⁸⁰

At times, rewards can be not just cost-effective, but also outright beneficial to the Sender. If rewards consist of trade liberalization measures, they enhance social welfare by creating more opportunities for economic exchange. Both Sender and Target gain from the creation of new trade. The prospect of these welfare gains solidifies the domestic support for rewards in both the Target and the Sender country, contributing to the legitimacy and effectiveness of rewards.⁸¹

Yet often rewards entail important costs. Some rewards are costly because they trigger a legal obligation to multiply the rewards. A commonly used reward is an extension of a trade concession—including a lower tariff rate or duty-free entry to some of Target's imports. This, however, is a costly reward when applied between members of the WTO. WTO members have a legal obligation to grant a Most Favored Nation (MFN) status to each other. This means that states are not allowed to discriminate among their trading partners—in other words, if a Sender grants a preferential treatment to one WTO member, it is forced to extend the same concession to all other WTO members. A reward to one state thus turns into a reward to 150 trading partners.

Moral hazard poses a serious further challenge to a successful reward strategy, potentially increasing Sender's costs. Enticing recalcitrant nations to cooperate by offering

⁷⁹ See Giuseppe Dari-Mattiacci and Gerrit De Geest, *Carrots, Sticks, and the Multiplication Effect*, 26 J L, Econ, & Org 365, 366 (2010).

⁸⁰ However, we acknowledge that in the anarchic international system, rewards may not consist of simple transfers of money or other benefits. Rewards may involve transaction costs. See Drezner, 9 Sec Studies at 188–218 (cited in note 19) (discussing the high costs of contracting, monitoring, and enforcing international bargains).

⁸¹ See Long, 40 Intl Studies Q at 77 (cited in note 18).

them rewards distorts incentives. A reward structured as a one-off transfer also carries the danger that once the reward has been paid, the Target comes back to the Sender with a new demand in return for continuing its compliance. At worst, an initial reward fuels a cycle of demands for additional rewards as the Target seeks to maximize the gains it can extract from the Sender.⁸² The prospect of capturing a reward may even lead to a “race to be a Target.” Imagine that State A offers to reward belligerent states for protecting the environment. In such a setting, every state has the incentive to understate its interest in complying in order to qualify for a reward.⁸³ This means that even states that were initially inclined to comply may feign a disinclination to comply in order to obtain the package of incentives. Similarly, states lacking incentives to comply now find it rational to increase their objectionable behavior further in an effort to obtain an even larger reward from State A.⁸⁴

The greatest impediment to seeking Target’s compliance through rewards is simply the gap that often exists between what the Target demands and what the Sender is prepared (or able) to offer. International cooperation on climate change illustrates this problem: in the Copenhagen climate conference, China asked developed countries to commit to transferring 1 percent of their GDP to pay for developing countries’ compliance with an international climate treaty.⁸⁵ This would amount to a reward of over \$300 billion annually—a magnitude that the deficit-ridden developed countries are highly unlikely to deliver.

This short survey captures the fundamental dilemma in international law: the absence of a cost-effective enforcement apparatus. Sometimes sanctions are preferred to rewards; other times rewards are superior. But more often, neither sanctions nor rewards are capable of generating compliance. Both are too costly to be effective. In the next Part, we offer a new perspective. Rather than engage in the standard debate—carrots versus sticks—we show that a more attractive enforcement mechanism combines the two.

III. THEORY: REVERSIBLE REWARDS

This Part advances a theory on how the Sender can reduce the cost of enforcement and create a more effective compliance scheme by employing “Reversible Rewards.” We first present a simple numerical example showing how the proposed mechanism for combining rewards and sanctions outperforms any simple sanctions or simple rewards scheme. We then explain informally why the proposed mechanism works better than sanctions or rewards used in isolation.⁸⁶

⁸² See Haass and O’Sullivan, *Conclusion* at 165 (cited in note 34).

⁸³ See Howard F. Chang, *Carrots, Sticks, and International Externalities*, 17 *Intl Rev L & Econ* 309, 315 (1997).

⁸⁴ See *id.* at 314.

⁸⁵ See Michael A. Levi, *Copenhagen’s Inconvenient Truth: How to Salvage the Climate Conference*, 88 *Foreign Aff* 92, 93 (Sept/Oct 2009).

⁸⁶ For a formal analysis of Reversible Rewards, see generally Omri Ben-Shahar and Anu Bradford, *Reversible Rewards* (University of Chicago Law & Economics Olin Working Paper No 557, June 8, 2011), online at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1864043 (visited Oct 18, 2011).

A. Simple Model of Enforcement

Consider the following scenario. A Target engages in a behavior or violation that is harmful to the Sender but beneficial to itself. The Sender can either sanction the Target in retaliation, or it can reward the Target conditional on the Target ceasing the violation. Sanctions are costly for the Sender. We assume that in order to inflict a sanction, S , on the Target, the Sender has to incur a cost greater than S . For simplicity, assume that there is a fixed cost of 30 to any sanction. That is, the cost of any sanction S is $S + 30$.

Assume that the violation imposes a cost of 100 on the Sender and conveys a benefit of 80 to the Target. Also assume that the Sender can induce the Target to stop the violation if the sanction leaves the Target with a negative net payoff. That is, the sanction has to impose a cost of at least 80 on the Target to persuade the Target to give up its benefit from the violation. Given the fixed cost of 30 attached to any sanction, this means the sanction necessary to stop the violation costs the Sender at least 110.

In the absence of any enforcement, the Target will commit the violation, enjoy a benefit of 80, and impose a loss of 100 on the Sender. The Sender can threaten to inflict a sanction of 80 that would strip the Target of its benefit. But the cost of such a sanction to the Sender would be at least 110, which exceeds the harm of 100 that the Sender suffers from the violation. Thus, the Sender's threat is not credible. A rational Sender prefers to absorb the harm from the violation (100) rather than incur the total cost of sanctioning (110). A Target, recognizing this, is not deterred by the threat of a sanction.

A reward could, in principle, induce Target to forgo reprehensible behavior. Since the Sender has more to lose from the violation than the Target has to gain—since the violation is inefficient—there is room for a Coasian bargain, a “bribe.”⁸⁷ Any reward of at least 80 and of no more than 100 would make both parties better off. Assuming, for the moment, that the Sender has greater bargaining power, it can offer a reward of slightly more than 80 and induce the Target to comply. In reality, of course, there are various transaction costs that might impede such a bargain. One such cost is that of detection: a bribe is worth paying only if the Target's compliance can be verified. This example does not show that a reward would necessarily succeed. All it shows is that, under perfect conditions, the reward is going to cost the Sender at least 80. The reward costs less than the minimum necessary sanction (110) and thus is superior to a sanction.

Can the Sender do better? Can it induce compliance without having to spend 80 on a reward? The answer is yes, and this is where the core of our contribution lies. The Sender can employ Reversible Rewards in the following way: the Sender offers the Target an amount of money that is substantially lower than 80 in return for the Target's compliance. Simultaneously, the Sender backs up this offer of a reward with an explicit threat: if the Target fails to cease the violation, not only will the Target forfeit the reward, but it will also endure a sanction. The cost of inflicting the sanction would be reimbursed to the Sender from the funds dedicated to the reward. That is, if the Sender has to resort to sanctions, the initial reward is reversed to the Sender who can use it to cover its costs of punishing the Target.

⁸⁷ See generally R.H. Coase, *The Problem of Social Cost*, 3 J L & Econ 1 (1960).

Under this scheme, we show that it is enough to offer the Target a reward of slightly more than 55 (say, 60). This would induce the Target to cease the violation. To see why, consider the severity of a sanction the Sender would be willing to impose if the violation continues. Expecting to be reimbursed up to 60, the maximum sanction that the Sender would have an incentive to inflict is $S = 30$. This is because the sanction would cost the Sender $S + 30 = 60$, exactly the amount that the reversed reward would cover. This would make the sanction effectively costless to the Sender at the time it would need to be imposed. Thus, the threat to inflict a sanction of 30 would be *ex ante* credible.

Recognizing the credibility of the threat to inflict a sanction of $S = 30$, the Target has to choose between two options: a violation, which would entail a net payoff of 50 (that is, a benefit of 80 from continuing violation minus a sanction of 30); or compliance, which would yield a payoff of 60, directly as a reward. In this scenario, the Target would choose compliance. Hence, a Reversible Reward of 60 (or, more precisely, a reward of at least 55) can lead to full compliance. This is substantially less than the cost of simple sanctions (110) or simple rewards (80).

B. Reversible Rewards: Why they Work

The above example illustrates that Reversible Rewards can succeed where simple sanctions fail, and that they cost less than simple rewards. The *double effect* of the expenditure, funding both the reward and the punishment, is critical to the success of this scheme. At times, the Sender may seek to enhance the credibility of this enforcement strategy by pre-committing itself to the dual use of the enforcement funds. This *pre-commitment effect* can be accomplished by placing the Reversible Rewards in an irrevocable enforcement fund.

1. The double effect.

The Reversible Rewards scheme leverages the same money twice. It is offered first as a reward incentive for the Target and, second as a sanctioning incentive for the Sender.⁸⁸ The incentive to comply is generated by a “wedge” between the payoffs from violation and from compliance. The greater this wedge, the stronger the incentive. This wedge can be stretched in two directions: the Sender can offer a higher payoff for compliance or a lower payoff for violation. A simple reward operates in the first direction by offering the Target a higher payoff for compliance. A simple sanction operates in the second direction by leaving the Target with a lower payoff for violation. Reversible Rewards operate in both directions—every \$1 increases the payoff for compliance by \$1 but also reduces the payoff for violation by the amount of sanction that \$1 can fund. Thus, the wedge between payoffs from compliance and non-compliance is doubled, which in turns doubles the deterrent effect of the money spent.⁸⁹

⁸⁸ To be sure, in equilibrium it can be used at most once, but because it is factored into the off-equilibrium moves—because parties act in the “shadow” of what this money can do—it has a double effect.

⁸⁹ The double effect embedded in Reversible Rewards is related to, albeit different from, discussions of simultaneous use of rewards and sanctions in Saul Levmore, *Waiting for Rescue: An Essay on the Evolution of*

We use the term “double” effect loosely. More precisely, the effect of Reversible Rewards could be more or less than double the effect of simple rewards, depending on the precise magnitude of the cost associated with the sanction. In the original example sanctions involved an excess cost $S + 30$ (a fixed cost of 30). Because of this excess cost, sanctions were less effective than rewards and thus a Reversible Reward had less than a double effect. Indeed, we saw that a Reversible Reward of 55 was necessary to achieve a wedge of 80 (enabling the Sender to offer a reward of 55 plus inflict a sanction of 25), to induce the Target to forgo a benefit of 80 from violation. If the excess cost were lower, say $S + 10$, a Reversible Reward of 45 would suffice.⁹⁰ In contrast, sanctions could be more efficient than rewards, in which case Reversible Rewards would more than double the effect of ordinary rewards. For example, if the cost of sanction was $\frac{1}{2} S$, a fund of 27 would be enough to generate compliance.⁹¹ In all these cases, the cost structure of the sanction determines the exact size of the necessary fund.⁹² Yet Reversible Rewards always stretch the wedge and thereby provide additional deterrence.

2. Credible commitment.

Reversible Rewards can deter the Target only if the Sender can credibly threaten to resort to sanctions in case the Target rejects the reward. The problem of pre-commitment to enforcement has been studied before,⁹³ and this Article offers no new theory on how to resolve it. Reversible Rewards are not a new commitment device, but rather a method to take advantage of pre-commitment strategies, both formal and informal. Thus, our central claim is that, to the extent that pre-commitment is possible, Reversible Rewards reduce the funds the Sender needs to spend on the enforcement effort.

One solution to the credibility problem involves a pre-commitment of the Reversible Rewards into an irrevocable fund, managed by an independent trustee. Under the terms of

Incentive Structure of the Law of Affirmative Obligations, 72 Va L Rev 879, 891–94 (1986); Saul Levmore, *Carrots and Torts*, in Eric A. Posner, ed, *Chicago Lectures in Law and Economics* 203, 221 (Foundation 2000). Reversible Rewards differs from Levmore’s discussion in that the funding of the rewards and sanctions is linked, lowering their costs to the Sender. See generally Ian Ayres, *Carrots and Sticks: Unlock the Power of Incentives to Get Things Done* (Bantam 2010).

⁹⁰ A fund of 45 would enable the Sender to offer a reward of 45 and threaten a sanction of 35, creating a wedge of 80.

⁹¹ A fund of 27 could be used to threaten a sanction of 54. The Target would prefer to take the reward (27) than to commit a violation and net $80 - 54 = 26$. However, we note that when sanctions entail excess efficiency as opposed to excess costs (for example, collecting a fine from the Target, which is a costly sanction to the Target but not to the Sender), Sender is more likely to use simple sanctions than Reversible Rewards.

⁹² This analysis compares the effectiveness of Reversible Rewards to simple rewards. Alternatively, we can compare the effectiveness of Reversible Rewards to simple sanctions. Here, too, the effect could more or less than double depending on the excess cost or excess efficiency association with funding rewards. In the original example, we assumed that rewards are zero-cost transfers. Sometimes, however, rewards could involve an excess cost (for example, overhead); other times, rewards could create efficiency (for example, improve the use of resources).

⁹³ In the civil litigation area, see, for example, Lucian Arye Bebchuk, *Suits with Negative Expected Value*, in Peter Newman, ed, 3 *The New Palgrave Dictionary of Economics and the Law* 551 (Macmillan 1998). In the criminal area, see, for example, Oren Bar-Gill and Omri Ben-Shahar, *The Prisoners’ (Plea Bargain) Dilemma*, 1 J Legal Analysis 737 (2009).

the fund, these designated funds could only be used to reward the complying the Target or, failing that, to reimburse the Sender for the costs of punishing the non-complying Target. The trustee would be barred from accommodating any conflicting ex-post instructions by the Sender. Thus, if the Sender fails to punish an ongoing violation, the reward remains in the fund and cannot be reclaimed by the Sender. This gives the Sender an incentive to carry out the punishment, *ex ante* bolstering the credibility of its threat to do so.

While contract law does not recognize the power of parties to write non-modifiable binary contracts,⁹⁴ trust law provides a legal framework to make effective pre-commitments.⁹⁵ Sender may also turn to more informal commitment devices. These may include contracting with a middleman to administer the Reversible Reward scheme, relying on this intermediary's reputation to prevent ex-post modifications. Banks, accounting firms, law firms and arbitrators, even websites (for example, StickK.com),⁹⁶ specialize in providing such commitment services, and sometimes are bound by professional ethics to preserve the original commitment.

To illustrate the relevance of a pre-commitment strategy, consider again the initial example, in which the Sender offers a reward of 60. Suppose the Target turned down the reward and continued the violation. If this unclaimed reward was not pre-committed for the purpose of subsequent sanctioning, the Sender would have no incentive to inflict sanctions. At this point, the strategic situation would be identical to that of a simple sanctioning scheme. With the option of using the unclaimed reward for some other purpose, the Sender would factor in the full cost of 110 in deciding whether to proceed with sanctions. Since the cost of carrying out the sanction would exceed the harm to the Sender from the violation, the Sender would not proceed with the sanction. Recognizing this, the Target would not be deterred by the threat of sanction.

In contrast, if the Reversible Reward was originally placed in an irrevocable fund, the reward money in the fund would be sunk and could only be recouped as reimbursement for sanctioning costs. Here, the Sender would be willing to spend up to the entire fund—60 in our example—to inflict a sanction. Refraining from imposing sanctions would not benefit the Sender because it could not reclaim any money left in the fund. Thus, any sanction that costs up to 60 would effectively be free for the Sender. A threat to impose a sanction of 30 (costing the Sender 60) would therefore be credible. The Target, recognizing this, would now be deterred by the threat of sanction.

Notice that a pre-committed fund can also improve the credibility of a threat under a simple sanctioning regime. If sanctions are merely retaliatory, the Sender (who has no *ex post* incentive to impose them) can successfully deter violations by pre-committing the money to an irrevocable fund. As long as the amount in the fund is high enough to impose a sanction that is greater than the benefit the Target is enjoying, the violation can be

⁹⁴ Christine Jolls, *Contracts as Bilateral Commitments: A New Perspective on Contract Modification*, 26 J Legal Studies 203, 203 (1997).

⁹⁵ See generally Kevin E. Davis, *The Demand for Immutable Contracts: Another Look at the Law and Economics of Contract Modifications*, 81 NYU L Rev 487 (2006).

⁹⁶ There, the pre-commitment is accomplished by contract with a third-party website, and the double effect is created by directing the deposited bond to a charity least favorable to the designator, in the event that the designated obligation is not fulfilled. See <http://www.stickk.com> (visited Oct 18, 2011). See also Ayres, *Carrots and Sticks* at 76–77 (cited in note 89).

deterred. The problem with such a fund—intended solely for financing the cost of sanctions—is that the Sender has no incentive to set it up in the first place. As demonstrated above, the amount of money needed in the fund would exceed the cost of the violation to the Sender.⁹⁷ In other words, the Sender could in theory credibly commit 110 in an irrevocable sanctioning fund and thereby deter the Target. This could be thought to constitute a superior enforcement strategy, as the Sender would not have to carry out its threat and thus bear the cost of sanction. However, if the funds were, indeed, placed in a truly irrevocable fund, the Sender could not have the funds returned to it later when the Target's compliance is verified without compromising the assumption that the funds were in a genuinely sunk escrow arrangement in the first instance. Thus, deterrence would only be accomplished at the cost of 110, exceeding the harm of 100 to the Sender. As a result, unless this same fund can be used repeatedly to deter various violations, the Sender would be dissuaded from a strategy relying on simple sanctions alone.

Still, we recognize that commitment can be difficult and costly to achieve. Any enforcement device that ultimately depends on the Sender's ability to pre-commit—whether to simple sanctions, rewards, or Reversible Rewards—might fail. The advantage of Reversible Rewards would then fail to materialize in the same way simple sanctions and simple rewards lacking credibility would also fail.

3. Limits of Reversible Rewards.

The above numerical example shows that Reversible Rewards have the potential to outperform simple rewards and simple sanctions. However, this result is limited to situations where simple sanctions would fail. Simple sanctions always dominate Reversible Rewards when a threat of sanctions is credible and thus need not be carried out. Second, Reversible Rewards are also unlikely to be helpful in situations where the Sender faces numerous potential Targets, all of whom can engage (or threaten to engage) in a “generic” violation. In utilizing Reversible Rewards, the Sender must avoid setting a precedent that all good behavior can be made subject to the payment of the reward. Otherwise, multiple states would have the incentive to portray themselves as potential Targets, whose compliance must be bought off with rewards.

This possible moral hazard problem embedded in any enforcement mechanism using rewards—whether they are simple or reversible—dictates that Reversible Rewards are likely to be more useful in scenarios involving a one-of-a-kind violation by an ex ante identifiable Target. Reversible Rewards also retain their advantage in settings where multiple potential Targets are capable of engaging in the same violation but where the Sender only cares about the behavior of one primary Target. In these scenarios, Reversible Rewards have the potential to outperform a simple sanction due to the double effect they create.

⁹⁷ In the companion paper, we explore the strategy of dividing the cost and pre-committing only a portion of it. In this case, if the remaining cost necessary to fund a sanction is less than the harm suffered by the Sender, the threat to impose it becomes credible, the violation is deterred, and this remaining cost need not be incurred. We demonstrate, however, that even if the cost of sanction is thus divisible, an even smaller sum would need to be pre-committed under the Reversible Reward fund. See Ben-Shahar and Bradford, *Reversible Rewards* (cited in note 86).

Indeed, while most international enforcement problems involve multiple (actual or potential) Targets, Senders only pursue enforcement against a few selected Targets. Senders may rationally ignore violations by small Targets capable of inflicting only trivial damage on the Sender. Any attempt by such a Target to extract a reward from a Sender would be rebuffed. Senders would also not offer Reversible Rewards to Targets that can credibly be deterred through a threat of simple sanctions. Reversible Rewards are therefore likely to be utilized only against a limited number of carefully selected Targets that cannot be otherwise deterred.

IV. APPLICATIONS OF REVERSIBLE REWARDS

This Part demonstrates two applications of Reversible Rewards. The first application involves a *bilateral* enforcement problem—the efforts of the US to induce China to terminate its disruption of the foreign currency exchange markets. Here, one Sender seeks to change the behavior of one Target. The second application involves a *multilateral* enforcement problem—the ongoing effort by a coalition of Senders to induce a group of Targets to cooperate on climate policy. This introduces a collective action problem among the multiple Senders. While the bilateral case poses the more straightforward application of Reversible Rewards, the multilateral case demonstrates another subtle advantage of this enforcement mechanism as a device for facilitating cooperation.

Both examples involve China as a Target. While Reversible Rewards could lower the Sender's enforcement costs in disputes with less mighty Targets, enforcement problems involving powerful Targets are particularly challenging.⁹⁸ It is always costlier for the Sender to restrict trade with another trade power due to the higher trade volumes involved and the greater likelihood that a powerful Target will retaliate. The Sender is likely to be able to rely on a threat of simple sanctions against Targets that it can sanction without inflicting significant costs on itself. Also, rewards are costlier to employ when a Target is less dependent on any benefits that a Sender can offer. Reversible Rewards are thus likely to be particularly attractive when Senders are seeking to influence the behavior of an economically powerful country like China.

A. Enforcement Conflicts

Enforcement challenges involving China span numerous areas of international law. China is the most common Target of actions that the US brings before the WTO. The US frequently challenges China's subsidy policies, dumping practices, and lax enforcement of intellectual property laws.⁹⁹ China's intervention in the foreign exchange markets has been

⁹⁸ However, the model can also be suitable for enforcing certain norms against a smaller Target as the benefits available from Target's compliance are often too small to outweigh the sanctioning costs.

⁹⁹ See Daniel Ikenson, *Nonmarket Nonsense: U.S. Antidumping Policy toward China* (CATO Inst Center for Trade Policy Studies Trade Briefing Paper No 22, Mar 7, 2005), online at <http://www.cato.org/pubs/tbp/tbp-022.pdf> (visited Oct 20, 2011) (discussing the antidumping practices towards China); Sumner J. La Croix and Denise Eby Konan, *Intellectual Property Rights in China: The Changing Political Economy of Chinese-American Interests*, 25 *World Econ* 759, 760-65 (2002) (describing disputes between the US and China over intellectual property rights).

a longstanding source of concern for the US.¹⁰⁰ The US and other Western countries have also tried—thus far unsuccessfully—to amend China’s human rights practices or persuade China to take action to combat climate change.¹⁰¹ All these conflicts share the common feature that they are difficult to enforce: any sanction aimed at changing China’s behavior is too costly for any potential Sender to carry out. Similarly, any reward is likely to exceed the costs that the Sender is willing to bear. To illustrate the enforcement challenges, we focus on two specific conflicts—currency manipulation and climate change—but the discussion can be extended to numerous other enforcement problems as well.

1. Currency manipulation.

Of the many tensions in US–China relations, the ongoing conflict over the value of the Chinese currency, the Yuan, represents the typical shortcoming of existing international enforcement. The US Congress has repeatedly expressed its concern that China’s intervention in the foreign exchange market artificially suppresses the value of the Yuan, and threatened to pursue sanctions against it.¹⁰² A weak Yuan lowers the price of Chinese goods abroad, giving Chinese exporters an unfair advantage over their US competitors. At the same time, US goods are relatively more expensive in China. Several estimates suggest that the Yuan is undervalued by more than 40 percent relative to the US dollar, effectively providing a 40 percent subsidy to Chinese exporters selling goods to the US and a 40 percent tax on US exporters selling goods to China.¹⁰³ This policy has also contributed to an unprecedented trade deficit with China—\$270 billion in 2010—and led to unsustainable imbalances in the global economy.

China maintains that a stronger Yuan would hurt its economy by curtailing its exports, which would impede China’s export-led growth.¹⁰⁴ A struggling export industry

¹⁰⁰ See Doug Palmer and David Lawder, *Geithner Vows to Take China Currency Dispute to G20*, Reuters (Sept 16, 2010), online at <http://www.reuters.com/article/2010/09/16/us-usa-china-geithner-idUSTRE68F16420100916> (visited Oct 20, 2011) (reporting on Treasury Secretary Geithner’s desire to raise the issue of currency manipulation with China as a result of growing consensus among American policymakers that the issue needs to be addressed).

¹⁰¹ See Anu Bradford and Eric A. Posner, *Universal Exceptionalism in International Law*, 52 Harv Intl L J 1, 36 (2011) (discussing President Clinton’s backing down from making trade deals with China conditional on human rights); David Stanway, *China Says Rich-Poor Divide Still Dogs Climate Pact Talks*, Reuters (Sept 13, 2010), online at <http://www.reuters.com/article/2010/09/13/us-china-climate-idUSTRE68C0RS20100913> (visited Oct 20, 2011) (explaining China’s continued demand for “common but differentiated responsibilities” to resolve global warming).

¹⁰² See Currency Exchange Rate Oversight Reform Act of 2011, S 1619.

¹⁰³ See Doug Palmer, *US Treasury Says China Yuan “Substantially Undervalued,”* Reuters (May 27, 2011), online at <http://www.reuters.com/article/2011/05/27/usa-china-currency-idUSN2717209820110527> (visited Oct 20, 2011) (reporting that many lawmakers and manufacturers in the US claim that China’s currency is undervalued by “as much as 40 percent”).

¹⁰⁴ See Michael Pettis, *China Needs to Move Slowly on Yuan Revaluation*, Bloomberg (Oct 11, 2010), online at <http://www.bloomberg.com/news/2010-10-11/china-must-move-slowly-on-yuan-s-revaluation-commentary-by-michael-pettis.html> (visited Oct 20, 2011).

would also lead to higher unemployment, which would undermine social stability.¹⁰⁵ China is therefore only prepared to let the Yuan rise slowly and continues to manage its exchange rate tightly.¹⁰⁶

While the adverse effects of undervalued Chinese currency are not limited to the US, a multilateral response to China's currency manipulation is unlikely. No international institution is likely to induce China to change its exchange rate policy through either persuasion or punishment. The IMF would be the natural candidate to be called upon to take action against China. Yet it has limited means to do so—both legally and politically.¹⁰⁷ Challenging China's practices before the WTO is similarly daunting.¹⁰⁸ G20 countries are seeking to address global economic imbalances among their members but have little means of enforcing their "indicative guidelines" on countries that manage their exchange rates and run persistently large imbalances.¹⁰⁹

¹⁰⁵ See Li Yanping, *China Faces Worst Unemployment in Decades as Slowdown Deepens*, Bloomberg (Jan 19, 2009), online at http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aEfualBs_OUM (visited Oct 20, 2011).

¹⁰⁶ Note that the US claims that China would benefit as opposed to lose from a stronger yuan. The price of imports would decrease and, consequently, domestic consumption increase. Appreciation in the value of the yuan should also contain inflationary pressures. China does not deny its need to "rebalance" eventually its economy but stresses its inability to do so too quickly. For the purpose of our argument, we do not need to resolve whether currency manipulation is in China's interest. Our simple assumption is that the US perceives China's currency intervention to be costly to the US whereas China perceives such intervention to convey it a benefit.

¹⁰⁷ See Robert W. Staiger and Alan O. Sykes, *'Currency Manipulation' and World Trade*, 9 World Trade Rev 583, 589–93 (2010). Article IV(1) of the IMF's Articles of Agreement provides that "each member shall . . . avoid manipulating exchange rates . . . in order to prevent effective balance of payments adjustment or to gain an unfair competitive advantage over other members." Articles of Agreement of the International Monetary Fund, Art IV(1), 60 Stat 1401, TIAS No 1501 (1945), as amended effective Mar 3, 2011. However, a violation of Article VI (1) is difficult to prove as China would need to be shown to have the *intent* to secure an increase in net exports, which China can rebut by claiming that it is instead intervening in currency markets in order to maintain macroeconomic stability. Also, the IMF has few tools to punish its powerful members. The most potent remedy the IMF has is to cut off its lending—hardly an effective threat to a nation holding over \$2.65 trillion in foreign exchange reserves with no need to resort to IMF funds now or in the future. See Paul Panckhurst, et al, *China Foreign-Exchange Reserves Jump to \$2.65 Trillion*, Bloomberg (Oct 13, 2010), online at <http://www.bloomberg.com/news/2010-10-13/china-s-currency-reserves-surge-to-record-fueling-calls-for-stronger-yuan.html> (visited Oct 20, 2011).

¹⁰⁸ See Staiger and Sykes, 9 World Trade Rev at 593–606 (cited in note 107). Article XV of the GATT Agreement prohibits member states from engaging in exchange action that frustrates the intent of the GATT Agreement. See General Agreement on Tariffs and Trade, Art XV, ¶ 4, 55 UN Treaty Ser 194 (1947). However, no cases have ever been litigated under the article. The success of a claim under Article XV would also hinge on IMF's determination of whether the member's exchange policies violated Article XV, showing unusual deference and implying the WTO's hesitation to act on currency disputes.

¹⁰⁹ See also *Meeting of Finance Ministers and Central Bank Governors*, G20 Communiqué (Apr 15, 2011), online at <http://www.g20.org/Documents2011/04/G20%20Washington%2014-15%20April%202011%20-%20final%20communiqué.pdf> (visited Oct 20, 2011); Ralph Atkins and Quentin Peel, *G20 Strikes Compromise on Global Imbalances*, Fin Times (Feb 19, 2011) <http://www.ft.com/intl/cms/s/0/1a12713e-3c56-11e0-b073-00144feabdc0.html#axzz1bMqxgvlI> (visited Oct 20, 2011); *G20 Agrees Guidelines to Measure Economic Imbalances*, BBC News (Apr 15, 2011), online at <http://www.bbc.co.uk/news/business-13098537> (visited Oct 20, 2011) (describing the G20 system for monitoring economic imbalances and noting that it lacks even a "name and shame" list to encourage compliance).

Unlike the US—which has repeatedly signaled its discontent with China’s currency regime—other trade powers affected by China’s managed currency are not lining up to pursue sanctions against China. For instance, while the EU’s trade deficit with China has been soaring, its overall current account is largely in balance. The EU also remains reluctant to criticize China’s trade imbalances given the existing internal trade imbalances within the EU. Germany, for instance, is accused of running an unsustainable trade surplus.¹¹⁰ The EU is therefore not likely to act upon China’s trade imbalances without first addressing the economic policies of its own surplus countries.

Similarly, while China is not the only country that intervenes in its currency markets, the US is predominantly concerned of the impact of China’s currently practices because of the sheer volume of US-China trade affected by China’s conduct. We therefore assume the US to be the lone Sender and China the lone Target of a unilateral enforcement action.

2. Climate change.

There is broad agreement among states that international cooperation to fight climate change is vital to global welfare and security. Because climate change is a global phenomenon, it cannot be solved by any nation alone. Even while states have gradually acknowledged that that they must collectively reduce the total quantity of greenhouse gases (GHG) that they emit into the atmosphere, there is no consensus on how to allocate this responsibility among states. No state wants to bear the disproportionate cost of reducing its emissions while allowing other states to continue emitting. Furthermore, questions of relative burdens and comparative fault have frustrated efforts to find a solution that overcomes the collective action problem underlying climate change.¹¹¹

Over 190 countries are involved in a UN-led effort to negotiate a treaty that would replace the Framework Convention on Climate Change and its Kyoto Protocol.¹¹² In 2009, these countries gathered in Copenhagen, in what was arguably the most high-powered international environmental negotiation ever, to attempt to launch the new treaty regime. The negotiations failed; no legally binding agreement was reached, nor did the states manage to set quantified emission reduction targets. The gap between the resources that China and other developing countries requested in exchange for their compliance, and what the developed countries were prepared to commit to, was visibly high.¹¹³ States have

¹¹⁰ See Patrick A. Messerlin, *Should Europe Join the US in Condemning Chinese Currency Manipulation?* (Vox Apr 16, 2010), online at <http://www.voxeu.org/index.php?q=node/4854> (visited Oct 20, 2011) (arguing that the EU is not likely to join the US in criticizing the Chinese trade imbalance because many EU economies, particularly Germany’s, share the same characteristic).

¹¹¹ Efforts to reach a solution on climate change are frustrated in two underlying features of the problem: distributional conflict that undermines the bargaining stage and incentives to defect that undermine the enforcement stage of international climate change cooperation. See generally James D. Fearon, *Bargaining, Enforcement, and International Cooperation*, 52 *Intl Org* 269 (1998).

¹¹² See Kyoto Protocol to the United Nations Framework Convention on Climate Change (1997), 2303 *UN Treaty Ser* 162 (2005).

¹¹³ See Fiona Harvey, Ed Crooks, and Andrew Ward, *A Discordant Accord*, *Fin Times Asia Ed* 5 (Dec 21, 2009).

since tried to revive the treaty process, but few believe that states have the ability to overcome the collective action problem surrounding climate change anytime soon.¹¹⁴

At the risk of over-simplifying, we divide the states participating in climate negotiations into two familiar categories: “Senders” and “Targets.” Senders are supporters of the proposed treaty: they are willing to limit their GHG emissions and to try to persuade other states to do the same. Targets are states that refuse to sign the treaty and seek to free ride on Senders’ efforts to curb GHG emissions. Almost every multilateral sanctioning episode has one lead Sender that heads the efforts to organize the sanctions regime.¹¹⁵ There are also other potential co-Senders that would prefer to free ride on the lead Sender’s efforts but could be persuaded to join the enforcement effort. In building a coalition of sanctioning states, the lead Sender is often forced to offer rewards to potential co-Senders or to threaten them with sanctions, or else accept their free riding and bear the sanctioning costs alone. Thus, the lead Sender faces a two-fold task: first, it must convince more states to join the negotiations as co-Senders and not as Targets; and, second, it must pursue collective enforcement measures with these co-Senders against the remaining Targets.¹¹⁶

The EU is perceived as a lead Sender in the area of climate change, because it has the greatest motivation and resources to enforce a climate treaty. European countries are geographically vulnerable to climate change.¹¹⁷ The EU has a low carbon/GDP ratio and thus bears relatively low total costs in reducing its GHG emissions compared to carbon-intensive economies like the US, China, and Australia.¹¹⁸ European countries are also committed to taking action to curb their emissions because of their heightened domestic awareness of the dangers of climate change.¹¹⁹ Indeed, in preparation for the negotiations

¹¹⁴ See, for example, Fiona Harvey, *Cancun Offers Slim Hopes of Progress*, *Fin Times* 3 (Nov 1, 2010) (reporting that many observers and participants had little expectation of a climate change agreement because of growing distrust among nations and continuing policy differences).

¹¹⁵ See Martin, 45 *World Pol* at 408 (cited in note 38).

¹¹⁶ See Martin, 45 *World Pol* at 410–13 (cited in note 38). This assumption of asymmetrical interests between Senders rules out certain games like coordination games. It is also not a Prisoner’s Dilemma, as the leading Sender has a dominant strategy to impose sanctions.

¹¹⁷ Although European countries are not as geographically vulnerable to climate change as India, Africa, or some small island nations, they are more at risk than countries like China. See Eric A. Posner and Cass R. Sunstein, *Climate Change Justice*, 96 *Georgetown L J* 1565, 1580–83 (2008); see also William D. Nordhaus and Joseph Boyer, *Warming the World: Economic Models of Global Warming* 69–98 (MIT 2000). Most threatened among the European Countries are the many coastal, low-lying countries, including the Netherlands. See Pam Berry, *Climate Change and the Vulnerability of Bern Convention Species and Habitats*, in 1 *Biodiversity and Climate Change: Reports and Guidance Developed under the Bern Convention*, 156 *Nature and Environment* 105, 125 (Council of Eur 2010).

¹¹⁸ Most European countries are not major producers of fossil fuels (including coal) or energy-intensive products (including aluminum, steel, iron, cement, glass, and chemicals). Due to their lower carbon/GDP ratio, they do not expect to suffer as many costs in moving away from fossil fuels. See International Energy Agency, *CO₂ Emissions From Fuel Combustion: Highlights*, **91, 94 (OECD 2011), online at <http://www.iea.org/co2highlights/CO2highlights.pdf> (visited Nov 15, 2011) (listing countries by their GDP per emissions).

¹¹⁹ The presence of many active environmental NGOs and the participation of green parties in many coalition governments ensure that political support for environmental policies is strong.

in Copenhagen, the EU led the charge by promulgating more ambitious emissions reduction commitments than any other major participant to the negotiations.¹²⁰

Among the climate change Targets, China is the most important. China has weak incentives to join the climate treaty. For one, China is expected to feel the adverse effects of climate change to a lesser extent than many other nations.¹²¹ At the same time, China's abatement costs of fighting climate change are distinctly high. China recently overtook the US as the largest emitter of GHGs in the world,¹²² and its emissions are constantly growing because of its thriving economy.¹²³ China's comparative advantage in international manufacturing is partly based on low energy costs due to its enormous coal reserves. The Chinese government also sees economic growth as fundamental for the prosperity and stability of the state, and is unlikely to prioritize environmental protection over meeting this goal for decades to come.¹²⁴ China would face distinctly high costs from emission reductions because it would require reallocation of resources from other pressing societal needs, such as poverty alleviation, nutrition, and health care. Politically, China maintains that the primary responsibility for reducing GHG emissions lies with developed countries and insists on adherence to the principle of "common but differentiated responsibilities" that the Kyoto Protocol reflects.¹²⁵

Compared to the EU or China, the role of the US is more ambiguous. Historically, the US has resisted international efforts to combat climate change. It has a relatively high capacity to adapt to climate change¹²⁶ and is not expected to suffer from climate change to

¹²⁰ EU promised to cut its emissions to at least 20 percent below 1990 emissions levels by 2020. The EU further pledged to reduce its emissions 30 percent below 1990 levels on the condition that other developed countries agree to make similar reductions and that developing countries also subscribe to the GCCT. See European Commission, *The Copenhagen Climate Change Negotiations: EU Position and State of Play* (Nov 9, 2009), [online at http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/493&format=HTML&aged=0&language=EN&guiLanguage=en](http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/493&format=HTML&aged=0&language=EN&guiLanguage=en) (visited Oct 20, 2011).

¹²¹ See Posner and Sunstein, 96 *Georgetown L J* at 1582-83 (cited in note 117). See also Richard S.J. Tol, *Estimates of the Damage Costs of Climate Change, Part II: Dynamic Estimates*, 21 *Envir & Resource Econ* 135, 156 (2002) (estimating that Centrally Planned Asia's benefit from moderate global warming would amount to nearly 2 percent of its GDP over the next century). But see Michael P. Vandenbergh, *Climate Change: The China Problem*, 81 *S Cal L Rev* 905, 919-23 (2008).

¹²² See *Gas Exchange: CO₂ Emissions 1990-2006*, 447 *Nature* 1031, 1038 (June 28, 2007).

¹²³ See Vandenbergh, 81 *S Cal L Rev* at 917 (cited in note 121). See also Richard B. Stewart and Jonathan B. Wiener, *Reconstructing Climate Policy: Beyond Kyoto* 38 n 3 (AEI 2003) (noting that in 2020, 50 percent of the total emissions are expected to originate from developing countries, most notably from China and India).

¹²⁴ See Yang Yao, *The End of the Beijing Consensus: Can China's Model of Authoritarian Growth Survive?*, *Foreign Aff* (Feb 2, 2010), online at <http://www.foreignaffairs.com/articles/65947/the-end-of-the-beijing-consensus> (visited Oct 20, 2011).

¹²⁵ See National Development and Reform Commission, *Implementation of the Bali Roadmap: China's Position on the Copenhagen Climate Change Conference* (Nat Dev & Reform Commn May 20, 2009), online at http://en.ndrc.gov.cn/newsrelease/t20090521_280382.htm (visited Oct 20, 2011).

¹²⁶ Developed countries, the US included, are generally less vulnerable to climate change because of their superior economic and technical resources to prepare for and respond to the effects of climate change. Their economies are also less dependent on agriculture, which is the sector of the economy most vulnerable to the threat of climate change. Further, developed countries are generally cooler places that can handle the warming effects, unlike many developing countries that already struggle with heat and drought. See Posner and Sunstein, 96 *Georgetown L J* at 1580 (cited in note 117).

the extent that many other states will.¹²⁷ The US's reliance on abundant domestic coal creates a high carbon/GDP ratio, resulting in costly transition to a low-carbon economy. However, more recently the US has shown some willingness to limit its emissions and join the treaty—under strictly defined conditions. Prior to the Copenhagen summit, the US pledged to cut its emissions to 17 percent below its 2005 emissions levels by 2020 pending congressional approval.¹²⁸ The US has also indicated that it is prepared to participate in international climate change cooperation assuming it can ensure participation by other states, including developing countries.¹²⁹ This suggests that if a treaty were to include strong enforcement measures against major Targets, most notably China, the US could be persuaded to play the role of the co-Sender.¹³⁰

Going forward, we assume a multilateral enforcement setting where the EU and the US act jointly as Senders in an effort to convince China to reduce its GHG emissions to the level determined by the Senders. This enforcement strategy could—simultaneously or subsequently—be applied to other key Targets (including India) through separate Reversible Reward accounts. We further assume that while other Targets continue to emit GHGs, the Senders are either prepared to ignore their violations due to their trivial effect on the climate, or to be in a position to credibly deter these Targets through sanctions.

In these two contexts—currency manipulation and carbon emissions—diplomacy, self-enforcing international agreements, and other modes of persuasion have failed. If Targets' behavior were to change, it would have to be induced by incentives, either sanctions or rewards. So far, political discourse in the US has almost exclusively focused on sanctions in both cases. The discussion below shows that reliance on sanctions may be the least effective and most costly way for the US to ensure China's compliance. At the same time, offering simple rewards to China would constitute an irrational strategy because the US would overpay for China's compliance. Instead, we show that China's compliance may, in both instances, be purchased more cheaply through Reversible Rewards.

B. Sanctions

¹²⁷ See Nicholas Stern, *The Economics of Climate Change* 139 (Cambridge 2007); Nordhaus and Boyer, *Warming the World* at 91 (cited in note 117). See also Posner and Sunstein, 96 *Georgetown L J* at 1580 (cited in note 117).

¹²⁸ See Office of the White House Press Secretary, *President to Attend Copenhagen Climate Talks* (Nov 25, 2009), online at <http://www.whitehouse.gov/the-press-office/president-attend-copenhagen-climate-talks> (visited Oct 20, 2011). See also John Broder, *Obama to Go to Copenhagen With Emissions Target*, *NY Times* A1 (Nov 25, 2009). According to the Pew Research Center for the People and the Press survey of September/October 2009, 65 percent of the US public considers climate change to be a "very serious" or "somewhat serious" problem, even after a steady decline in the number of people holding such opinion. *Modest Support for "Cap and Trade" Policy: Fewer Americans See Solid Evidence of Global Warming* *1 (Pew Rsrch Center Oct 22, 2009), online at <http://people-press.org/reports/pdf/556.pdf> (visited Oct 20, 2011).

¹²⁹ The inability to entice developing countries to assume binding obligations under the Kyoto Protocol was an important reason that the Senate opposed US participation in the Protocol. See S Res 98, 105th Cong, 1st Sess (June 12, 1997), in 143 *Cong Rec S* 5623 (June 12, 1997) (statement of Sen Byrd).

¹³⁰ This assumption is consistent with the Waxman-Markey climate change bill that passed the House of Representatives on June 26, 2009. See American Clean Energy and Security Act of 2009, HR 2454 §§ 765–69 (cited in note 3).

1. Available sanctions.

Trade sanctions constitute the most likely punishment strategy against China. Targeting China's imports on the Sender's border is at least theoretically a feasible strategy and has the greatest potential to hurt China, given China's emphasis on export-led economic growth. Other types of sanctions—including withdrawal of economic or military assistance—can be successful in securing compliance of a country that is economically or militarily dependent on the Sender. However, sanctions that can be effectively employed against a superpower are much more limited.

The Omnibus Trade and Competitiveness Act of 1988¹³¹ provides the US a domestic statutory authority to pursue trade sanctions against a currency manipulator.¹³² Mounting voices in the US Congress are calling for the US Treasury to act upon this authority and to impose tariffs on goods originating from China.¹³³ These proposed tariffs would offset the artificial subsidy that the undervalued currency offers to Chinese exporters and would thus have to equal the benefit Chinese manufacturers derive from an undervalued Yuan—which some economists claim is undervalued by as much as 40 percent.¹³⁴ Tariffs can also be a preferred strategy in times of economic recession or during periods of slow growth: they generate direct revenue for the US government, which can be further invested to bolster exports and employment in sectors that are most affected by China's foreign exchange policies.

Similarly, in climate policy, the EU and the US have identified carbon border taxes (carbon tariffs) as a feasible strategy against countries that do not sign on to the climate treaty or do not otherwise assume comparable commitments domestically.¹³⁵ The EU and the US would impose a carbon tariff at the border on products imported from countries that fail to charge their domestic producers for their GHG emissions. The tariff would reflect the carbon tax or permit that similar domestic products bear. Since the US and the EU markets account for 41 percent of Chinese exports, which represent 14 to 28 percent of

¹³¹ Pub L No 100-418, 102 Stat 1107 (codified in various sections of Title 19).

¹³² The Act requires the US Treasury to issue semiannual reports on countries' exchange rate policies. If the Treasury declares a country a currency manipulator, the Act requires it to enter into negotiations with the offending country. Should the negotiations fail, the Act then requires the US to impose at least a 25 percent tariff on the imports by the currency manipulator. Omnibus Trade and Competitiveness Act of 1988 § 3004-05, 102 Stat at 1273-75, codified at 22 USC §§ 5304-05.

¹³³ In 2005, Senators Charles Schumer and Lindsey Graham proposed a bill that called for a 27.5 percent tariff on all imports from China, should China fail to revalue the yuan. S 295, 109th Cong, 1st Sess (Feb 3, 2005). More recently, Senators Sherrod Brown, Charles Schumer, and Lindsey Graham, among others, sponsored a bill calling for antidumping duties and countervailing duties to be imposed on Chinese imports. Currency Exchange Rate Oversight Reform Act of 2011, S 1619 (cited in note 3).

¹³⁴ See Palmer, *US Treasury Says China Yuan "Substantially Undervalued"* (cited in note 103).

¹³⁵ French President Nicolas Sarkozy proposed a carbon border tariff on nations that failed to address climate change. See Frank McDonald, *Call For EU Carbon Tariffs on Imports From Defaulters*, Irish Times 12 (Jan 28, 2010). Various bills that have been proposed or that are currently pending in the US Congress contain a provision calling for border measures to be imposed on goods that originate from countries that do not limit the carbon content of their products. The American Clean Energy Security Act that passed the House of Representatives in 2009 included a provision that would trigger border tariffs in 2020 if other major emitters had not taken significant action on climate change. See American Clean Energy and Security Act of 2009, HR 2454 §§ 765-69 (cited in note 3).

all Chinese carbon dioxide emissions, these two Senders together can put significant pressure on China to transform its energy infrastructure.¹³⁶

The minimum costs imposed by the carbon tariffs would have to equal the benefit Chinese manufacturers derive from externalizing the carbon cost. Such a tariff would eliminate the unfair comparative advantage of Chinese manufacturers relative to domestic producers, who are subject to GHG emission caps or a domestic carbon tax. It would also mitigate the so-called leakage problem created by producers relocating to “pollution havens” because they would not be able to export their products at reduced cost to countries applying a carbon tariff. Finally, the tariff would also generate direct revenue for the EU and US governments that could be further invested in these countries’ efforts to fight climate change within their domestic markets. These measures would obviously price only the emissions embodied in exports that are destined for the EU or the US, and would not reach emissions that “stay” in the Target state. They are, therefore, only effective against export-oriented Targets like China.

2. Cost of sanctions.

A decision to impose a tariff on Chinese imports would carry several costs. First, at a very basic level, tariffs require administrative expense. To implement the tariff, the US would need to devote additional resources to the existing US Customs and Border Protection agency. In the currency manipulation case, the agency would need to estimate the “Chinese content” of various products at the border. A possible circumvention of imports through third countries would add to the difficulty and cost of defining the origin of the goods. Administering a carbon tariff would likely involve even higher costs: the EU and the US customs officials would need to estimate the carbon content of the Chinese products at the border, a task that would be complicated by the absence of accurate information on the production methods employed by Chinese producers.¹³⁷

Second, tariffs would impose great economic costs. Cheap Chinese imports, which currently benefit millions of US and EU consumers and are used as inputs in local manufacturing, would become more expensive. For example, Wal-Mart alone imported goods worth \$27 billion from China in 2006.¹³⁸ Consumers’ and commercial buyers’ welfare will be diminished, therefore, whether by paying more for the same goods or switching to alternative sources of supply.

¹³⁶ See Vandenberg, 81 S Cal L Rev at 911 (cited in note 121). But see Gary Clyde Hufbauer, Steve Charnovitz, and Jisun Kim, *Global Warming and the World Trading System* 13 (Peterson Inst Intl Econ 2009) (noting that the US imports carbon-intensive goods primarily from Canada and the EU, and that in 2007, for instance, China accounted for only 11 percent of the carbon-intensive imports in five key product groups—steel, aluminum, chemicals, paper, and cement).

¹³⁷ See Gilbert E. Metcalf and David Weisbach, *The Design of a Carbon Tax*, 33 Harv Envir L Rev 499, 550 (2009). See also Joost Pauwelyn, *US Federal Climate Policy and Competitiveness Concerns: The Limits and Options of International Trade Law* **6–7 (Nicholas Inst Working Paper No 07-02, Apr 2007), online at <http://nicholasinstitute.duke.edu/climate/policydesign/u.s.-federal-climate-policy-and-competitiveness-concerns-the-limits-and-options-of-international-trade-law> (visited Oct 20, 2011).

¹³⁸ See Robert E. Scott, *The Wal-Mart Effect: Its Chinese Imports Have Displaced Nearly 200,000 U.S. Jobs* (Econ Poly Inst June 25, 2007), online at <http://www.epi.org/publications/entry/ib235/> (visited Oct 20, 2011).

Third, Chinese exporters may successfully divert trade to other countries that do not impose tariffs on its products. This would diminish some of the intended effect of the sanction. This method of avoiding the tariffs would be considerably harder when the US and the EU are enforcing sanctions jointly. But even then the US and EU may need to seek relevant third countries to join the measure as additional co-Senders to mitigate the harm caused by successful trade diversion. This might require costly transfers if these third countries condition their cooperation on various rewards from the US and the EU—further adding to the costs of sanctioning.

Finally, a tariff regime in either case would likely lead to a WTO challenge, and, if China prevailed (and the US failed to comply), to China's retaliation against the Senders' products.¹³⁹ By threatening to retaliate, China increases the Senders' expected cost of sanctioning. This is one of the primary reasons why some US exporters oppose the idea of imposing trade sanctions against China in connection with the currency dispute. Should China proceed to retaliate, it would likely choose to target industries such as agriculture and high-technology sectors, both of which have high economic or political value and are hence more likely to lead the US government to abandon the punitive tariffs.¹⁴⁰ At worst, a conflict over tariffs could escalate into a full-blown trade war across a range of economic sectors, leading to unprecedented costs in terms of contraction of world trade.

Despite these high costs, sanctioning would still be rational if the Senders incurred even higher costs by tolerating China's non-compliance. Knowing this, China could strategically lower its violation to the level that still imposes costs on Senders but does not justify the costs of imposing sanctions. For instance, China might choose to allow its currency to appreciate somewhat—not too much, so as to keep its exports competitive, yet enough to make sure that the US's benefits from any further appreciation of the Yuan remain below its cost of punishing China. This will allow China to engage in the maximum tolerable behavior that remains unpunished.¹⁴¹ Indeed, China has recently allowed for modest appreciation of the Yuan. Thus, while threats of sanctions could operate in the background to create deterrence, they would be effective in deterring only China's most egregious interventions in the currency market, while always failing to deter the more moderate (but nevertheless socially costly) levels of intervention.

Similarly, China could pre-empt climate change sanctions by strategically limiting its GHG emissions in certain sectors of the economy in order to bring down its overall level of emissions while allowing some other sectors—in particular those that are the key to its

¹³⁹ There is an extensive literature discussing whether a carbon tariff would be consistent with the WTO regime. See, for example, Pauwelyn, *US Federal Climate Policy and Competitiveness Concerns* **12–23 (cited in note 137); Jagdish Bhagwati and Petros C. Mavroidis, *Is Action against US Exports for Failure to Sign Kyoto Protocol WTO-Legal?*, 6 *World Trade Rev* 299, 310 (2007); Ludivine Tamiotti, et al, *Trade and Climate Change*, WTO-UNEP Report **88–115 (WTO 2009), online at http://www.wto.org/english/res_e/booksp_e/trade_climate_change_e.pdf (visited Oct 20, 2011).

¹⁴⁰ Risa A. Brooks, *Sanctions and Regime Type: What Works, and When?*, 11 *Sec Studies* 1, 40 (Summer 2002).

¹⁴¹ Uncertainty for either actor can complicate the analysis. Because errors are not symmetrically costly, uncertainty would give both sides an incentive to act with greater caution. All else equal, China would set a level of violation below what it would otherwise allow for itself, and the US would set a threshold of punishment more lenient than it would otherwise employ if detection were perfect. See generally Richard Craswell and John E. Calfee, *Deterrence and Uncertain Legal Standards*, 2 *J L, Econ, & Org* 279 (1986).

economic growth—to continue polluting. China may also selectively reduce its emissions in export-oriented sectors in order to limit its exposure to border measures, without reducing its overall GHG emissions. China might also limit its export of steel, glass, and other carbon-intensive products yet continue to export so called “carbon-derivatives”—products whose carbon content is difficult and costly to determine. These measures would allow China to escape sanctions by lowering its violations to a level that Senders would find cost-ineffective to punish. Reduced emission levels would diminish the direct harm the EU and the US suffer, and consequently, the attractiveness for administering a costly system of border measures. Thus, again, the main problem with costly sanctions is that they are capable of deterring only China’s most reprehensible violations, but not violations that are socially costly but for which the cost of deterrence exceeds the harm to the coalition of Senders.

C. Rewards

Recognizing the limits of the sanctioning strategy, the US could alternatively offer China rewards in return for its decision to discontinue intervening in the currency markets. Similarly, the US and the EU could forgo sanctions and offer China rewards in exchange for its climate compliance. The idea of rewarding China would, undoubtedly, be difficult to justify to the domestic audience—yet the US has a long history of rewarding belligerent countries for their cooperation.¹⁴² Positive inducements, while domestically unpopular, have been chosen as tools of influence when sanctions have been too costly, risky or simply unavailable. Importantly, the analysis in Part II above suggests that rewards may at times induce compliance at a lower cost because they save the deadweight loss associated with sanctions.

1. Available rewards.

China presents a particularly challenging case for a reward strategy. Unlike a small developing economy with a limitless need for possible rewards from a large developed economy, China is harder to coerce by extending a traditional reward—for example, direct cash transfer in the form of foreign aid.¹⁴³ China is the world’s second largest economy, the largest exporter, the second largest importer, and the holder of the largest amount of foreign currency reserves.

Further, many of the traditional carrots have also already been used: China is a member of the WTO, benefiting from the MFN tariff rates. Further trade opening would yield only marginal additional benefits and be difficult to execute, given that the WTO prevents favorable treatment of any single trade partner. Thus, if the US were to open further some sector of the economy that remains protected (for instance, agriculture) as a

¹⁴² See Part II.A.2.

¹⁴³ There are other types of rewards that would likely appeal to China. For instance, China wants more power in international institutions such as the IMF and the World Bank. China also wants to be left alone in human rights issues—thus, a commitment not to interfere in China’s handling of Tibet or in other sensitive questions dealing with civil and political rights would have “value” for China.

reward, the US would be forced to extend the same benefit to all other 150 WTO member states under the WTO's MFN obligation. This multiplier effect would make the reward extremely costly.

Still, despite its rapidly growing economy, China continues to claim that it is a poor developing country. In terms of GDP per capita, China ranks 125th in the world.¹⁴⁴ Lifting people out of poverty is the Chinese government's primary concern. The government knows that its authoritarian rule rests in its ability to alleviate poverty and spread wealth to a steadily increasing number of its citizens. Thus, notwithstanding China's vast economic resources, it is sensitive to the opportunity costs of deploying them—in particular when its investments in compliance would also reduce its economic growth. This might make China open to accepting monetary rewards in some instances. Yet traditional rewards are unlikely to solve the bilateral currency dispute between the US and China. The US alone may not be able or willing to amass the kind of money that would persuade China to forgo its currency intervention. Instead, the US may consider other types of rewards that have clear monetary value for China. For instance, China has repeatedly insisted on being treated as a "market economy" for the purposes of US antidumping investigations.¹⁴⁵ Removing the non-market economy status with respect to antidumping investigations would lead to less frequent and less severe antidumping duties against Chinese companies.¹⁴⁶ Another potential reward relates to China's request that the US lift some of its existing export controls of high-technology products to China.¹⁴⁷

The US could also promise to discontinue arms sales to Taiwan. The US regularly supplies Taiwan with state of the art military technologies.¹⁴⁸ These major arms deals are significant for US manufacturers of military equipment. Most recently, in 2010, the Obama administration approved a \$6 billion arms package to Taiwan. China condemned the deal, stating that the sale harms its national security and peaceful reunification efforts. China also indicated that the deal would seriously undermine US-China bilateral relations.¹⁴⁹ A government-imposed ban on arms sales to Taiwan would therefore likely be a particularly welcome reward for China.

¹⁴⁴ US Central Intelligence Agency, *China*, in World Factbook (Oct 18, 2011), online at <https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html> (visited Oct 20, 2011).

¹⁴⁵ See Scott Otteman, *Zhong: More U.S. Exports, Less Curbs Will Slash Trade Gap Better than Currency Shift*, Inside US-China Trade (Mar 31, 2010), online at <http://wtonewsstand.com/Inside-US-China-Trade/Inside-U.S.-China-Trade-03/31/2010/menu-id-715.html> (visited Oct 20, 2011).

¹⁴⁶ Antidumping duties are imposed on goods that are sold at too low value on the US market. To determine whether dumping exists, the US Department of Commerce compares the price of the good in the US and in the exporting country. However, in case of non-market economies, the US insists that it cannot use the price data of the exporting country—the rationale being that prices in non-market economies are not set by market forces. This allows the US authorities to reject the information China provides in antidumping investigations and thereby treat Chinese exporters less favorably than exporters from market economies.

¹⁴⁷ See Otteman, *More US Exports, Less Curbs* (cited in note 145).

¹⁴⁸ The Taiwan Relations Act, Pub L No 96-8, 93 Stat 14 (1979), codified at 22 USC §§ 3301–16, requires the US to provide Taiwan with means to defend itself. 22 USC §§ 3301–02.

¹⁴⁹ See Helene Cooper, *U.S. Approval of Taiwan Arms Sales Angers China*, NY Times A5 (Jan 30, 2010).

The idea of rewards has been central to the discussions about the climate treaty.¹⁵⁰ Throughout the negotiation process, developing countries have insisted that their compliance with a treaty will be conditioned on securing a binding commitment from developed countries to finance the costs of developing countries' compliance. China has explicitly indicated that it is willing to comply with a treaty if rich countries will pay for its costs of compliance. Recently, developed countries consented to these demands by stating their "intention" to provide the necessary funds. The Copenhagen Accord promulgates a goal of establishing a Copenhagen Green Climate Fund (Climate Fund), which would be aimed at assisting developing countries to mitigate the effects of climate change.¹⁵¹

2. Cost of rewards.

China would likely require a substantial reward in exchange for letting its currency float. At a minimum, the reward would need to amount to China's net costs of allowing for the Yuan's appreciation. Importantly, the reward would need to cover the costs of China's reduced export revenue in all exports markets—not just in the US—as well as likely adjustment costs resulting from a presumably higher rate of unemployment.

Yet such a reward would likely exceed the US's willingness to pay, given that the US does not internalize all the costs associated with China's objectionable behavior. For one thing, it is hard to imagine the political feasibility of the US Congress's appropriating funds to compensate China for ending a palpable wrong-doing. Moreover, the US only cares about the direct benefits that it expects to derive from the Yuan's appreciation, including increased export revenue from increased sales in China and the strengthening of its own producers' relative competitiveness to Chinese manufacturers at home and in third markets. In contrast, the US is not expected to take into account the benefits that the Yuan's appreciation would have on third countries (including, for instance, increased competitiveness of European firms). Given its perception of high economic benefits of undervalued currency, China may thus be better off pursuing its chosen monetary policy than accepting a (limited) reward offered by the US.

Similar problems undermine the Senders' ability to buy China's climate compliance through rewards. For the reward to be attractive to China, it would need to amount to the

¹⁵⁰ Jeffrey Sachs has called for two global trust funds to be established: a mitigation fund that would offer transfer payments for the purpose of adopting new emission technologies and a technology transfer fund that would provide poorer countries access to (often IP-protected) technologies that can be harnessed to reduce countries' GHG emissions. Sachs has stressed that the fund would require donor countries to commit approximately 0.5 percent of their GNP to the fund. This would amount to \$170 billion annually that could be directed to recipient countries to compensate them for their efforts to mitigate climate change. See Rashme Sehgal, *Climate Change According to Jeffrey Sachs*, Infochange (Aug 2009), online at <http://infochangeindia.org/environment/features/climate-change-according-to-jeffrey-sachs.html> (visited Oct 20, 2011). See also Jeffrey Sachs, *The End of Poverty: Economic Possibilities for Our Time* 302-03 (Penguin 2005); Gordon Brown, *All Together Now*, NY Times A35 (Sept 23, 2009).

¹⁵¹ See UN, Draft Decision CP.15, *Copenhagen Accord*, UN Doc FCCC/CP/2009/L.7 (2009). Specifically, developed countries would provide developing countries with financial support of \$100 billion annually by 2020, with an additional pledge to offer these countries up to \$10 billion of upfront financing annually through 2012. While lacking any binding force, the mere statement of this goal was considered a tangible achievement in otherwise disappointing negotiations.

net costs of participating in the treaty. Specifically, the reward would have to cover China's costs of cutting its GHG emissions, including the cost of adopting new energy solutions. It would also need to cover the costs of reduced growth rates, the possible forgone benefits from global warming that China would enjoy absent any action,¹⁵² and the forgone benefits that China would enjoy though "leakage" of energy-intensive production to its territory. In setting the reward, the Senders could deduct from these costs China's (discounted) long-term benefits of halting global warming and its more immediate co-benefits of any abatement action, including better air quality and the associated health benefits.¹⁵³ Still, the magnitude of the reward would need to be substantial. This is supported by China's explicit request that wealthy nations commit 1 percent of their GDP—over \$300 billion annually—to a fund that would help developing countries, including China, cut their emissions and adapt to climate change.¹⁵⁴

Critics point out that even if the Copenhagen Accord's pledged funding materialized, it would fall short of the demands by developing countries, international organizations, and NGOs.¹⁵⁵ Developing countries also fear that the funds to cover the reward would merely be diverted from existing development aid budgets, compromising the effectiveness of other development programs and initiatives in developing countries.¹⁵⁶ Thus, given the high economic benefits of continuing emissions, Targets, including China, may be better off violating the treaty than accepting an inadequate reward from the proposed Climate Fund.

This discussion shows that extending a traditional reward to a Target like China may simply be too costly for the EU and the US—even when funding the reward jointly—making it impossible to garner domestic support for the fund. This is particularly true when the Sender who funds the reward does not internalize all the costs associated with the violations. For instance, the EU only cares about the direct benefits that it derives from China's compliance, including a mitigated risk of suffering adverse consequences from climate change in the EU territory, reduced leakage of carbon-intensive production, the strengthening of its own producers' competitiveness, and expanded export opportunities for its own producers that manufacture clean technologies that China would possibly be required to purchase as a condition for obtaining the reward. The EU is not generally expected to care about the benefits China's compliance would have on third countries (including the Maldives' remaining above sea level or India's agricultural sector's

¹⁵² Even if China does not benefit from climate change, it may be less exposed to impacts than other developing countries. See Posner and Sunstein, 96 *Georgetown L J* at 1582 (cited in note 117).

¹⁵³ See discussion on side-benefits to China in Stewart and Wiener, *Reconstructing Climate Policy* at 103 (cited in note 123).

¹⁵⁴ See Levi, 88 *Foreign Aff* at 93 (cited in note 85).

¹⁵⁵ See *Why the G8 Needs to Finance Developing Country Climate Action* (Greenpeace July 3, 2009), online at <http://www.greenpeace.org/international/en/publications/reports/why-the-g8-needs-to-finance-de/> (visited Oct 21, 2011) (demanding \$140 billion annually by 2020); *The EU Is Treating Climate Deal like an eBay Novice* (Oxfam Intl Oct 30, 2009), online at <http://www.oxfam.org/en/pressroom/pressrelease/2009-10-30/eu-treating-climate-deal-ebay-novice> (visited Oct 21, 2011) ("€50 billion per year[] is less than half of what developing countries need"); Levi, 88 *Foreign Aff* at 93 (cited in note 85) (discussing China's demand for \$300 billion annually).

¹⁵⁶ See Bill Gates, *2010 Annual Letter from Bill Gates* *17 (Bill & Melinda Gates Foundation Jan 2010), online at <http://www.gatesfoundation.org/annual-letter/2010/Documents/2010-bill-gates-annual-letter.pdf> (visited Oct 21, 2011).

remaining productive). Similar considerations constrain the extent to which the US is prepared to offset the harm it experiences with a reward.

Thus, it is likely that the largest fund that the EU–US coalition would be willing to support would not cover the benefit China would be asked to forgo, particularly if the Senders apply a high discount rate in assessing the detrimental future effects of China’s GHG emissions. A successful fund would therefore likely require a commitment from multiple additional Senders, who must first overcome the collective action problem of agreeing on a fair distribution of their respective contributions. Even then, the individual contributions that would be required may remain too high, given the significant gap between what Targets are asking as a reward and what Senders are likely prepared to contribute in the end.

D. Reversible Rewards

In Part II of this Article we demonstrated how Reversible Rewards can, in theory, achieve the same enforcement goals as simple sanctions or simple rewards but at a lower cost. We now turn to examine how Reversible Rewards would, in practice, affect China’s incentives to comply and American and European incentives to pursue enforcement in the currency and climate domains.

1. How reversible rewards work.

In the case of currency manipulation, Reversible Rewards would work as follows: The US would announce that China is entitled to collect a reward if it allows its currency to float, or to appreciate above some minimum exchange rate, by some predetermined date. The US would also announce that if China continued its intervention at that date, the reward would not be paid and instead the US would pursue several (predetermined) sanctions. The money earmarked for the reward would then be used to compensate key US stakeholders hurt by the sanctions.

The simplest type of reward China could earn for compliance is a direct cash transfer. But other, indirect rewards are also possible. For example, the US could reward China by halting arms sales to Taiwan. The cost of such reward is the reduced sales profits to the US defense industry, and thus the reward fund would be used to compensate this sector.

If, instead, China fails to cooperate and continues to intervene in the currency markets, the US would initiate sanctions by, for example, imposing duties on all Chinese goods. The US government would use the same funds designated for the reward to cover its expenses in administering the tariff or to pay for any litigation costs involved in defending its measures in the WTO. Similarly, if faced with retaliation, the US could resort to these same funds to compensate those of its industries that would become targets of Chinese trade sanctions.

Similarly, the EU could proceed to enforce GHG reduction targets on China unilaterally by employing Reversible Rewards. It could set aside funds for the sole purpose of financing rewards (for example, direct cash transfers to facilitate the transformation of

China's energy infrastructure) and sanctions (for example, carbon tariffs) the way we have discussed above in connection with the US–China currency conflict.¹⁵⁷ The EU could allocate additional rewards in separate accounts and pursue a similar strategy towards other key Targets that are major emitters of GHGs and that refuse to sign the treaty. Most likely, the EU would only enforce the treaty against a few major emitters and ignore the behavior of states whose contribution to climate change is trivial. As our analysis showed, Reversible Rewards would require a substantially smaller contribution to the individual accounts. Still, enforcing a global treaty unilaterally is likely to be too costly for the EU.

The EU could lower its enforcement costs if it were able to persuade the US and possibly other states to join the treaty and enforce the treaty against remaining Targets as co-Senders. The participation of the US would expand the resources available through the Reversible Rewards, further reducing the funds the EU would need to deposit upfront. The involvement of the US could also make trade sanctions against China more potent. Thus, the first task the EU faces as a lead Sender is to broaden the coalition of Senders by enticing potential co-Senders—predominantly the US—to enforce the treaty against China.¹⁵⁸ The Leading Sender has three primary ways to gain the cooperation of a potential co-Sender: it can buy off the co-Sender's cooperation through rewards, coerce cooperation through a threat of sanctions, or, as our model would suggest, seek cooperation through a combination of the two.¹⁵⁹ As a second step, the EU and the co-Sender would jointly set up the Reversible Reward mechanism and proceed with offering rewards or inflicting sanctions, depending on China's record of compliance.

The US and the EU could further bolster their enforcement efforts by placing the Reversible Rewards in an irrevocable enforcement fund. The allocated budget would be deposited into this escrow fund for the sole purpose of resolving the currency issue (or, alternatively, the climate change conflict) against the specified Target—in this case, China. The enforcement fund could not advance any other objectives and could not be used to deter any other Target. This would make the commitment to the Reversible Reward scheme more credible. Of course, there are no simple legal templates to achieve the irrevocability effect in the public international arena. We will address some possible ways to contract into this arrangement in Part 3 below.

2. The benefits of Reversible Rewards.

The key advantage of Reversible Rewards is their ability to lower the Sender's enforcement costs through the dual use of the same funds. We have shown that Reversible Rewards generate additional compliance by stretching the wedge between the Target's payoffs from compliance and non-compliance, leading the Target to comply in

¹⁵⁷ The difference would be that the EU and the US would not want to use the fund to cover the costs to its consumers and producers, who would incur higher costs in buying Chinese carbon-intensive products because they would have faced similar higher costs in the event that China were to comply.

¹⁵⁸ For a discussion on the difficulties in gaining support of other countries for sanctions, see Martin, 45 *World Pol* at 408–19 (cited in note 38).

¹⁵⁹ See *id.* at 411–12. We do not discuss the rewards and sanctions that the EU could use towards the US due to the analytical similarity of the situation with the discussion of the US's employing rewards and sanctions against China.

circumstances where simple sanctions or simple rewards fail to have this effect.

However, Reversible Rewards have additional benefits. They exploit the “best of both worlds” by harnessing the advantages of rewards without forgoing the advantages of sanctions. At the same time, they mitigate the downsides of both. First, rewards lend legitimacy to the threat to inflict sanctions. Within the Target, sanctions may have the effect of unifying the various groups in the face of a common external threat to its sovereignty (“rally-round-the-flag effect”).¹⁶⁰ Sanctioned and ostracized regimes are more likely to pose a greater threat to the Sender. Destabilizing an already erratic regime may exacerbate problems rather than alleviate them.¹⁶¹ The inclusion of a reward element mitigates these problems.¹⁶² Rewards also avoid the negative side effects that sanctions have on cooperation with the Target on other (current or future) issues.¹⁶³ Imposing simple sanctions on China for its alleged currency manipulation, for instance, makes it much harder for the US to convince China to cooperate with it on disciplining Iran or North Korea. Sanctions are also often more divisive than rewards within the Sender country, particularly when sanctions are costly to domestic industries while rewards would expand their economic opportunities.¹⁶⁴

Offering a reward to the Target before sanctions are triggered is also less likely to be condemned by third parties or international organizations. Resistance to the US’s unilateral decision to inflict trade sanctions is likely to be more restrained if the US combined its punishment strategy with first offering China the opportunity to accept the reward.¹⁶⁵ The pursuit of a cooperative strategy initially is also likely to facilitate later efforts to mobilize a coalition to carry out sanctions, if required.¹⁶⁶

Conversely, simple rewards can be more effective and acceptable when coupled with a threat of sanctions. Rewarding unfriendly or defiant nations can be difficult to justify to a domestic constituency. The leadership within the Sender may struggle to explain why a nation that fails to abide by its obligations ought to be rewarded. The American public is not likely to be receptive to the idea of a large wealth transfer to China—particularly given the existing fiscal deficit—and would probably prefer the pursuit of sanctions, the costs of which are not as immediately observable. Reducing the total amount of wealth transfer necessary to buy China’s compliance and preserving the option to inflict sanctions is hence

¹⁶⁰ See Long, 40 Intl Studies Q at 82 (cited in note 18); United States General Accounting Office, Report to the Chairman, Committee on Foreign Relations, US Senate on *Economic Sanctions: Effectiveness as Tools of Foreign Policy*, GAO/NSIAD-92-106 at 4–5 (Feb 19, 1992).

¹⁶¹ This would be less applicable to China but relevant with North Korea or Iran. See Haass and O’Sullivan, *Introduction* at 3 (cited in note 8).

¹⁶² See Long, 40 Intl Studies Q at 82 (cited in note 18) (using Fidel Castro and Saddam Hussein as examples to show how sanctions act as rallying devices that can be used to extend regimes by leaders of oppressive regimes).

¹⁶³ See Baldwin, 24 World Pol at 33 (cited in note 25) (distinguishing between “spill-over effects,” which are harms caused by sanctions to the Sender and Target’s relations while sanctions are imposed, and “scar effects,” which are harms caused by sanctions to future relations between the parties).

¹⁶⁴ See Long, 40 Intl Studies Q at 82 (cited in note 18).

¹⁶⁵ See Haass and O’Sullivan, *Conclusion* at 162 (cited in note 34).

¹⁶⁶ See Kenneth I. Juster, *The Myth of Iraqgate*, 94 Foreign Poly 105, 105–09 (1994) (explaining “Iraqgate,” a popular scandal in the media about agricultural aid to Iraq before the first Gulf War, as initial attempts by the Bush Administration to normalize relations with Iraq to avert conflict).

likely to garner greater acceptance among American taxpayers.¹⁶⁷ A simple reward strategy can also compromise the perception of resolve and toughness—attributes that many leaders work hard to cultivate—and be associated with the negative connotations of appeasement.¹⁶⁸ Reinforcing the promise of rewards with a credible threat of sanctions is likely to mitigate this concern. Thus, the Reversible Rewards can please both audiences: those who favor sanctions and those who advocate rewards.

A further benefit of Reversible Rewards is that they can mitigate, though not eliminate, the collective action problem—a central problem underlying cooperation on climate change. There are at least two aspects to this problem in the context of climate change: first, countries have incentives to remain Targets and, second, potential co-Senders can free ride on other Senders' enforcement efforts. To the extent that Reversible Rewards provide increased deterrence, they directly alleviate the first aspect of the collective action problem. And, to the extent that they increase the propensity of countries to join a costly enforcement effort, they alleviate the second aspect of the collective action problem.¹⁶⁹

There are several reasons why Reversible Rewards could decrease free-riding among Senders. First, this mechanism requires each participant to contribute less. Second, the establishment of a fund is separate from its use. Thus, the international community needs to address the collective action problem only when assembling the fund, not when administering its expenditures, as the designated Senders alone would be compensated from the fund. Further, the problem of undetected defections from cooperation can be easily overcome, since it is easy to monitor who has contributed to the fund. Later, if sanctions are needed, Senders are less likely to defect because sanctioning costs are reimbursed from the fund.

Reversible rewards also separate rewards and sanctions for the purposes of harnessing the broadest possible coalition of Senders. By decoupling the two elements of the enforcement scheme—rewarding and sanctioning—the mechanism allows different Senders to participate at different stages of the enforcement action. Some states may choose to contribute to the payment of the reward whereas others may volunteer to carry out the punishment, if necessary (and be compensated from the reward funds). This way, the enforcement burden can be allocated in the most cost-effective way. Decoupling is also helpful as there may be states that are not in a position to pursue sanctions, or that would

¹⁶⁷ However, the public may also consider unused money held in escrow wasteful, reducing political acceptance.

¹⁶⁸ See Baldwin, 24 *World Pol* at 34 (cited in note 25); Nincic, 7 *Intl Studies Perspectives* at 322 (cited in note 40).

¹⁶⁹ For instance, there is significant uncertainty as to which countries would contribute to the Climate Fund, highlighting the collective action problem undermining any reward mechanism requiring cooperation among multiple Senders. The EU has pledged to contribute \$10.5 billion to the 2010–12 start-up fund, whereas the US has merely stated that it intends to contribute but refuses to specify the level of its contribution. See *Climate Change after Copenhagen: China's Thing about Numbers*, *Economist* 35 (Jan 2, 2010); *EU Raises Stakes with €7.2bn in Climate Change Aid*, (Eur Commn Dec 11, 2010), online at http://ec.europa.eu/news/eu_explained/091211_en.htm (visited Oct 21, 2011); *Support for Developing Countries under the "Hatoyama Initiative": Japan Pledges \$11 Billion of Public Money for Assistance up to 2012* (Government of Japan Dec 16, 2009), online at http://www.kantei.go.jp/foreign/topics/2009/1216initiative_e.pdf (visited Oct 21, 2011); Frank McDonald, *Clinton Says US Climate Aid Conditional on Transparency*, *Irish Times* 12 (Dec 18, 2009).

face a distinctly high cost of doing so, but still share the common goal of the Senders. For instance, states that do not import from Target countries do not have the option of credibly threatening them with tariffs.

Similarly, some Senders may only be able to gain domestic political approval for rewards but not for sanctions. The EU, for instance, has often preferred politics of positive engagement and rewards to inflicting sanctions. In contrast, other states are less likely to obtain domestic political support for rewards but are prepared to carry out sanctions and shoulder their burden that way. For instance, while various domestic climate change bills pending in Congress contain language on carbon tariffs, the US has indicated that it will not participate in funding a relatively resourceful country like China through rewards.¹⁷⁰ Thus, one option would be for the EU to donate more resources to the fund while having the US take the lead in threatening China with tougher sanctions.

Strengthening the Reversible Reward mechanism with an explicit pre-commitment element would bring additional advantages. Like any escrow arrangement, a pre-committed Reversible Reward fund would have the benefit of convincing the other party of the seriousness of the Sender's intent. This would be a credible way for a government to make a commitment to a foreign government. In the international context, there would be the additional benefit of allowing the current government to tie the hands of a successive administration that might not otherwise be as committed to addressing the issue. Without an escrow arrangement, the next administration may well choose to divert the funds for a purpose other than, for instance, the US-China currency conflict, including national security missions, deficit reduction, or tax cuts to individuals and corporations. Thus, the escrow mechanism would open up a credible strategy for a long-term commitment in an uncertain political environment.

3. Challenges of Reversible Rewards.

The first challenge for a Reversible Reward scheme is defining compliance. This is likely to be less problematic in some instances, including the currency manipulation context, where the value of Yuan can be objectively and cheaply monitored.¹⁷¹ In the climate area, defining compliance requires the EU and the US to obtain information on China's actual emission levels. Most developing countries, including China, do not currently have the capacity to monitor their economy-wide emissions.¹⁷² And even if they did, the US and the EU would be unlikely to trust the numbers provided by China.¹⁷³ This is a challenge to any enforcement action in the climate area, not unique to Reversible Rewards. If it is insurmountable, the implications extend beyond the feasibility of this mechanism. If,

¹⁷⁰ See Todd Stern, *Press Briefing on UN Climate Change Negotiations* (Dec 9, 2009), online at <http://geneva.usmission.gov/2009/12/10/todd-stern-2/> (visited Oct 21, 2011) ("I don't envision public funds—certainly not from the United States—going to China.").

¹⁷¹ In these other cases, part of the reward fund's fixed costs would need to be directed to monitoring China's activities in order to determine whether it is meeting its obligations and whether it therefore remains entitled to the reward.

¹⁷² See Levi, 88 Foreign Aff at 95 (cited in note 85).

¹⁷³ See Jim Tankersley, *Enforcing Pledges is an Obstacle at Climate Talks; A Monitoring Dispute Pits the West against Emerging Powers*, LA Times A37 (Dec 11, 2009).

instead, monitoring is possible, then part of the enforcement mechanism's fixed costs would need to be directed to monitoring, reporting, and verifying the emissions in order to determine whether the country is meeting its target and whether it therefore remains entitled to the reward.¹⁷⁴

While the difficulty of determining whether the Target has complied applies to all enforcement actions, a challenge that is unique to Reversible Rewards stems from the need to determine when to reverse the reward to the Sender. It is feasible that the US or the EU may be motivated by the opportunity to collect a reward in situations where punishment is not welfare-enhancing. They may also seek to attain the reward but not use it to carry out punishment. This would, obviously, dilute the entire "double leverage" mechanism that makes Reversible Rewards attractive in the first place. Finally, Senders might have an incentive to find non-compliance if they believe that the prospective reimbursement from the fund outweighs their actual costs of sanctioning. Thus, it may be necessary to monitor not only the conduct of the Target but that of each Sender in order to guarantee the effectiveness of Reversible Rewards.

A further challenge of Reversible Rewards relates to a potential moral hazard problem. In utilizing Reversible Rewards, the US would need to avoid setting a precedent that all international cooperation entitles countries to a reward. Such a signal could lead to a highly problematic "race to be a Target." While no country wants to have sanctions imposed on it, many countries would be eager to be Targets of an enforcement action based on rewards. The US's rewarding China for discontinuing its condemned behavior could thus signal to other countries that any country that threatens to act contrary to its international obligations can collect a reward, removing the idea that "good behavior" ought to be automatic and unconditional in the international community. Alternatively, existing Targets might amplify their objectionable behavior (for example, China could further lower the value of its currency) in an effort to ratchet up the magnitude of the reward that the US would offer for their compliance.

Of course, moral hazard problem undermines all enforcement actions that contain element of rewards and is not limited to Reversible Rewards. Indeed, one might suggest that the problem is less severe in the case of Reversible Rewards than simple rewards because of the smaller amount that the frivolous Target can expect to capture as a reward. Moral hazard incentives underlying Reversible Rewards may also be mitigated compared to the situation of using simple rewards, as the Target identifying itself as an entity eligible for a reward also simultaneously identifies itself as a potential Target of sanctions. Still, the existence of the moral hazard problem supports our argument that Reversible Rewards are better suited to strategic settings where the recipient of the reward can be ex ante limited to a unique Target in connection with a specific enforcement conflict.

The moral hazard problem looms particularly severe when Senders attempt to solve a global collective action problem akin to climate change, where every country seeks to free ride on other states' efforts to curtail emissions. Any reward mechanism could attract

¹⁷⁴ Note that the monitoring, reporting and verification (MRV) system designed to support the system of rewards differs from the MRV costs that the US would incur in administering a carbon tariff in that the rewards would most likely require information on countries' total emissions as opposed to emissions that can be attached to each individual product that crosses the US border.

numerous frivolous Targets that all seek to present themselves as potential Targets in the hope of collecting the reward. Alternatively, genuine Targets like China might raise their GHG emission levels in an effort to drive up the magnitude of the reward that the Sender would offer for their compliance. Thus, Reversible Rewards require the Senders to convert generic enforcement problems (involving multiple Targets seeking to extract rewards) into unique enforcement problems that focus on changing the behavior of one or a limited number of Targets that cannot be deterred through simple sanctions.

To address this concern, the EU and the US could explicitly limit the Reversible Rewards to genuine Targets. These would be states that stand to be net losers under the climate treaty or states that are economically dependent on outside funding to comply with the treaty. Importantly, the category of genuine Targets would not include states that can be deterred by sanctions alone. Also excluded would be states that are net beneficiaries from climate treaties and that can afford to make the technological changes required to meet the stipulated emissions goals, because their threats to continue with violations are not credible. These conditions would limit the beneficiaries of Reversible Rewards to large Target countries that are difficult or impossible to deter through sanctions alone. The coalition of Senders could, for instance, limit the offer of Reversible Rewards to China, and, possibly, utilize them in a separate enforcement action against India.

Placing the funds in an irrevocable fund, as suggested above, would present its own set of challenges. The utilization of an escrow arrangement raises the obvious question of how the fund holding these rewards could be truly sunk. If the money is not sunk—if it can be reclaimed for a different purpose by the Sender—then the cost of sanctioning is no longer zero, which would undermine the credibility of the threat to inflict sanctions. Ideally, the Senders would try to credibly tie their hands by surrendering their control of the escrow fund and designating a neutral third party to manage the funds as a trustee.

Escrow arrangements have been used in international law in instances where sovereign states do not trust each other and require additional safeguards to reinforce commitments they make to one another. For example, the Libyan government used the Bank for International Settlements when it established an escrow arrangement to compensate the families of the Pan Am Flight 103 victims.¹⁷⁵ Similarly, the Iran–US Claims Tribunal, which was set up to provide a negotiated solution to the Iran hostage crisis following Iran’s Islamic Revolution, relied on an escrow mechanism when the US undertook to unfreeze Iranian assets in return for Iran releasing the hostages.¹⁷⁶

In these cases, a private bank in a neutral country was used as an escrow agent. The choice of an escrow agent would be crucial in conferring the required credibility for the arrangement. For the US and EU’s offer to reward China to be credible, China would need to trust the escrow agent to release the funds when their compliance is verified. And for the

¹⁷⁵ See Jonathan B. Schwartz, *Dealing with a “Rogue State”: The Libya Precedent*, 101 Am J Intl L 553, 570 (2007).

¹⁷⁶ Iran had seized 53 Americans from the US embassy in Teheran and held them hostage for 444 days from 1979 to 1981. The US responded by freezing all Iranian assets in the US. The two countries established an escrow arrangement whereby the Banque Centrale d’Algerie in the Bank of England held the frozen Iranian assets that the US had agreed to transfer to Iran in return for the release of the hostages. When the aircraft carrying the hostages left Iran, the Banque Centrale d’Algerie released the agreed amount of the funds to Iran. See *Official Documents: Settlement of the Iran Hostage Crisis*, 75 Am J Intl L 418, 427 (1981).

sanction threat to be credible, the escrow agent would have to be one over which the Senders have no leverage. For these reasons, international organizations like the UN, the World Bank, or the IMF might not work; China would most likely distrust a fund managed by these bodies over which the US and the EU wield significant power.¹⁷⁷ By choosing an autonomous third party, the US and the EU can send a strong signal of their commitment to reward—and, if necessary, to sanction.

The difficulty in choosing a neutral third party to manage the Reversible Rewards scheme arises from the joint tasks the escrow institution would have to perform. On one hand, the institution would have to make difficult judgments in evaluating whether the Target has complied or whether the Sender has followed through with sanctions. For this to succeed, this body would have to be an established international institution—including, for instance, a UN Sanctions Committee—with the competence and experience to make these subtle judgments on compliance. At the same time, such institutions are often closely related to, and influenced by, the US and the EU. This would raise questions as to their capability to perform their other task, which is to direct the money only to the pre-committed purposes and withstand any ex post pressures from the funding countries.

One option would be to use an independent arbitration panel, nominated by the Sender and the Target jointly, to determine whether the Target is entitled to a reward for compliance or whether the Sender is entitled to recompense for imposing sanctions on a non-complying Target. The panel's decision-making could be guided not only by the specific escrow provisions, but also by the laws and guidelines of the relevant international institutions (for example, IMF and WTO provisions on currency manipulation or any agreed-upon international climate change treaty). This arbitration panel would then instruct the actual trustee of the escrow institution as to whether and when to release the funds.

Given the challenges embedded in using a formal third party escrow, the Sender may choose to resort to indirect and less formal commitment mechanisms whenever these mechanisms are sufficient to provide the needed credibility. The Sender may simply dedicate a set of funds for a specific enforcement challenge and make a highly publicized statement on how the funds are to be used. If the Sender were to renege on its promise to extend a reward to the complying Target or fail to proceed with sanctions against a non-complying Target, the Sender would lose its credibility with the current Target as well as with all other future targets. In other words, inaction by the Sender would constitute a visible signal to other potential Targets that its promise of rewards or a threat of sanctions is empty. This alone would likely keep the Sender from compromising its own enforcement scheme, albeit less formally than if a formal escrow arrangement was used.

¹⁷⁷ Contrast this to the discussion of how the Copenhagen Climate Fund would be managed. Some have proposed placing the fund under the umbrella of the Global Environmental Facility (GEF) with the World Bank as a Trustee. Developing countries, however, have expressed skepticism of a fund that is administered by the GEF, preferring to avoid a close involvement by the World Bank and a tight control of the funds by the donor countries. The GEF is also criticized for the high fees involved in its administration. See Nathaniel Gronewold, *Red Tape, High Fees Hamstring Int'l Green Funds*, NY Times (E&E Dec 22, 2009), online at <http://www.nytimes.com/gwire/2009/12/22/22greenwire-red-tape-high-fees-hamstring-intl-green-funds-3156.html?pagewanted=2> (visited Oct 21, 2011).

Finally, we acknowledge that the challenge with Reversible Rewards—irrespective of the costs—is the dwindling leverage the US or the EU have to “hold the entire bilateral relationship hostage” to a single concern such as currency manipulation or climate change. Senders cannot afford to jettison cooperation with China on a host of key areas based on insistence that progress be made in one isolated area.¹⁷⁸ Because China knows this, any effective threats and conditional rewards to China are difficult to devise and implement. But this challenge, too, is not unique to Reversible Rewards. Thus, any incentive or coercive strategy is likely to be more complicated than what any enforcement mechanism can capture—even if we manage to enhance credibility and lower the costs of such a strategy through Reversible Rewards.¹⁷⁹

V. CONCLUSION: THE PATH FOR BROADER APPLICATIONS

Although the choice between sticks and carrots is a fundamental and much-discussed dilemma in international law, the existing literature has failed to recognize that the combined use of both sticks and carrots could improve compliance without burdening the fiscal position of the Sender. Backing up rewards with the threat of sanctions—or complementing a threat of sanctions with the promise of a reward—creates a more potent enforcement measure in an area long plagued by weak enforcement.

So why do we not see Reversible Rewards being used in practice? First, as we noted, their application is limited. Reversible Rewards are not designed to solve every enforcement problem. In situations where sanctions are not costly, a Sender can credibly deter a Target at little or no cost. A threat of sanctions that does not need to be carried out is always superior to a simple reward or to a Reversible Reward, both of which force the Sender to incur some costs if the Target complies. The advantage of Reversible Rewards is therefore limited to situations where the Sender’s threat suffers from lack of credibility due to high enforcement costs. Second, Reversible Rewards are also better suited to solve specific violations by individual Targets, as opposed to generic violations by multiple Targets, to contain the moral hazard problem and limit the total funds that the Sender needs to be dispatched.

Further, some problems that apply to simple rewards or simple sanctions also carry over to Reversible Rewards. At times, sanctions are not available to the Sender. Consider the enforcement problems currently underlying the Eurozone. When countries like Greece, Ireland, and Portugal are already on the verge (or in the midst) of financial ruin, tougher sanctions would make them less likely to recover. This would only worsen the position of Senders. Sanctions are similarly ineffective in situations where the Sender has already employed them unsuccessfully against a Target in the past and where further sanctions can only inflict marginal additional pain on the Target. For instance, the US’s extensive sanctions have not changed policies in countries like North Korea or Syria.¹⁸⁰ Imposing

¹⁷⁸ See Haass and O’Sullivan, *Conclusion* at 177 (cited in note 34).

¹⁷⁹ Even a qualified success of enforcement would present a victory in the existing conflict with China. Even if China stopped short of letting its currency float, the US would benefit from China’s measures to allow its currency to appreciate.

¹⁸⁰ See David E. Sanger, *U.S. Faces a Challenge in Trying to Punish Syria*, NY Times A10 (Apr 26, 2011).

additional sanctions would have, at best, trivial adverse effects on these countries. In these scenarios, when sanctions are not feasible or useful, Reversible Rewards are not helpful. In such situations, the promise of lifting existing sanctions is often the most attractive reward for the Target. This type of reward, however, is not costly to the Sender and thus not an enforcement action that benefits from the use of Reversible Rewards.

Other times, rewards are not feasible, undermining the dual leverage of Reversible Rewards. When an egregious regime engages in genocide or commits crimes against humanity, few would suggest that the international community ought to offer lucrative trade deals or other rewards to persuade the regime to stop slaughtering its citizens. There is a point in a conflict after which rewards are no longer an option and the international community faces a choice between inaction and sanctions. For instance, after the UN Security Council authorized a military intervention in Libya in March 2011 to protect civilians from assaults conducted by Muammar Gaddafi's forces, a strategy of rewards was foreclosed. At best, a "reward" to the Libyan leadership post-intervention would have consisted of a promise to withdraw NATO forces in exchange for a credible promise of an immediate termination of all attacks against civilians. Again, this type of reward removes an existing cost—the military operation—rather than imposing a new one on the coalition of Senders and does not therefore call for Reversible Rewards.

Despite these limitations, Reversible Rewards can be valuable in various settings where the costs and credibility of enforcement are central impediments for the deployment of either sanctions or rewards. In addition to international economic and environmental issues discussed above, Reversible Rewards could be useful in enforcing national security-related norms. For instance, the US and the EU have in the past offered multiple rounds of rewards and sanctions in trying to halt Iran's nuclear ambitions.¹⁸¹ Thus far, this dual-track approach has not persuaded Iran to give up its nuclear program. The sanctions have further imposed significant costs on the US and the EU while ceding economic opportunities to countries that continue to engage with Iran, such as China and Russia.¹⁸² Instead of absorbing the high sanctioning costs associated with maintaining largely ineffective sanctions, an alternative strategy for the US and the EU would have been to employ the dual incentives offered by Reversible Rewards at the outset. For instance, in exchange for abandoning its nuclear program, the US and its allies could have offered to invest in the Iranian energy infrastructure or pay for gasoline deliveries to Iran from a Reversible Reward fund. Should Iran have turned down such a reward, the fund could have been used to finance the costs of sanctions—including a nearly complete trade embargo and a set of financial sanctions and asset-freezes targeting Iranian companies and individuals.

We could further imagine Israel's using this mechanism in its conflicts with Hamas or the Palestinian Authority. Whether it is Israel's attempts to free a kidnapped soldier or

¹⁸¹ See Daniel Dombey, *US and EU Step Up Iran Nuclear Sanctions Drive*, *Fin Times* 6 (May 25, 2011); Daniel Dombey, *EU Renews Offer of Nuclear Aid to Tehran*, *Fin Times* (May 15, 2006), online at <http://www.ft.com/intl/cms/s/0/1315b82e-e430-11da-8ced-0000779e2340.html#axzz1P8392XsB> (visited Oct 21, 2011).

¹⁸² See Ali Sheikholeslami, Anthony DiPaola, and Alaric Nightingale, *Iran Sanctions Leave China, Russia as Winners in Trade*, *Bloomberg* (Aug 8, 2010), online at <http://www.bloomberg.com/news/2010-08-08/china-embracing-iran-raises-reliance-ship-costs-as-un-sanctions-take-toll.html> (visited Oct 21, 2011).

to induce the Palestinians to adopt some security-related measure, Israel could offer a set of incentives through Reversible Rewards. It could extend direct financial aid or promise to build much-needed infrastructure, such as schools and hospitals in the Palestinian territory, or agree to withdraw some of its settlements in the West Bank. These rewards could be financed from a Reversible Reward fund that would be set up for the sole purpose of inducing the Palestinian side to comply. If the reward is rejected, the trustee of the fund would transfer the funds to the Israeli military for the purpose of, say, building more settlements. Knowing that Israel can retaliate at a lower cost, the Palestinian side is more likely to accept the reward in the first place. Israel is also likely to trigger less international condemnation for its action if it results from Palestinians' decision first to reject a set of positive inducements. Finally, having an independent trustee deploy the funds is likely to provide the needed level of trust in a conflict otherwise marked by considerable distrust between the parties.

The idea of decoupling—where one Sender extends the reward and another Sender carries out the sanctions—was discussed above in connection with climate policy. Dividing the rewarding and sanctioning functions between different entities could also be helpful in a variety of other enforcement settings. For instance, to contain the terrorist threat posed by groups like Hamas, the US could offer rewards—such as direct cash transfers—in return for these groups' forfeiting their arms. This reward could be backed up by an explicit threat of sanctions carried out by another party. For instance, Israel could threaten to punish Hamas by force. The threat would be made credible by a promise to finance the strike from the Reversible Reward fund set up by the US. Even international organizations could decouple sanctions and rewards to gain more leverage and save costs through Reversible Rewards. To halt Iran and North Korea's nuclear ambitions, for instance, the World Bank could offer a reward—investment in these countries' energy infrastructure—and the UN could impose the threat of sanctions—primarily economic, but backed by a military threat—that would be financed from the World Bank's fund if Iran and North Korea rejected their rewards.

Also, while relying on Reversible Rewards to Euro members that are already on the brink of a sovereign default would be difficult, strengthening the Eurozone governance with Reversible Rewards in the future is worth considering. European countries have agreed to pre-commit 700 billion euros in the new European Stability Mechanism (ESM)—European governments' proposed central lending facility. The ESM will likely allow for sanctions to be inflicted against governments that break agreed-upon fiscal rules on budget deficit and public debt. Pre-committed funds are meant to secure the AAA credit rating for the lending facility and send a clear signal to the markets that the ESM will have the capacity to solve any future crises in the currency area.¹⁸³ Yet a further advantage of the pre-commitment mechanism could be its ability to sustain the Reversible Rewards mechanism. The pre-committed capital could be used to extend rewards (for example, loans) to countries with sound fiscal policies and sanctions to countries that fail to follow the fiscal discipline (for example, loans on a “penalty” interest rate, austerity measures,

¹⁸³ See Tony Barber, *Four Steps to Fiscal Union*, *Fin Times* 5 (Aug 12, 2011); see also Council Conclusion, 1 EUCO 10/1/11 REV 1 at 23–25 (Mar 24–25, 2011).

finances and, ultimately, a forced exit from the currency union). These fines could further be used to bolster the ESM's resources, making reckless countries supply more of the required capital for the joint facility. This would create additional incentives for the Eurozone members to abide by the currency union's rules without increasing the resources of the ESM.

Applying Reversible Rewards in the context of a highly institutionalized supranational system like the EU would also likely mitigate the concerns about designing a credible escrow that would have the capability to monitor compliance and execute the payment of rewards. The EU and the Eurozone benefit from existing institutions with the power to exercise supranational authority and extensive experience in solving disputes between member states. The member states could vest the European Court of Justice with the powers to act as the final arbitrator. Alternatively, this power could be given to the Governing Council of the European Central Bank, which is formally independent of the member states' influence. Some recent proposals include establishing new governance institutions for the Eurozone, including a European Finance Ministry or a "Stability Council." These institutions could be natural arbitrators of compliance with the new fiscal rules. This type of economic governance would represent a significant strengthening of the current system under which fines have never been imposed against an EU member state. A different question is whether these steps towards a fiscal union will ever be taken. Yet, if the economic governance rules for the Eurozone are being re-written, it merits discussing whether sanctions, rewards, or a combination of the two, will provide the best enforcement strategy for a strong and stable currency union.

The idea that sanctions are superior instruments of enforcement is deeply entrenched in scholarly and public discourse. Yet the inability to credibly commit to sanctioning is pervasive and continues to undermine much of international enforcement. These limits of simple sanctions have provided the motivation for our inquiry. The above examples show that Reversible Rewards have the potential to furnish incentives for a Target to comply with a Sender's demands in situations where the cost of sanctioning would otherwise dilute the credibility of the Sender's threat. Reversible Rewards will not replace simple sanctions in the enforcement of international law. Yet they offer a novel way to think about compliance and credibility through a framework that takes stakeholders' incentives and the costs of enforcement seriously.