The Economic Coercion Trilemma and the Paradox of Self-Defeating Success

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July 1, 2021

Word Count: 10,770

Abstract

States blessed with strong economies often leverage their position for political gain using conditionality: they withhold market access from any state that does not embrace specific policies. Programs of conditionality are staggeringly diverse, varying the types of issues tied to market access, the amount of market access connected to each issue, and the degree of compliance required for access. What factors limit the number and types of political issues that can be linked to market access? Using a formal model I show how the design of conditionality is constrained by an underlying economic coercion trilemma. Programs of economic coercion can achieve at most two of the following three objectives: 1) a broad coalition of support for conditionality from multiple interest groups whose issues are linked to trade, 2) the maximum trade value possible being tied to each issue, and 3) consistent enforcement across issues. I show that states will benefit from tying multiple political issues to a single commercial volume when simultaneous noncompliance on multiple issues is unlikely. I also show how the optimal program design varies with the degree of dependence on trade. Finally, I describe how the trilemma is applied to historical and modern examples of economic coercion.

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1 Introduction

On July 25, 1990, two State Department officials sent a classified memo to Secretary of State James Baker concerning Chile's eligibility for the Generalized System of Preferences (GSP), a US program which offers steep discounts on tariffs to member states that respect both labor and intellectual property rights. Chile had been removed from the program in 1988 due to workers' rights violations under the government of Augusto Pinochet. The new government after Pinochet's fall worked rapidly to improve the situation with the goal of restoring GSP membership and made a formal request for reinstatement in 1990. Regarding that request, the two officials advised that the new regime's progress was substantial, noting that the petition had earned endorsements from major labor unions in both the United States and Chile. However, they also described significant obstacles to rewarding Chile with the restoration of its benefits:

> While indications are that the worker rights problems that triggered the denial of GSP have been addressed, the review will cover all GSP criteria, including adequate protection for intellectual property rights. USTR, under pressure from the Pharmaceutical Manufacturer's Association, insists that Chile must enact a new patent law before GSP is restored. The Chilean Congress is now in recess, and cannot conclude such a law before November.
>
> — *Eugene McAllister and Bernard Aronson to Secretary James Baker, July 25, 1990. Declassified as part of the Chile Declassification Project.*

Chile ultimately met all of the US conditionality and its GSP membership was restored. But the memo reveals how US demands could have seriously backfired if Chile had made a slightly different choice. What might have happened if Chile had failed to strengthen its intellectual property laws? On the one hand, if the US continues to withhold GSP membership from Chile then the incentives to maintain progress in the area of labor rights

would be undercut. GSP membership is ineffective as an incentive to improve labor rights if its restoration also depends on a condition that cannot or will not be met. On the other hand, if the US restores Chile's GSP membership without progress on intellectual property laws then the threat to withhold program membership was empty and US credibility could suffer. Either way, the US reputation for credibility is at stake. This hypothetical scenario exemplifies a paradox of self-defeating success: the GSP's value as a bargaining chip regarding one policy undermines its ability to influence other policies.

In this article I use a formal model to study what limits the number and types of issues that can be connected to a commercial volume. I find that the paradox of self-defeating success is just one manifestation of an underlying *economic coercion trilemma* constraining the design of any program of conditionality where the commercial volume is fixed. States can only achieve two of three priorities when designing a program of conditionality: 1) secure a broad coalition of political support for the program, 2) attach meaningful trade value to each policy issue, and 3) ensure that enforcement never reduces the target's incentives to comply with conditionality on other policy issues.[1] The paradox of self-defeating success is a possibility when states pursue the first two objectives by tying multiple issues each to a high degree of market access.

The optimal balance between the three objectives depends on political and economic factors. Generally, choosing a program that divides the available commercial volume among issues raises the chances of compliance but decreases the degree of compliance on each issue. However, there are circumstances where the target of the conditionality might be willing to fully comply in multiple issue areas connected to the same commercial volume despite the paradox of self-defeating success. If the target of the conditionality is highly dependent on market access then it may be willing to comply in several issue areas without hesitation to guarantee its economic future. Moreover, certain types of issues which are *compatible* can be

[1] In this paper economic coercion is defined as the use of commercial or financial incentives as leverage in a program of conditionality. While the literature typically considers instances of economic coercion separately by instrument, the framework developed in this article enables the comparison of different economic coercion programs on the basis of their design.

productively bundled. If a target would be unlikely to simultaneously violate conditionality in two or more issue areas then the issues can be connected to the same trade volume without undermining the consistency of enforcement. Finally, the analysis points to a new form of power in the international economy: states that can more efficiently convert economic value into political influence by using the same dollar of commerce as leverage in multiple issue areas.

Programs of economic coercion can be characterized by their location in the economic coercion trilemma (see Figure 1). A program is *support limited* if its political survival depends on support from a single issue and its interest group. Support limited programs achieve the other two priorities by default: enforcement is always consistent and the entire commercial volume can be conditioned on the issue if there is only one issue. Programs which broaden the coalition of support by conditioning commerce on multiple issues are called *leverage limited* if they also ensure consistent enforcement. The only way to prevent the enforcement of the conditionality from reducing leverage on unrelated issues is to ensure that no dollar of value is conditioned on more than one issue. In that case, the amount of leverage attached that can be attached to each issue is limited. Finally, a program is called *enforcement limited* if the entire commercial volume is conditioned on simultaneous compliance in multiple issue areas. These designs ensure that each issue is tied to a significant amount of commercial value, but enforcement of conditionality in one issue area can undermine the leverage in another area.

Section 4 will discuss real examples of each type of program. The single issue tied to commerce in support limited programs tends to benefit all or nearly all of society. For example, national security issues usually stand alone in economic sanctions programs because they benefit all of society. As discussed above, the GSP program as implemented by the United States exemplifies the enforcement limited programs. Finally, the leverage limited programs are well illustrated by most economic coercion programs that commit to reciprocity. For example, most trade agreements have a dispute settlement procedure which specifies the procedure for withdrawing tariff concessions in the event that another party to the agreement

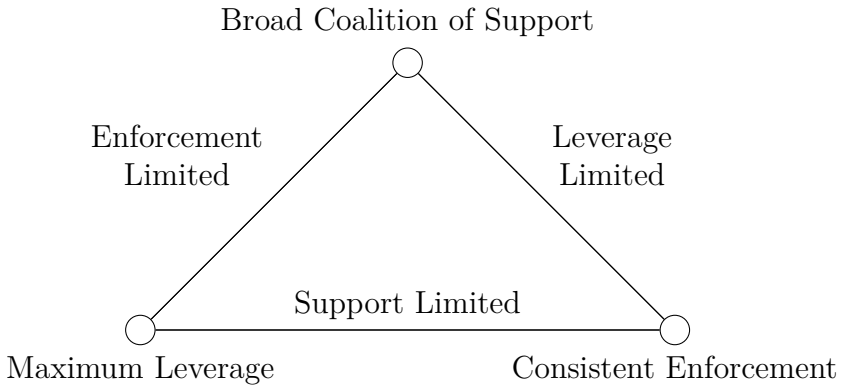

Figure 1: The economic coercion trilemma. Intermediate choices between the three pillars are also possible.

does not fulfill their commitments. Most of these procedures specify that any retaliation must be of "equal effect" to the value of the violation. The proportionality requirement ensures that the coercive retaliatory program will be leverage limited, since the maximum commercial value which can be used to incentivize compliance is bounded by the commercial value of the violation.

The economic coercion trilemma demonstrates that asymmetric dependence is necessary but not sufficient for a state to exert political influence using economic instruments. A long tradition of literature has understood the potency of economic coercion to be a direct consequence of asymmetric dependence on the gains from trade (Hirschman 1980; Baldwin 1985; Drezner 2003; Carnegie 2014). The logic is that whichever state values trade more highly would potentially be willing to offer political concessions to ensure its continuation. The theory has been productively applied to the study of economic sanctions (Hufbauer, Schott, and Elliott 1990; Pape 1997; Krustev and Morgan 2011; Morgan, Bapat, and Kobayashi 2014; Early 2015), aid conditionality (Svensson 2000; Carnegie and Marinov 2017), conditional lending from the World Bank and the International Monetary Fund (Vreeland 2006; Dreher, Sturm, and Vreeland 2009), and more. Recent work has generalized the logic by studying asymmetric dependence induced by the position of states in economic networks (Farrell and Newman 2019; Drezner, Farrell, and Newman 2021). The economic coercion trilemma

describes how political constraints can lead to design choices that undermine the effectiveness of the conditionality. These constraints could undercut the effectiveness of economic coercion even in the presence of asymmetric dependence on commerce.

The theory of the economic coercion trilemma explains the distinct roles of domestic and international politics in forming credible issue linkages. International trade negotiations are increasingly attempting to bolster commerce not only by removing trade barriers but also by coordinating regulations and institutions across borders (Lawrence 2000; Conconi and Perroni 2002; Maggi 2016). A literature has arisen to explain how some issues become tied to international trade (Sebenius 1983; Eichengreen and Frieden 1993; Huelshoff 1994; Lohmann 1997; Lacy and Niou 2004; McKibben 2010; Davis 2012; Lee 2020). Davis (2004) studied how international institutions facillitated credible linkages between tariff reductions in agricultural and non-agricultural sectors that led to the success of the Uruguay Round. Other scholars have explored whether policy convergence across states can be explained by the deeper integration of trade agreements (Dobbin, Simmons, and Garrett 2007; Dür, Baccini, and Elsig 2014; Jinnah and Lindsay 2016).[2] The literature has put special emphasis on the role of international institutions in enhancing the credibility of linkages by creating structures that "tie the hands" of the state, ensuring the linkage is enforced regardless of any future temptations to neglect it (Putnam 1988). The economic coercion trilemma shows how domestic interest groups can overstretch the state's influence by competing for the right to link their issues to a single commercial volume and for the right to enforce those linkages. Overstretching the state's influence erodes the credibility of its commitment to any single issue. Second, the trilemma shows how the target state's characteristics determine which issues can be linked through the mechanism of issue compatibility.

Finally, the trilemma introduces a new dimension of power in the theory of international bargaining (Schelling 1980; Mo 1995; Fearon 1998; Powell 2002; Tarar 2005; Leventoglu

[2]Scholars have also studied issue linkage in the realm of international security (Wiegand 2009; Poast 2012, 2013a, 2013b). This literature is also interested in understanding how issue linkage can serve as a commitment device.

and Tarar 2005; McKibben 2013, 2015). Outcomes in international bargaining are usually explained using the concept of resolve, or the willingness of a state to endure the costs of negotiation (Kertzer 2016). Issue linkage has most often been studied in this context as a mechanism for reducing the risk of bargaining failure – Poast (2012) even called issue linkage a special case of "side-payments" (see also Fearon 1995 on issue indivisibility). While one strand of the literature has previously suggested that linkage politics potentially enhance credibility, another argues that linking issues hampers credibility. Morrow (1992) proposes that linkages are issued from a position of weakness and signal a lack of resolve. Moravcsik (1998) is concerned that distributional consequences would render linkages impotent and merely symbolic. In a seminal work Tinbergen (1952) argued that each distinct policy goal should be targeted by a dedicated policy instrument, a principle which has become known as the Tinbergen Rule. Applied to the problem of economic coercion, the rule would imply that each program of conditionality target only a single political issue.

The economic coercion trilemma explains that, generally, tying multiple issues to a single trade volume creates conflicting enforcement incentives that undermine the program's influence, echoing the concerns of Moravcsik (1998). But the theory also reveals that there are cases where one single policy of economic coercion can efficiently influence a foreign state on multiple issues. If the trade volume is sufficiently valuable to the target, or if the target is unlikely to simultaneously violate a group of issues, then that group can be effectively combined in a program of economic coercion. A state that can "double dip" by using the same trade volume to exert influence in multiple issue areas is extracting influence from dependence more efficiently. States whose strategic circumstances facillitate multiple linkages can use economic coercion effectively even if they do not have large markets.

2 A Theory of Economic Coercion Program Design

Like all tradeoffs, the economic coercion trilemma is driven by scarcity. The maximum impact of withdrawing market access is limited by the total possible volume of commerce between the two states. It is simply impossible to withdraw trade that never would have occurred even in a world without trade barriers. The limited commercial volume creates a scarcity of political influence which ultimately must be divided among the interest groups vying to link their issues to trade. The state can choose whether this constraint will manifest as a competition for leverage or a competition for enforcement, but there is no way to escape the tradeoff completely.

I employ a two state and two issue formal model to explore the tradeoffs of the economic coercion trilemma. While two issues is sufficient to convey most of the model's intuition, the results can usually be extended to far more general circumstances. Readers interested in a version of the model that covers an arbitrary number of issues and significantly more general functional forms should consult Appendix E. In the simpler version, a sender state wishes to influence the policy choices of a target state on each of two issues. Policies α_j are set by the target in the unit interval and chosen separately for each issue $j \in \{1, 2\}$. The ideal points for the target and the sender are $\alpha_j = 0$ and $\alpha_j = 1$ respectively for all issues j. To encourage the target to comply with their preferred policy choices the sender state can punish the target by interrupting commerce between them. Both states value the gains from trade – exports and imports create economic value for both the target and sender, but the two states may value the gains differently, allowing for different degrees of asymmetric dependence. The target state will always choose $\alpha_j = 0$ unless doing so would result in too much lost economic value.

Let $\phi_j(\alpha_j) : [0, 1] \to [0, 1]$ be an **issue specific punishment function** for issue $j \in \{1, 2\}$ and compliance level α_j. Issue specific punishment functions ϕ_j are chosen by the sender state and compliance levels $\alpha_j \in [0, 1]$ are chosen by the target state. Issue specific punishment

functions represent how much economic value will be withheld as a function of the target's compliance with conditionality, and thus they must be nonincreasing (more compliance cannot result in more punishment). The **total punishment function,** which is the amount of economic value actually withheld, is defined as

$$\phi(\alpha_1, \alpha_2) = \min\{\phi_1(\alpha_1) + \phi_2(\alpha_2), 1\}$$

which is a simple sum of the punishment for the target's choice of compliance on each issue until all commerce is withheld, at which point the function takes its maximum value of 1.

The issue specific punishment function is a highly flexible representation of trade conditionality reflecting the wide variety of program designs employed by states. A brief comparison of the US GSP program and an analogous EU program can illustrate how real programs can be represented in the framework. As described in the Introduction, the US excludes states from program eligibility which do not take sufficient measures to protect intellectual property and labor rights. The analogous EU program, however, is limited to the protection of human rights. States can also be excluded from the EU's more generous GSP+ program if they violate conditionality on either human rights or on environmental protection. The issue specific punishment functions reflecting the US conditionality program could be $\phi_j(\alpha_j) = 0$ if $\alpha_j = 1$ and $\phi_j = 1$ if $\alpha_j < 1$ for $j \in \{1, 2\}$. These functions each remove all trade under the GSP for any amount of noncompliance on either issue. The EU's issue specific punishment function representing conditionality on environmental rights could be $\phi_1(\alpha_1) = 0$ if $\alpha_1 = 1$ and $\phi_1(\alpha_1) = k$ if $\alpha_1 < 1$ reflecting how beneficiaries lose k percent of their trade benefit by losing access to GSP+ if they do not fully comply with environmental protection. The function for EU conditionality on human rights could be $\phi_2(\alpha_2) = 0$ if $\alpha_2 = 1$, $\phi_2(\alpha_2) = k$ if $\rho < \alpha_2 < 1$, and $\phi_2(\alpha_2) = 1$ if $\alpha_2 < \rho$. The two steps in this function reflect how states which choose an intermediate level of compliance can be excluded from GSP+ while maintaining eligibility in the less generous basic GSP program. Some other possible issue specific punishment functions

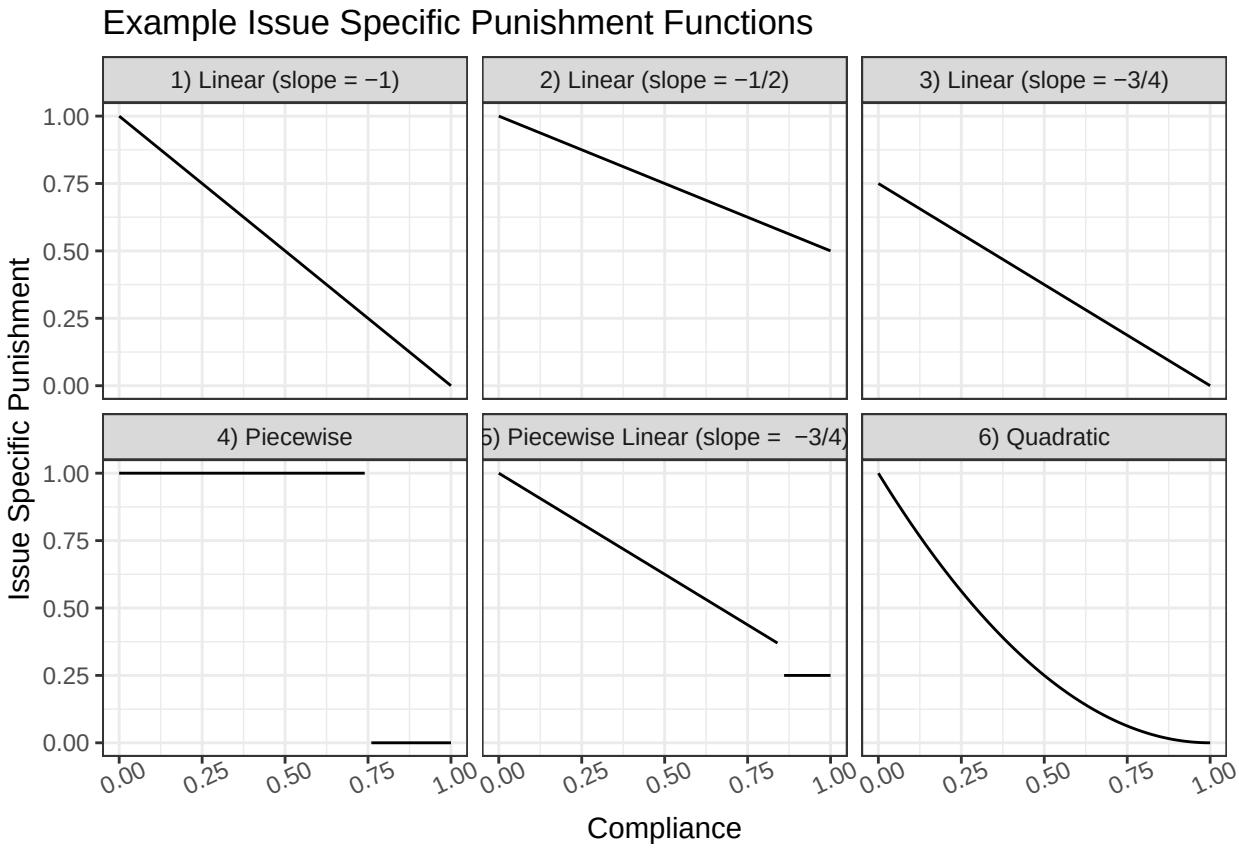

Figure 2: The only requirements on the issue specific punishment punishment functions $\phi_j(\alpha_j)$ is that the functions must 1) be nonincreasing in compliance and 2) map to the unit interval. Functions 1, 2, and 3 illustrate linear punishment functions where the total amount of trade tied to the issue varies. Function 1 rewards compliant behavior with full access to trade and punishes noncompliant behavior with zero trade. Functions 2 and 3 have different amounts associated with fully noncompliant and compliant behavior. In each of these cases less compliant targets are always punished more. Functions 4 and 5 illustrate discontinuities in the punishment schedule which correspond to strategies where trade is interrupted suddenly when the target crosses a compliance threshold. Function 6 illustrates a valid non-linear punishment schedule.

are depicted in Figure 2.

The remainder of the section discusses the costs and benefits of different choices under the trilemma. States are presumed to design programs that maximize their efficacy. Typically, maximizing efficacy over the long run requires balancing domestic interest groups, some of which are lobbying to expand the scope of conditionality and others which are lobbying to limit it. The most important structural variables determining the optimum tradeoff are 1) the nature of the interest groups whose issues are being tied to commerce, 2) degree of complementarity between the issues, 3) asymmetric dependence of the sender and target on the commercial flow, and 4) the target's domestic political institutions.

2.1 Broad Coalition of Support

Programs of conditionality have few natural allies. The distributional consequences of international commerce, especially trade policy, guarantee that trade conditionality will always displease at least one group. Importers will generally wish for conditionality to be replaced with free trade while import competers will generally wish to replace it with autarky.[3] One efficient way of forming a coalition that sustains trade conditionality is to offer interest groups the opportunity to link their issues to it. For example, if trade is made conditional on the protection of labor rights then representatives of the labor movement (especially the unions) have an interest in defending the policy despite its economic disadvantages.

A broad coalition of support raises the chances that trade conditionality will survive as policy. Conditionality is threatened when interests groups that previously supported the policy evolve new priorities. The process is natural and inevitable – all political coalitions evolve as the interests of their constituent groups evolve. For example, a policy of promoting labor rights through trade conditionality might be more attractive to labor rights activists

[3]For example, import competing firms may prefer that human rights violators continue to be sanctioned even if respect for rights improves because they benefit from trade protection. Firms that depend on imports may prefer free trade even if human rights violations continue unabated. The distributional consequences of trade policy are extensively analyzed in Stolper and Samuelson (1941), Dixit and Norman (1980), Rodrik (1995), and many others. The political implications of the distributional consequences of trade have been explored by Rogowski (1989), Hiscox (2001), Broz, Frieden, and Weymouth (2019), and many others.

when the labor share of traded goods and services is relatively high. If the support of labor rights activists for conditionality weakens then the program will come under pressure unless support can be buttressed with resources from another interest group. A diversified coalition has a better chance of withstanding these fluctuations. Programs of conditionality are more likely to endure when their coalition of support is broad because the policy's continuation is not predicated on the support of any one group.

The breadth of the coalition is relatively less important to the program's longevity when support is deep or stable over time. Here, the "depth" of support means the political weight of the interest groups, measured both in the number of people they represent and the intensity of their interests. These criteria are more likely to be met for issues that affect the interests of the entire society such as national security. Other issues are far more difficult to sustain in a program of conditionality without broadening the coalition of support. A strategy of keeping all tariffs high unless a trading partner lowers tariffs on fertilizer would benefit farmers but few others. Even if there there is enough support from farmers to sustain the strategy in the short run, it will likely be discarded in the future unless the issues of other interest groups are incorporated into the program.

The model in the main text will take the number of issues as given and will focus on either one or two issues. Each issue represents a different interest group having an interest in the conditionality. The role of a broad coalition in the economic coercion trilemma can be demonstrated by comparing programs with one issue to programs with two. The version of the model in Appendix E contains a more general framework that can accommodate an arbitrary number of issues.

2.2 Maximum Leverage

Interest groups can maximize their leverage by connecting as much trade as possible to the compliance of foreign states in their issue areas of concern. The objective behind seeking leverage is clear: better compliance can be achieved with better incentives. Interest groups

are always more motivated to link their issue to a commercial volume worth one hundred million dollars than to a volume worth one million dollars. Indeed, the amount of leverage determines both demand for issue linkage and the compliance of the target. Ultimately, in leverage limited programs the domestic interest groups must compete for the right to link their issue to any given dollar of commerce.

An issue specific punishment function regarding a particular issue j exhibits **maximum leverage** if $\max_{\alpha_j} \phi_j(\alpha_j) - \min_{\alpha_j} \phi_j(\alpha_j) = 1$. In other words, an issue specific punishment function exhibits maximum leverage if and only if the maximum possible economic value is tied to compliance. Note that the definition can be simplified: because α_j is restricted to the unit interval and ϕ_j must be nonincreasing, the maximum must be attained at $\alpha_j = 0$ and the minimum must be attained at $\alpha_j = 1$. Therefore, an equivalent formulation is $\phi_j(0) - \phi_j(1) = 1$. In words, this formulation says that 0% compliance is punished with a full withdrawal of economic value and 100% compliance is rewarded with full access to the economic volume. For example, the issue specific punishment function $\phi_j(\alpha_j) = 1 - \alpha/2$ does not exhibit maximum leverage. We see that $\phi_j(0) = 1$ and $\phi_j(1) = 1/2$, thus $\phi_j(0) - \phi_j(1) < 1$. By contrast the issue specific punishment function $\phi_j(\alpha_j) = 1 - \alpha_j$ does exhibit maximum leverage because $\phi_j(0) = 1$ and $\phi_j(1) = 0$. In more casual language, maximum leverage means that the sender is creating the maximum possible incentive for compliance on a particular issue.

My focus on "leverage," defined as the economic value attached to conditionality, might at first glance appear neglectful of the target's incentives at the margin. Initial intuition from the literature might presume that the degree of compliance should depend on marginal incentives, i.e. the economic losses resulting from an infinitesimal decrease in compliance. I do not dispute that the target will respond to marginal incentives. But in this interaction the marginal incentives are not always well defined because of potential discontinuities in the

total punishment function ϕ.[4] Instead of studying the marginal incentives, which frequently do not exist in many real world examples of conditionality, the analysis focuses on an upper bound of the marginal incentives: the total economic value tied to the issue. An increase in compliance cannot be rewarded with more economic value than would result from unrestricted commerce. Thus, the marginal incentives are bounded above by the total economic volume attached to conditionality on a particular issue. And this is why the maximum leverage property matters: issue specific punishment functions that exhibit maximum leverage have no artificial restrictions on the marginal incentives that can be used to encourage compliance from the target.

Although the behavior of the interest groups occurs outside the model, it is still important to discuss their incentives and explain why they would find maximum leverage to be desirable. Interest groups have little reason to be satisfied with linkages to only a fraction of the available commerce. Of course it is possible to demand too much – sometimes the target might only be willing to fulfill a more modest demand. But unless additional demands would cause the target to reject all compliance, an interest group would always wish to maximize the commercial volume tied to their issue. An interest group may not be willing to reduce its demands even if they are rejected by the target. Why should the interest group reduce their leverage, and not some other interest group whose issues are also tied to conditionality? No group wants to be the one that must reduce their demands to elicit the target's compliance.

Competition among interest groups for leverage is a core characteristic of any leverage limited program. In a leverage limited program no dollar of commercial value can be tied to more than one issue. Therefore, interest groups compete to add additional value to their conditionality. Competition for leverage generally occurs at the moment of the program's design when the punishments for noncompliance are being specified. In the case of

[4]For example, derivatives of the issue specific punishment function

$$\phi_j = \begin{cases} 0 & \text{if } \alpha_j < 1 \\ 1 & \text{if } \alpha_j = 1 \end{cases}$$

would be completely uninformative about the target's incentives where they exist.

international trade, interest groups are often competing for the right to withdraw market access for specific products as punishment for noncompliance. Interest groups succeed by influencing the policymakers who decide how products and issues will be paired. Thus, the competition is found and won in the legislating institutions that govern program design. Interest groups with influence in the legislation process would favor this form of competition.

2.3 Consistent Enforcement

The property of consistent enforcement describes the cross-issue spillovers from decreases in compliance. Formally, a total punishment function exhibits **consistent enforcement** if and only if, for all issues j, $\max_{\alpha_j} \phi(\alpha_1, \alpha_2) - \min_{\alpha_j} \phi(\alpha_1, \alpha_2)$ is not increasing in α_i where $i \neq j$. In more casual language, enforcement is consistent unless reducing compliance in some issue area also reduces the leverage applied to some other issue area. For example, the total punishment function $\phi(\alpha_1, \alpha_2) = \min\left\{2 - \frac{\alpha_1}{2} - \alpha_2, 1\right\}$ does not exhibit consistent enforcement.[5] Inconsistent enforcement means that the target might be able to reduce its costs of noncompliance on issue j by choosing to reduce its compliance on some issue i (unless the sender chooses not to enforce conditionality on issue i). For example, expelling a state that violates labor rights from the GSP would remove its incentive to protect intellectual property rights.

It is important to note that inconsistent enforcement only becomes a problem when the conditionality needs to be enforced. A target may find that compliance in both issue areas is preferable even though they face an inconsistently enforced total punishment function. Again, it is useful to keep in mind that the economic value attached to conditionality is an upper

[5] A short calculation illustrates the point. From the definition for $j = 1$:

$$\begin{aligned}\max_{\alpha_1} \phi(\alpha_1, \alpha_2) - \min_{\alpha_1} \phi(\alpha_1, \alpha_2) &= \max_{\alpha_1} \left(\min\left\{2 - \frac{\alpha_1}{2} - \alpha_2, 1\right\}\right) - \min_{\alpha_1} \left(\min\left\{2 - \frac{\alpha_1}{2} - \alpha_2, 1\right\}\right) \\ &= \min\{3/2 - \alpha_2, 1\} - \min\{1 - \alpha_2, 1\} \\ &= \begin{cases} 1/2 \text{ if } \alpha_2 > 1/2 \\ \alpha_2 \text{ if } \alpha_2 \leq 1/2 \end{cases}\end{aligned}$$

which is an increasing function of α_2 over a subset of its domain ($\alpha_2 \leq 1/2$).

bound on the marginal incentives faced by the target. The source of the strategic problem in enforcement limited designs (where commerce can be attached to multiple issues) is their own success at influencing the target's behavior. The reason why a state would hesitate to enforce conditionality on some issue is because it might sabotage its influence on another issue. The paradox of self-defeating success is a consequence of enforcement limited economic coercion.

Consistent enforcement and the sender state's reputation for credibility are intricately linked. All programs of economic coercion represent a double commitment – a promise to reward compliant behavior and a threat to punish noncompliant behavior. Enforcement limited programs create temptations to selectively enforce these commitments because states can sometimes preserve influence on one issue by refusing to enforce conditionality on another. States that succumb to the temptation of selective enforcement are violating a prior commitment and potentially damaging their reputation for following through on commitments. The importance of credibility to relative power in international bargaining is well established in the literature (Powell 2002; Kertzer 2016). Bargaining is only possible when commitments are believable, so states that can more easily make believable commitments are negotiating from a stronger position (Putnam 1988; Fearon 1994, 1995).

It is not necessarily the case that all enforcement limited programs will threaten the state's reputation. Some states have institutional arrangements which bolster their ability to resist the temptation to abrogate their commitments. For example, Fearon (1994) discusses how audience costs in democracies can increase the credibility of their commitments because their leaders are electorally accountable for any reversals. It is entirely possible that states endowed with legal and political institutions that facillitate credible commitments will embrace enforcement limited programs knowing that they will fully enforce the conditionality even if it means losing leverage. In that case, inconsistent enforcement does not threaten the state's credibility, but it does threaten the efficacy of the economic coercion program.

The strategic interaction between domestic interest groups depends on the program's location wtihin the economic coercion trilemma. Interest groups compete for the right to

enforce their conditionality when a program design is enforcement limited. By punishing a state for noncompliance on one issue, the program surrenders the opportunity to reward states for compliance on other issues. For example, the enforcement of intellectual property rights conditionality under the GSP removes the incentive to comply with labor rights conditionality. In general, interest groups compete to ensure that their issue's conditionality is the one which is being enforced. This competition occurs *ex post* at the moment of enforcement rather than *ex ante* at the moment of program design. Different interest groups could be better situated to compete at the enforcement stage – for example, some interest groups might have better access to the bureaucracy (You 2017). Competition over enforcement rights is continuous because the right to enforce must be contested whenever noncompliance is detected.

3 Making Tradeoffs Under the Trilemma

At this point it is possible to formally establish the economic coercion trilemma. The formal statement is given in Theorem 1 and the proof is found in Appendix A.1. The theorem describes the precise sense in which maximum leverage and consistent enforcement are incompatible – unless only one issue is tied to the conditionality, achieving one objective precludes the achievement of the other. The trilemma is a consequence of the fixed volume of commerce available to the sender acting as a "budget constraint" of political influence on the target. The remainder of this section explores what conditions would cause a sender state to prioritize one objective over another. There are two main factors: the degree of asymmetric dependence and issue compatibility.

Theorem 1 (Economic Coercion Trilemma) *Every issue specific punishment function which exhibits maximum leverage is also part of an inconsistently enforced total punishment function unless there is only one issue tied to conditionality.*

3.1 The Risk-Reward Tradeoff

What makes consistent enforcement a desirable property? Put simply, inconsistent enforcement increases the fragility of the target's compliance. It does this by creating the possibility that the target might be able to reduce its costs of noncompliance on issue j by choosing to reduce its compliance on some issue i. However, there can be advantages to enforcement limited strategies as well. Targets which are especially averse to the costs of punishment might choose a higher degree of compliance when more economic value is tied to conditionality. Thus, the inconsistent enforcement property is polarizing in the sense that 1) targets might be less inclined to comply when confronted with these incentives and 2) targets that do comply will provide a higher degree of compliance.

Proposition 1 *If the total punishment function is not consistently enforceable and the target's utility function is additively separable then the target's optimum level of compliance on issue i is an increasing function of its compliance on other issues j.*

The precise statement is contained in Proposition 1. The proof, which explores the total punishment function as a submodular function, is provided in Appendix B.[6] The intuition of the result is that inconsistent enforcement creates complementarities in noncompliance that encourage the target to choose either full compliance on all issues or zero compliance on all issues. In other words, inconsistent enforcement polarizes the compliance of the target.

The following example illustrates the core properties of consistent enforcement more concretely for specific functional forms. Consider two total punishment functions shown in (1) and (2). Note that ϕ and γ differ only in the fraction of trade that can be used to incentivize compliance on issue 1. And yet ϕ is consistently enforceable over the entire domain while γ is not consistently enforceable for $\{\alpha_1, \alpha_2 : \alpha_1/2 + \alpha_2/2 < 1/2\}$. Consider a target state having

[6]The general strategy of the proof is to show that 1) the total punishment function is strictly submodular wherever the sum of the issue specific punishment functions is greater than one, 2) subject to some assumptions, the target's utility function is supermodular over that domain, and 3) by the Topkis theorem there are cross-issue complementarities in compliance where the target's utility function is supermodular.

Sender choice	Target response α_1^*	Target choice α_2^*
ϕ	$\frac{2}{3a_1}H(1, a_1, a_2)$	$\frac{2}{3a_2}H(1, a_1, a_2)$
γ	$\frac{1}{a_1}H(1, a_1, a_2)$	$\frac{1}{a_2}H(1, a_1, a_2)$

Table 1: The target's optimal compliance choices for γ and ϕ.

utility $U_t(\alpha_1, \alpha_2; h) = -\frac{a_1}{4}{\alpha_1}^2 - \frac{a_2}{4}{\alpha_2}^2 - h(\alpha_1, \alpha_2)^2$ where $h \in \{\phi, \gamma\}$ and a_i are positive real coefficients determining the weights on the two issues relative to the pain of lost economic surplus (coefficient 1 on h).[7]

$$\phi = \min\left\{\frac{1}{2} - \frac{\alpha_1}{2} + \frac{1}{2} - \frac{\alpha_2}{2}, 1\right\} = \min\left\{1 - \frac{\alpha_1}{2} - \frac{\alpha_2}{2}, 1\right\} \tag{1}$$

$$\gamma = \min\left\{1 - \frac{\alpha_1}{2} + \frac{1}{2} - \frac{\alpha_2}{2}, 1\right\} = \min\left\{\frac{3}{2} - \frac{\alpha_1}{2} - \frac{\alpha_2}{2}, 1\right\} \tag{2}$$

How will such a target respond to the incentives of the program of economic coercion? The target will choose α_1 and α_2 to maximize their utility given the consequences of being punished according to ϕ or γ. The target's optimal compliance choices when facing ϕ and γ are calculated in Appendices C.1 and C.2 and the results are given by the results in Table 1. where H is the harmonic mean. Recall that the harmonic mean is equal to the weighted arithmetic mean with weights $(1/x_i)/(\sum_j 1/x_j)$. In other words, when facing ϕ the optimal level of compliance is about 2/3 of the harmonic average of the weights on each component of the utility function. Also, compliance is decreasing in the weight associated to that issue. Note that the optimal choice of compliance on one issue is decreasing in the compliance of the other. The target effectively has a "budget constraint" of economic value defined by ϕ which is divided across compliance on two issues. The target chooses the optimal compliance vector by shifting along this negatively sloped budget constraint.

As discussed previously, the target will never choose full noncompliance on both issues when the total punishment function is ϕ. Some positive amount of compliance is always

[7]The division by 4 simplifies the arithmetic but has no effects on the analysis beyond rescaling the units.

preferred because there is always a marginal incentive to comply for both issues. However, when the total punishment function is γ this is no longer true. After a certain point the sender has exhausted all its leverage and it cannot withdraw any more economic value. At this point the marginal incentive to continue complying has evaporated and the target will cease to comply. As shown analytically in Appendix C.2, the target chooses total noncompliance on both issues for values of a_1 and a_2 satisfying $4/3 < H(1, a_1, a_2) < 2$. In this region it is feasible for the target to choose the interior solution, but the target can get more utility from exploiting the complementarities of noncompliance. This region exhibits what I have called the "paradox of self-defeating success." For $4/3 > H(1, a_1, a_2)$ the target chooses the interior solution, meaning that they prefer to comply some amount on both issues. When they do choose compliance on both issues, the target chooses more compliance under γ than they would have under ϕ. Finally, when $H(1, a_1, a_2) > 2$ the target is at a boundary solution and chooses zero compliance because the needed compliance vector is not in the feasible set.

Of course, we would not expect the sender to actually use a punishment function resulting in full noncompliance. Doing so would mean accepting the costs of sanctions without receiving any concessions. Therefore, the function γ would never be observed as a strategy if the target would choose zero compliance. But γ might be chosen if the sender could choose to "look the other way" and ignore noncompliance in one issue area to maintain its leverage on other issues. To other states, this behavior would amount to hypocrisy where the sender state says they care about an issue at one time period but then abandon it later for strategic reasons. While Krasner (1999) has argued hypocrisy can communicate power by demonstrating that the state is above international norms, it could also undercut power by reducing credibility.

3.2 Asymmetric Dependence

This subsection identifies a sufficient condition for the existence of an enforcement limited strategy that elicits full compliance under conditions of asymmetric dependence. Put simply, it will be possible to extract full compliance using an enforcement limited strategy if the target

values the economic relationship significantly more than it values its policy autonomy. Strictly speaking, the condition describes absolute dependence rather than asymmetric dependence because the sender's utility does not come into play.[8] The proof appears in Appendix D.

Proposition 2 (Asymmetric Dependence) *Let* $\bar{U} = \max_{\alpha_1,\alpha_2} U_t(\alpha_1, \alpha_2; \phi)$ *s.t.* $\phi(\alpha_1, \alpha_2) = 1$ *be the highest utility the target can attain given the maximum possible punishment. Also, let* $\underline{U} = \max_{\alpha_1,\alpha_2} U_t$ *s.t.* $\phi(\alpha_1, \alpha_2) = 0$ *be the highest utility the target can attain given minimum possible punishment. If* $\bar{U} < \underline{U}$ *then there exists a leverage limited strategy that elicits full compliance.*

The proposition confirms that a target who values market access enough to clear a certain threshold would comply fully with an enforcement limited program of coercion. The threshold, which is sufficient but not necessary, is that the target must be willing to make full concessions on both policies to avoid a total loss of market access. Such a target would never risk the loss of its foreign markets to achieve a better outcome in one policy domain. Importantly, it does not matter what preferences the target has over other all other compliance choices and punishments. In particular, the rate at which the target is willing to substitute compliance for market access does not matter as long as the above condition holds. The result partially explains why states that depend heavily on the global economy are vulnerable to coercion. In addition to having more ability to pressure the target into making concessions on a single issue, the target's dependence on trade also helps the sender avoid the paradox of self-defeating success.

3.3 Issue Compatibility

Two issues are called compatible if a target which is noncompliant on one issue is unlikely to be noncompliant on the other. Issue compatibility increases the potency of enforcement

[8] That being said, the sender's utility function would be important in a model where the credibility of their commitment to the punishment function were not assumed. The sender must stand to gain more than the target from "winning" the negotiation in order for threats to be credible. See Eaton and Engers (1992) for a detailed analysis.

limited strategies. As discussed in an earlier section, enforcement inconsistency only leads to the paradox of self-defeating success when noncompliance on one issue reduces the incentives to comply on some other issue. A corollary of the argument is that a target which is unlikely to be simultaneously noncompliant in multiple issue areas would be more susceptible to enforcement limited strategies. For example, consider a program of economic coercion that threatens to withdraw all market access from a target state if it either 1) pegs its currency to gold or 2) pegs its currency to silver. In this case, it would be impossible for the target to peg its currency entirely to both gold and silver – these are distinct commodities whose prices do not always move together.[9] Thus, there is no enforcement inconsistency because the target cannot threaten simultaneous noncompliance. Punishing the target for noncompliance on one issue does not reduce the target's incentives to continue compliance on the other, since the target would never want to choose simultaneous noncompliance.

Issues might be compatible for a variety of reasons. It could be that the target's preference is simply to choose noncompliance on one of two issues but it has no preference over which. For example, it could be that the target state is subject to multiple domestic pressures, one encouraging compliance on both issues and one preferring noncompliance, and the state wishes to take the middle ground. Or it could be that the type of state which might prefer noncompliance on one issue is predisposed to compliance on another. For example, the states that produce greenhouse gas emitting products such as oil and coal tend not to be the ones that consume them. Thus, the issues of oil/coal consumption and production are probably compatible and can be conditioned on the same commercial volume.

To illustrate how issue compatibility can play a role in facillitating enforcement limited strategies I return to the example from the previous section with one modification: now we assume that the weights a_1 and a_2 are random variables drawn from the known joint distribution $F(a_1, a_2)$. This setup could be interpreted to mean that the sender is attempting to influence an entire population of targets using one program of economic coercion, or that

[9]Of course it would be possible to peg a currency to a basket of gold and silver prices, but this would be permitted by the hypothetical program.

the sender does not know the weights for a particular target. Appendix D.1 analyzes the case where a target having utility function $U_t = -\frac{a_1}{4}\alpha_1^2 - \frac{a_2}{4}\alpha_2^2 - h(\alpha_1, \alpha_2)^2$ faces the enforcement limited total punishment function $h = \gamma$ chosen by the sender. The analysis demonstrates how the probability of the target choosing full compliance is decreasing in the correlation of a_1 and a_2.

The concept of issue compatibility presents a criterion for evaluating which political issues can be bundled. Compatible issues are less likely to trigger the paradox of self-defeating success when bundled in a program of economic coercion. The literature has previously said relatively little about why some issues are more likely to be linked than others. Compatible issues are easier to bundle credibly because the sender is unlikely to need to choose between enforcing one or the other.

4 Applications

In this section, the economic coercion trilemma is applied to three issues in the international political economy of trade. While the trilemma can be applied to any program that ties a fixed commercial volume to compliance, this section focuses on applications to international trade due to two factors. First, bargaining outcomes are more observable because the text of trade agreements are ultimately disclosed to the public. Second, international trade is known to be one of the most important policies for the study of international economic coercion.

However, the economic coercion trilemma applies more widely than the issues discussed in this section. Three additional examples demonstrate the prevalence of designs with inconsistent enforcement incentives. In each of these cases a fixed amount of economic value is conditioned on the simultaneous fulfillment of multiple criteria. Each case exhibits the paradox of self-defeating success: enforcement of conditionality in one domain reduces influence in another. First, the US Trade Representative tied four political issues to billions of dollars of trade during the US-China Trade War. Second, when she ran for President in

2020 Senator Elizabeth Warren (D-MA) proposed that the United States refuse to sign trade agreements with any state that did not meet a list of nine pre-conditions.[10] In both cases, the requirement of simultaneous compliance as a precondition for the end of tariffs makes this an example of an enforcement limited strategy.

Third, the Maastricht Treaty lists four convergence criteria that states must fulfill before they can join the Eurozone. The Maastricht Treaty requires that before entering the Eurozone states must have a stable exchange rate and sufficintly low inflation, government debt burdens, and long-term interest rates (European Union 1992, Article 109j). The design may have contributed to problematic outcomes. In 2004 it was revealed that Greece had misrepresented its economic data sufficiently seriously to call its compliance with the Maastricht Treaty into question. Two of the four provisions were considered to have been affected – Greece had partially complied with the conditionality (Carassava 2004). Revealing the paradox of self-defeating success, the European Commission chose not to expel Greece from the Eurozone in spite of the revelations. Greece later became a major vulnerability for the Union's financial health during the Euro Crisis. The link between the original decision not to punish the deception and the eventual crisis is not necessarily straightforward (see Pisani-Ferry 2011 for a discussion of the link).

4.1 The Generalized System of Preferences

The economic coercion trilemma has shaped the development of the GSP throughout its history. Initially, the GSP was not conditional on domestic policy at all. Whether out of a sense of global worker solidarity or material self-interest, in the 1980s US labor unions

[10] In its report under Section 301 of the Trade Act of 1974 the US Trade Representative listed the four issues as the forced transfer of intellectual property to Chinese firms, non-market pricing for technology products, government direction of Chinese technology exports, and Chinese government support of cyberattacks (Office of the United States Trade Representative 2018). Senator Warren's proposal would have required that all trade agreements be signed with states that recognize and enforce the core rights of the International Labor Organization, uphold internationally recognized human rights, uphold religious freedom, comply with the Trafficking Victims Protection Act, be a party to the Paris Agreement, eliminate domestic fuel subsidies, ratify the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, comply with tax treaties signed with the US, and not appear on the Department of Treasury's monitoring list for currency manipulation (Warren 2019).

pushed the government to make GSP membership conditional on support for labor rights.[11] But the support of unions was not enough to overcome the objections of import competing industries who wanted the program ended entirely. The design was support limited and a broader political coalition was necessary. The support of export oriented firms was secured by making GSP membership additionally conditional on the protection of intellectual property rights, thereby creating a robust coalition that could sustain the program.[12]

The introduction of intellectual property rights conditionality presented the program's architects with a choice. One option would be to divide the benefits of GSP membership across the two policies. For example, tariff discounts on some fraction of the products covered by GSP could have been associated with labor rights protections alone and the remainder could be conditional on intellectual property rights protections. In this case, the enforcement of conditionality with respect to any single issue would always be neutral to the interests of the program's other domestic constituents. As long as all issues are assigned nonoverlapping fractions of the trade value, the withdrawal of the discounts associated with labor rights would never erode the incentives to continue protecting intellectual property rights. However, dividing the benefits of the GSP across the issues would mean reducing the trade volume tied to respect for labor rights. Under this leverage limited scenario, the unions and the export oriented firms would be in competition for the right to tie each dollar of trade under the GSP to their issue.

The only other option available to the architects of GSP conditionality would be to let eligibility be entirely conditional on respect for both intellectual property rights and labor rights. This choice would have resolved the competition for leverage, but at a potentially steep cost. Specifically, enforcement of conditionality against a noncompliant state on either

[11]The history of the GSP labor rights amendment is given by Congressman Don Pease (D-OH), the congressman who led the legislative effort, in Pease and Goold (1985). One explanation for why the unions were willing to support trade liberalization under the GSP program is that their concerns about jobs being offshored to low wage markets were somewhat mitigated by the workers' rights conditionality.

[12]Drahos and Braithwaite (2002) describe in Chapter 6 how pharmaceutical firms organized themselves to pressure the US government to make trade conditional on robust intellectual property enforcement. They argue that adding the intellectual property issue was crucial to renewing the GSP authorizing statue over the objections of protectionist interests.

issue would necessarily undermine leverage over the other policy dimension. Expelling a state from membership due to labor rights violations would remove that state's incentives to respect intellectual property rights – having already been fully removed from the program for labor rights violations, why should the state continue to protect intellectual property rights? Anticipating a loss of influence, the export oriented firms might seek to prevent the enforcement of labor rights conditionality in that case. Under this enforcement limited scenario, the US domestic interest groups are in competition for the right to enforce conditionality on their issue of concern.

In the specific historical case of the GSP, both interest groups were ultimately allowed to tie all the benefits of GSP membership to compliance. The designers effectively decided that competition between interest groups over enforcement was preferable to competition over leverage. The arrangement has generally not caused major problems. Indeed, states will generally choose program designs that minimize the problems they are most likely to encounter. In the case of the GSP, I argue that the issues of labor rights and intellectual property rights were combined in a single program because they are enforcement compatible, meaning that the states at risk of meaningfully violating one issue are different from the states at risk of violating the other. Therefore, it is rarely the case that domestic interest groups have conflicting enforcement incentives – enforcing the conditionality on one issue rarely means that compliance will deteriorate in the other domain. Problems resembling Chile's readmission into the GSP, where different interest groups are pushing for opposite enforcement decisions, are infrequent enough that they do not justify splitting leverage across the two issues.

4.2 Bilateral Trade Agreement Negotiations

The trilemma constrains the strategies that trade negotiators can deploy to secure concessions. Trade agreements consist of contingent concessions – each state offers tariff concessions conditional on receiving certain concessions from the other state. Although the choice to

engage in negotiations is typically considered a form of cooperative politics, the actual negotiation is an example of trade conditionality to the extent that negotiators attempt to use market access as leverage to extract concessions. This section will interpret trade agreement negotiations as an example of trade conditionality through the lens of the trilemma.

The literature traditionally understands preferential trade agreements as examples of interstate cooperation – states choosing to put aside their protectionist inclinations and lower their trade barriers so they can enjoy the mutual gains from trade (Mansfield, Milner, and Rosendorff 2002; Mansfield, Milner, and Pevehouse 2005; Dür, Baccini, and Elsig 2014; Dür and Elsig 2015). While the choice to enter into negotiations might be described as cooperative, economic coercion can occur during the negotiation process. Negotiators use market access as leverage in the negotiations by offering to lower trade barriers on some products in exchange for lower barriers on other products.[13] Even more starkly, negotiators may threaten to abrogate an agreement unless the partner agrees to implement certain regulations on issues which may or may not be trade-related. Implicitly, negotiators are conditioning the opening of their markets on the compliance of their partner on either a trade or non-trade related issue. While states do sign trade agreements willingly, the division of the gains is still subject to bargaining.

A trade agreement is only politically viable if any political opposition can be overcome by a sufficiently influential coalition of supporters. As with any trade policy, trade agreements have distributional consequences, so agreements always have a group of natural supporters and a group of natural opponents. The coalition of supporters is broadened by adding products to the agreement. The idea that interest groups can be converted from opposition to support by combining unfavorable policy with additional favorable provisions has gathered substantial empirical support. Indeed, Schattschneider (1935) showed that the Smoot-Hawley Tariff of 1930 became aggressively protectionist because congressmen were willing to withdraw their opposition to such a high tariff bill as a whole in exchange for even higher tariffs

[13]For an illuminating account highlighting the role of bargaining during negotiations from a trade negotiator, see Grozoubinski (2018).

on specific products that benefitted their district.[14] The same principle applies to trade agreement negotiations, but the interest groups are exporters rather than import competers. For example, dairy farmers would be more enthusiastic to support a trade agreement that included lower tariffs on milk. By making the agreement conditional on product specific concessions the negotiators can garner support from political groups who would have otherwise been indifferent or even opposed to further trade liberalization.

Once the negotiators have decided to prioritize concessions in two or more issue areas they face a crucial choice. An enforcement limited strategy would refuse to sign an agreement at all without prespecified concessions on every prioritized issue area. This strategy, which in the context of a trade negotiation is tantamount to an ultimatum, prioritizes achieving a deal with deep concessions at the risk of achieving no deal at all. A leverage limited strategy would gradually offer concessions of proportional significance to the concessions made by the the other side. This strategy raises the probability of achieving a deal at the cost of the depth of the eventual concessions. Different domestic institutions determine the relative importance of these competing priorities.

As discussed in Section 2.3, the enforcement limited strategy might have insufficient credibility. For example, imagine if the USTR threatened not to sign an agreement with Canada unless Canada reduced barriers to 1) its dairy market and 2) its poultry market.[15] If the value of prospective US concessions does not motivate Canada to make concessions in its poultry market then there will be no deal. However, if Canada would be willing to make concessions in its dairy market but not in the poultry market then the USTR is leaving value on the table by refusing to sign without poultry concessions. The threat to withhold concessions over poultry is not believable because spurning the deal when concessions on dairy are feasible is not in the interests of the USTR. In this example, enforcing the conditionality by refusing to sign a deal without poultry concessions means that the US loses the opportunity

[14]For more detail on the log-rolling politics of Smoot-Hawley, see Irwin and Kroszner (1996), Irwin (1998), and Irwin (2017).

[15]Access to the Canadian dairy market was a major issue in the US Mexico Canada Agreement (USMCA). See O'Keefe (2020) for an account of their importance from a representative of the US dairy industry.

to use its barriers to trade as leverage to obtain concessions on dairy. The alternative strategy would be for the USTR to withhold concessions on certain products unless Canada makes concessions on dairy and to withhold concessions on other products unless Canada makes concessions on poultry. This strategy permits the credible and simultaneous enforcement of conditionality – enforcing conditionality with respect to poultry does not undermine leverage with respect to dairy.

In the context of a trade agreement maximum leverage is being exerted when each concession is tied to the maximum possible trade value. For example, if the USTR threatened to abrogate the entire deal unless Canada makes concessions in both the poultry and dairy markets then the maximum value of US concessions is tied to both products. This strategy maximizes the monetary incentive tied to each concession target. The alternative is to split the US concessions across products. For example, the USTR could threaten to withhold concessions on automobiles unless Canada makes concessions on dairy and threaten to withold concessions on other agricultural products unless Canada makes concessions on poultry. This strategy of splitting concessions across products does not exert maximum leverage. US poultry exporters would prefer the USTR to hold up concessions on both agriculture and automobiles unless Canada concedes on poultry. Canada might not be willing to concede on poultry if the concession is only tied to agriculture, but it might be willing to concede on poultry if the concession is tied to agriculture and automobiles.

Virtually all trade agreements require a broad coalition of support to earn political viability. In general, the groups harmed by trade liberalization tend to be highly politically organized because they tend to be highly geographically concentrated, relatively few in number, and tend to suffer large negative economic consequences (Busch and Reinhardt 1999; Alt and Gilligan 1999; Kim 2017). Therefore, viable trade agreements require broad product coverage to form a large enough coalitions to overcome opposition. Tying more products to conditionality raises the incentives to comply, but if the state loses leverage when enforcing its conditionality then the threats can become less enforceable and therefore less believable,

less effective, or both. States can preserve consistent enforcement by breaking cross-product linkages, but doing so reduces the volume of trade tied to any single product.

4.3 Multilateral Trade Agreement Negotiations

International institutions can also trade negotiations by affecting the economic coercion trilemma. The Uruguay Round negotiations are an important example that shows how international institutions can change the tradeoff between enforcement and leverage limited strategies. Unlike previous negotiations, the Uruguay Round was formally considered to be a *single undertaking*, meaning that all concessions had to be jointly approved or rejected. As shown by Davis (2004), the institutionalized rule made it possible for Japan and the EU to make concessions in the agricultural sector by linking concessions in agricultural and non-agricultural sectors.[16] Seen through the lens of the economic coercion trilemma, the single undertaking forced states to pursue a enforcement limited negotiation strategies. The leverage of agricultural concessions alone was insufficient to motivate Japan and the EU to make agricultural concessions – progress required the addition of non-agricultural concessions to the agenda. As an institutionalized rule of the negotiation, the single undertaking ensured that no state could defect from an enforcement limited strategy in the service of other objectives, ensuring that Japan and the EU were put under maximum pressure to liberalize.

Why did the single undertaking in the Uruguay Round not undermine the credibility of cross-sectoral linkages? The economic coercion trilemma would predict that a state pursuing an enforcement limited design might have limited credibility. By contrast, Davis (2004) argues that the single undertaking at the Uruguay Round negotiations enhanced the credibility of cross-sectoral linkages by preventing states from decoupling sectors. These two theories are reconciled because Japan and the EU had a high value for the agreement. In this example, Japan and the EU were willing to make concessions in the agricultural sector in order to

[16] Japan and the EU valued the non-agricultural concessions highly enough that they were willing to make concessions in the agricultural sector to avoid losing the agreement. Without the single undertaking Japan and the EU could have carved the agricultural sector out of the agreement as they had done in previous multilateral negotiations. See Davis (2004) for additional details.

preserve the agreement and the concessions of other states in non-agricultural sectors.

An implication of this analysis is that the single undertaking could undermine the credibility of cross-sectoral linkages when trade liberalization is less valuable. In fact, the economic coercion trilemma may have contributed to the failure of the Doha Round negotiations. After the success of the single undertaking in the Uruguay Round, the subsequent Doha Round was also designed to be a single undertaking. And yet the Doha Round has failed to produce any meaningful agreements after nearly two decades of negotiations. While many factors which contributed to the ultimate failure of the negotiations, most analysts blame the agenda's inclusion of the Singapore issues (Evenett 2007). These issues, which covered how trade should be regulated with respect to government procurement, facillitation, competition, and investment, were prioritized by developed states.

Why were the possible gains from additional trade liberalization insufficient to overcome the resistance to tackling the Singapore issues? In the Uruguay Round, the single undertaking ensured that Japan and the EU could not access tariff reductions in non-agricultural sectors without making concessions in their agricultural sectors. In the Doha Round, average tariffs were significantly lower at the start of the negotiations. Thus, the potential gains from liberalization for developed states were smaller. They were arguably too small to overcome resistance to additional concessions without settling thornier points such as the Singapore issues.

While Japan and the EU found it worthwhile to make concessions in the agricultural sector in order to preserve the Uruguay Round agreement, the same is not true of the Doha Round. The developed states resisted liberalizing agricultural sectors because the gains from liberalization in non-agricultural sectors are no longer sufficiently enticing.[17] The substantial concessions made in the Uruguay Round mean that the available gains from lowering tariffs are smaller. Thus, there are smaller incentives to the developed states to address thornier

[17]For a thorough analysis of the challenges facing the Doha Round see Baldwin (2016). Baldwin develops the idea, among other arguments, that developing states had insufficiently large markets to incentivize further liberalization from the developed states.

areas such as the Singapore issues in the Doha Round.

Without the single undertaking, perhaps it would have been possible to carve the difficult issues out of the agreement. In the language of the trilemma, the negotiators could have converted to leverage limited rather than enforcement limited strategies. But the strongly institutionalized nature of the single undertaking within the Doha Round negotiation framework prevented this course of action. Instead, states have turned to preferential trade agreements to liberalize non-agricultural sectors on a bilateral or plurilateral basis while the Doha Round, where the difficult issues are inexorably linked to the areas where progress is possible, has languished.

5 Conclusion

Although the use of economic coercion is commonplace, states have chosen to implement conditionality using a wide variety of program designs. Some programs, such as the US GSP, condition market access on simultaneous compliance with conditionality in multiple policy areas. Others, including most trade negotiations, attach only a fraction of the market value to each issue area subject to conditionality. This paper explains the diversity of program designs as a consequence of how different sender states choose to navigate an underlying economic coercion trilemma. No program of economic coercion can simultaneously 1) secure a broad coalition of support for conditionality from multiple interest groups whose issues are linked to trade, 2) tie the maximum trade value possible to each issue, and 3) guarantee the program's consistent enforcement across issues. States with different institutions, preferences, and political environments will make the tradeoff differently, leading to the wide variety of program designs. The "budget constraint" that generates the trilemma is the fixed economic value available as a bargaining chip to the sender state.

What factors determine how sender states navigate the trilemma? I find that states which are willing to accept less compliance from the target in return for less fragile influence are

more likely to prioritize consistent enforcement. I also find that consistent enforcement is relatively less important for states whose targets are highly dependent on trade. Finally, I find that compatible issues, or issues chosen so that the target is unlikely to simultaneously violate conditionality in multiple areas, can be bundled more effectively. Applying the economic coercion trilemma to real applications enables a deeper analysis of the strategic situation of sender states. Taken as a whole, these results illustrate why some states can induce more compliance for every dollar of commerce tied to a political issue.

The economic coercion trilemma illuminates a new dimension of power in international politics. In general, states cannot tie the same dollar of commerce to multiple political issues without raising the possibility of inconsistent enforcement. However, in specific circumstances some sender states do not need to be concerned about the consequences of inconsistent enforcement. States that are risk-tolerant, that wish to bundle compatible issues, or whose targets are more dependent on international commerce are able to "double dip" by conditioning the same commercial volume on compliance in multiple issue areas.

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The Economic Coercion Trilemma and the Paradox of Self-Defeating Success
ONLINE APPENDIX

March 12, 2021

A Simple Model

A.1 Proof of Theorem 1

Let ϕ be a consistently enforced total punishment function having one maximum leverage issue specific punishment function (ϕ_1 without loss of generality). By the consistent enforcement of ϕ it must be that $\max_{\alpha_1} \phi(\alpha_1, \alpha_2) - \min_{\alpha_1} \phi(\alpha_1, \alpha_2)$ cannot be an increasing function of α_2. Simplifying the expression

$$\begin{aligned}\max_{\alpha_1} \phi(\alpha_1, \alpha_2) - \min_{\alpha_1} \phi(\alpha_1, \alpha_2) &= \max_{\alpha_1} \left(\min \left\{\phi_1(\alpha_1) + \phi_2(\alpha_2), 1\right\}\right) - \min_{\alpha_1} \left(\min \left\{\phi_1(\alpha_1) + \phi_2(\alpha_2), 1\right\}\right) \\ &= \min \left\{1 + \phi_2(\alpha_2), 1\right\} - \min \left\{\phi_2(\alpha_2), 1\right\} \\ &= 1 - \phi_2(\alpha_2)\end{aligned}$$

where the second line uses the property that $\phi_1(0) = 1$ and $\phi_1(1) = 0$ which is implied by the maximum leverage of ϕ_1. Note that because ϕ_2 is nonincreasing over its domain by assumption it must be that $1 - \phi_2(\alpha_2)$ is an increasing function of α_2. The only way to avoid this difficulty is to tie only one issue to conditionality.

B Proof of Proposition 1

The proof proceeds by first establishing the submodularity of the total punishment function and then studying its implications for the behavior of the target. Unlike the other proofs in this section, the proof here is immediately extended to an arbitrary number of issues because the extension is straightforward from the main proof. It is necessary to use the submodularity of the total punishment function because of possible discontinuities and consequent nondifferentiability.

Lemma 1 (Submodularity of the total punishment function) *The total punishment function is submodular. It is strictly submodular over the domain* Υ *where* $\Upsilon := \{\boldsymbol{\alpha} : \sum_{j\in\Upsilon} \phi_j(\alpha_j) > 1\}$.

Proof: by construction. For ease of notation, let $\sum_k \phi_k(\alpha_k) = \psi(\boldsymbol{\alpha})$ where $\boldsymbol{\alpha} = [\alpha_1, \ldots, \alpha_k, \ldots, \alpha_K]$. By definition, ϕ is submodular if and only if, for all $\boldsymbol{x}$ and $\boldsymbol{y}$,

$$\begin{gathered}\phi(\boldsymbol{x}\uparrow\boldsymbol{y}) + \phi(\boldsymbol{x}\downarrow\boldsymbol{y}) \leq \phi(\boldsymbol{x}) + \phi(\boldsymbol{y}) \\ \min\{\psi(\boldsymbol{x}\uparrow\boldsymbol{y}),1\} + \min\{\psi(\boldsymbol{x}\downarrow\boldsymbol{y}),1\} \leq \min\{\psi(\boldsymbol{x}),1\} + \min\{\psi(\boldsymbol{y}),1\} \qquad (3)\end{gathered}$$

where $x \uparrow y = [\max\{x_1, y_1\}, \cdots, \max\{x_k, y_k\}, \cdots, \max\{x_K, y_K\}]$ denotes the componentwise maximum and $x \downarrow y = [\min\{x_1, y_1\}, \cdots, \min\{x_k, y_k\}, \cdots, \min\{x_K, y_K\}]$ denotes the componentwise minimum.

We proceed by considering cases describing the relationship between ϕ and ψ. First, note that if $\phi(\boldsymbol{x}\downarrow\boldsymbol{y}) < 1$ then it must be that $\phi(\boldsymbol{x}\uparrow\boldsymbol{y}) < 1$, $\phi(\boldsymbol{x}) < 1$, and $\phi(\boldsymbol{y}) < 1$. Thus, Definition (3) simplifies as follows:

$$\begin{gathered}\min\{\psi(\boldsymbol{x}\uparrow\boldsymbol{y}),1\} + \min\{\psi(\boldsymbol{x}\downarrow\boldsymbol{y}),1\} \leq \min\{\psi(\boldsymbol{x}),1\} + \min\{\psi(\boldsymbol{y}),1\} \\ \psi(\boldsymbol{x}\uparrow\boldsymbol{y}) + \psi(\boldsymbol{x}\downarrow\boldsymbol{y}) \leq \psi(\boldsymbol{x}) + \psi(\boldsymbol{y})\end{gathered}$$

Observe that the final line above must hold with equality $\psi(\boldsymbol{x} \uparrow \boldsymbol{y}) + \psi(\boldsymbol{x} \downarrow \boldsymbol{y}) = \psi(\boldsymbol{x}) + \psi(\boldsymbol{y})$ because the left hand side is just a rearrangement of the terms on the right hand side. Every element appearing in $\boldsymbol{x}$ or $\boldsymbol{y}$ also appears in either $\boldsymbol{x} \uparrow \boldsymbol{y}$ or $\boldsymbol{x} \downarrow \boldsymbol{y}$.

Now consider the case where $\phi(\boldsymbol{x} \downarrow \boldsymbol{y}) = 1$, $\phi(\boldsymbol{x} \uparrow \boldsymbol{y}) < 1$, $\phi(\boldsymbol{x}) < 1$, and $\phi(\boldsymbol{y}) < 1$. In this case Definition (3) reduces to

$$\psi(\boldsymbol{x} \uparrow \boldsymbol{y}) + 1 \leq \psi(\boldsymbol{x}) + \psi(\boldsymbol{y})$$

This line must hold true because in this case $\psi(\boldsymbol{x} \downarrow \boldsymbol{y}) \geq 1$ and, as shown above, $\psi(\boldsymbol{x} \uparrow \boldsymbol{y}) + \psi(\boldsymbol{x} \downarrow \boldsymbol{y}) = \psi(\boldsymbol{x}) + \psi(\boldsymbol{y})$. Thus, $\psi(\boldsymbol{x} \uparrow \boldsymbol{y}) + 1 \leq \psi(\boldsymbol{x} \uparrow \boldsymbol{y}) + \psi(\boldsymbol{x} \downarrow \boldsymbol{y}) = \psi(\boldsymbol{x}) + \psi(\boldsymbol{y})$.

Now consider the case where either $\phi(\boldsymbol{x}) = 1$ or $\phi(\boldsymbol{y}) = 1$. These cases imply that $\phi(\boldsymbol{x} \downarrow \boldsymbol{y}) = 1$ because $\psi(\boldsymbol{x} \downarrow \boldsymbol{y}) \geq \psi(\boldsymbol{x}) \geq 1$. Definition (3) reduces to

$$\psi(\boldsymbol{x} \uparrow \boldsymbol{y}) + 1 \leq \psi(\boldsymbol{x}) + 1$$
$$\psi(\boldsymbol{x} \uparrow \boldsymbol{y}) \leq \psi(\boldsymbol{x})$$

The above line must be true because the punishment functions are nonincreasing in their arguments and $\uparrow$ is a componentwise maximum.

The final case is $\phi(\boldsymbol{x}) = 1$ and $\phi(\boldsymbol{y}) = 1$. These cases immediately imply that $\phi(\boldsymbol{x} \downarrow \boldsymbol{y}) = 1$ since ϕ is nonincreasing and $\boldsymbol{x} \downarrow \boldsymbol{y}$ is a componentwise minimum. Since $\phi(\boldsymbol{x} \uparrow \boldsymbol{y}) \leq 1$ it must be that Definition (3) must be satisfied. ■

Now it is possible to prove the proposition. Let the target's utility be given by $U_t(\boldsymbol{\alpha}; \phi)$. Assume that there exists a monotonic transformation of U_t that can be written as $U_t = au(\boldsymbol{\alpha}) - b\phi(\boldsymbol{\alpha})$ where $a, b > 0$. It is well known that linear combinations of supermodular functions with nonnegative coefficients are also supermodular. By definition, $-\phi$ is supermodular because ϕ is submodular by Lemma 1. Thus, U_t is supermodular if u is supermodular. A well known sufficient condition for the supermodularity of u is that $\partial^2 u / \partial \alpha_i \alpha_j \geq 0$ for all issues i and j. Thus, the target's problem will be $\max_{\boldsymbol{\alpha}} U_t$ where U_t is supermodular. Applying

the result of Topkis (1978) it must be that $\alpha_i^*(\alpha_{-i}) = \arg\max_{\boldsymbol{\alpha}} U_t$ must be a nondecreasing function of α_{-i}. It will be a strictly increasing function when U_T is strictly supermodular, which will occur when ϕ is strictly submodular, which in turn occurs when $\psi(\boldsymbol{\alpha}) > 1$. ■

The interpretation of the proposition is that inconsistent enforcement (i.e. choices of ψ that allow $\psi(\boldsymbol{\alpha}) > 1$ for some $\boldsymbol{\alpha}$) creates complementarities in noncompliance (i.e. $\alpha_i^*(\alpha_{-i})$ increases in the elements of α_{-i}). These complementarities encourage the target to choose either full or zero compliance on all issues.

C Example of the Polarization Result

C.1 Optimal Response to Consistent Enforcement

First, consider the program ϕ. Because the program is consistently enforceable, ϕ can be simplified as $\phi = 1 - \frac{\alpha_1}{2} - \frac{\alpha_2}{2}$. The target's optimal response is characterized by

$$\max_{\alpha_1,\alpha_2\in[0,1]} U_t(\alpha_1, \alpha_2; \phi(\alpha_1, \alpha_2))$$
$$\max_{\alpha_1,\alpha_2\in[0,1]} -\frac{a_1}{4}{\alpha_1}^2 - \frac{a_2}{4}{\alpha_2}^2 - \left(1 - \frac{\alpha_1}{2} - \frac{\alpha_2}{2}\right)^2$$

Solving this for optimal compliance:

$$\begin{aligned}
\frac{\partial U_t}{\partial \alpha_1} &= -\frac{a_1\alpha_1}{2} - 2\left(1 - \frac{\alpha_1}{2} - \frac{\alpha_2}{2}\right)\left(-\frac{1}{2}\right) = 0 \\
0 &= -\frac{a_1\alpha_1}{2} + \left(1 - \frac{\alpha_1}{2} - \frac{\alpha_2}{2}\right) \\
\alpha_1 &= \frac{2 - \alpha_2}{a_1 + 1} \\
\alpha_2 &= \frac{2 - \alpha_1}{a_2 + 1}
\end{aligned}$$

which writes α_2 using symmetry. Plugging in to get α_1^* in terms of parameters:

$$\begin{aligned}
\alpha_1 &= \frac{2 - \frac{2-\alpha_1}{a_2+1}}{a_1+1} \\
\alpha_1(a_1+1) &= 2 - \frac{2-\alpha_1}{a_2+1} \\
\alpha_1(a_1+1)(a_2+1) &= 2(a_2+1) - 2 + \alpha_1 \\
\alpha_1((a_1+1)(a_2+1) - 1) &= 2a_2 \\
\alpha_1 &= \frac{2a_2}{(a_1+1)(a_2+1) - 1} \\
\alpha_1^* &= \frac{2a_2}{a_1a_2 + a_1 + a_2} \\
\alpha_2^* &= \frac{2a_1}{a_1a_2 + a_1 + a_2}
\end{aligned}$$

which again uses symmetry to find α_2^*. Rewriting the expression:

$$\begin{aligned}
\alpha_1^* &= \frac{2a_2}{a_1a_2 + a_1 + a_2} \\
\alpha_1^* &= \frac{2\frac{1}{a_1}}{1 + \frac{1}{a_1} + \frac{1}{a_2}} \\
\alpha_1^* &= \frac{2}{3a_1}\frac{3}{1 + \frac{1}{a_1} + \frac{1}{a_2}} \\
\alpha_1^* &= \frac{2}{3a_1}H(1, a_1, a_2) \\
\alpha_2^* &= \frac{2}{3a_2}H(1, a_1, a_2)
\end{aligned}$$

where H is the harmonic mean. Recall that the harmonic mean is equal to the weighted arithmetic mean with weights $(1/x_i)/(\sum_j 1/x_j)$. In other words, the optimal level of compliance is about 2/3 of the harmonic average of the weights on each component of the utility function. Also, compliance is decreasing in the weight associated to that issue.

C.2 Optimal Response to Maximum Leverage

Now consider the other function γ which is not consistently enforceable but does exhibit maximum leverage. In this case the target's utility function is

$$U_t = \begin{cases} -\frac{a_1}{4}{\alpha_1}^2 - \frac{a_2}{4}{\alpha_2}^2 - \left(\frac{3}{2} - \frac{\alpha_1}{2} - \frac{\alpha_2}{2}\right)^2 & \text{if } \frac{3}{2} - \frac{\alpha_1}{2} - \frac{\alpha_2}{2} < 1 \\ -\frac{a_1}{4}{\alpha_1}^2 - \frac{a_2}{4}{\alpha_2}^2 - 1 & \text{if } \frac{3}{2} - \frac{\alpha_1}{2} - \frac{\alpha_2}{2} > 1 \end{cases}$$

The target's problem can be written

$$\max\left\{\max_{\{\alpha_1,\alpha_2:\frac{3}{2}-\frac{\alpha_1}{2}-\frac{\alpha_2}{2}<1\}} U_t, \max_{\{\alpha_1,\alpha_2:\frac{3}{2}-\frac{\alpha_1}{2}-\frac{\alpha_2}{2}>1\}} U_t\right\}$$

First considering the case where $\frac{3}{2} - \frac{\alpha_1}{2} - \frac{\alpha_2}{2} > 1$, it is clear that the target cannot reduce the punishment with any amount of compliance. Thus, the optimal choice is $\alpha_1 = \alpha_2 = 0$ and the utility will be $U_t(0, 0, \gamma(0, 0)) = -1$. Now consider the case where $\frac{3}{2} - \frac{\alpha_1}{2} - \frac{\alpha_2}{2} < 1$. Solving again for optimal compliance:

$$\begin{aligned} \frac{\partial U_t}{\partial \alpha_1} &= -\frac{a_1\alpha_1}{2} - 2\left(\frac{3}{2} - \frac{\alpha_1}{2} - \frac{\alpha_2}{2}\right)\left(-\frac{1}{2}\right) = 0 \\ 0 &= -\frac{a_1\alpha_1}{2} + \left(\frac{3}{2} - \frac{\alpha_1}{2} - \frac{\alpha_2}{2}\right) \\ \alpha_1 &= \frac{3 - \alpha_2}{a_1 + 1} \\ \alpha_2 &= \frac{3 - \alpha_1}{a_2 + 1} \end{aligned}$$

where the final line follows from symmetry. By a similar procedure to the above, the final optimal compliance vector in terms of parameters is

$$\begin{aligned} \alpha_1^* &= \frac{3a_2}{a_1a_2 + a_1 + a_2} \\ \alpha_2^* &= \frac{3a_1}{a_1a_2 + a_1 + a_2} \end{aligned}$$

These values can also be rewritten in terms of the harmonic mean:

$$\begin{aligned}
\alpha_1^* &= \frac{3a_2}{a_1a_2 + a_1 + a_2} \\
\alpha_1^* &= \frac{3\frac{1}{a_1}}{1 + \frac{1}{a_1} + \frac{1}{a_2}} \\
\alpha_1^* &= \frac{1}{a_1}H(1, a_1, a_2) \\
\alpha_2^* &= \frac{1}{a_2}H(1, a_1, a_2)
\end{aligned}$$

Note that compliance is strictly greater under γ when the target chooses α_1^* and α_2^* than it was under ϕ.

However, recall that these formulae are only valid for $3/2 - \alpha_1/2 - \alpha_2/2 < 1$ or $1 < \alpha_1 + \alpha_2$. Thus, the formulae are only valid when:

$$\begin{aligned}
1 &< \frac{3a_2}{a_1a_2 + a_1 + a_2} + \frac{3a_1}{a_1a_2 + a_1 + a_2} \\
\frac{1}{3} &< \frac{a_2 + a_1}{a_1a_2 + a_1 + a_2} \\
1 - \frac{1}{3} &> 1 - \frac{a_2 + a_1}{a_1a_2 + a_1 + a_2} \\
\frac{2}{3} &> \frac{a_1a_2}{a_1a_2 + a_1 + a_2} \\
\frac{2}{3} &> \frac{1}{1 + \frac{1}{a_1} + \frac{1}{a_2}} \\
\frac{2}{3} &> \frac{1}{3}H(1, a_1, a_2) \\
2 &> H(1, a_1, a_2)
\end{aligned}$$

When valid, the utility received from the interior solution is

$$\begin{aligned}
U_t(\alpha_1^*, \alpha_2^*; \gamma) &= -\frac{a_1}{4}\left(\frac{3a_2}{a_1a_2 + a_1 + a_2}\right)^2 - \frac{a_2}{4}\left(\frac{3a_1}{a_1a_2 + a_1 + a_2}\right)^2 - \left(\frac{3}{2} - \frac{3}{2}\frac{a_2}{a_1a_2 + a_1 + a_2} - \frac{3}{2}\frac{a_1}{a_1a_2 + a_1 + a}\right. \\
&= -\frac{9}{4}\frac{{a_1}{a_2}^2}{(a_1a_2 + a_1 + a_2)^2} - \frac{9}{4}\frac{{a_1}^2a_2}{(a_1a_2 + a_1 + a_2)^2} - \left(\frac{3}{2}\left(1 - \frac{a_1 + a_2}{a_1a_2 + a_1 + a_2}\right)\right)^2 \\
&= -\frac{9}{4}\frac{{a_1}{a_2}^2 + {a_1}^2a_2}{(a_1a_2 + a_1 + a_2)^2} - \frac{9}{4}\frac{{a_1}^2{a_2}^2}{(a_1a_2 + a_1 + a_2)^2} \\
&= -\frac{9}{4}\frac{{a_1}{a_2}^2 + {a_1}^2a_2 + {a_1}^2{a_2}^2}{(a_1a_2 + a_1 + a_2)^2} \\
&= -\frac{9}{4}\frac{a_1a_2}{a_1a_2 + a_1 + a_2}
\end{aligned}$$

The target will choose full noncompliance on both issues when $U_t(0, 0; \gamma) > U_t(\alpha_1^*, \alpha_2^*; \gamma)$. Both quantities are now established in terms of parameters. The target chooses full noncompliance when

$$\begin{aligned}
-1 &> -\frac{9}{4}\frac{a_1a_2}{a_1a_2 + a_1 + a_2} \\
\frac{4}{9} &< \frac{a_1a_2}{a_1a_2 + a_1 + a_2}
\end{aligned}$$

Rewriting the above in terms of the harmonic mean:

$$\begin{aligned}
\frac{4}{9} &< \frac{1}{1 + \frac{1}{a_1} + \frac{1}{a_2}} \\
\frac{4}{9} &< \frac{1}{3}H(1, a_1, a_2) \\
\frac{4}{3} &< H(1, a_1, a_2)
\end{aligned}$$

D Proof of Proposition 2

Let ϕ be the enforcement limited total punishment function where its component ϕ_j are defined

$$\phi_j = \begin{cases} 1 & \text{if } \alpha_j < 1 \\ 0 & \text{if } \alpha_j = 1 \end{cases}$$

In other words, this strategy calls for the sender to withdraw all trade for any infraction on the conditionality. It is immediately clear that the target must either comply on all issues or no issues because noncompliance on one issue reduces the cost of noncompliance on all other issues to zero. We now partition the compliance space into points where $\phi = 1$ and points where $\phi = 0$. The best that the target can do under maxmimum punishment (i.e. where $\phi = 1$) is $\alpha_1 = \alpha_2 = 0$. The best that the target can do under minimum punishment (i.e. where $\phi = 0$) is to choose $\alpha_1 = \alpha_2 = 1$ because only this choice confers minimum punishment. If the target chooses to comply on all issues their utility will be $\underline{U}$ and if they choose to noncompliance on all issues their utility will be $\bar{U}$. By the proposition we know $\bar{U} < \underline{U}$, so the target will choose full compliance.

Furthermore, note that an enforcement limited strategy is not guaranteed to elicit full compliance. Modify the total punishment function such that

$$\phi_j = \begin{cases} b_j & \text{if } \alpha_j < 1 \\ 0 & \text{if } \alpha_j = 1 \end{cases}$$

where $\sum_j b_j = 1$ and $b_j > 0$. The total punishment function is no longer enforcement limited, but it is leverage limited because $b_j \neq 1$ for any issue j. Now it is no longer the case that noncompliance on one issue reduces the costs of noncompliance to zero on all other issues. Therefore, the target may find it beneficial to comply on some issues but not others. It may be

the case, for example, that $U_t(1,0;\phi(1,0)=b_2) > U_t(1,1;\phi(1,1)=0) > U_t(0,0;\phi(0,0)=1)$. In this case, partial compliance would be expected.

D.1 Example of Issue Compatibility

As before, the target will choose the interior solution when facing the total punishment function γ if

$$\begin{aligned}
\frac{a_1 a_2}{a_1 a_2 + a_1 + a_2} &< \frac{4}{9} \\
a_1 a_2 &< \frac{4}{9}(a_1 a_2 + a_1 + a_2) \\
\frac{5}{9} a_1 a_2 &< \frac{4}{9}(a_1 + a_2) \\
\frac{5}{4} &< \frac{a_1 + a_2}{a_1 a_2} \\
\frac{5}{4} &< \frac{1}{a_2} + \frac{1}{a_1} \\
\frac{4}{5} &> \frac{1}{\frac{1}{a_2} + \frac{1}{a_1}} \\
\frac{8}{5} &> \frac{2}{\frac{1}{a_2} + \frac{1}{a_1}} \\
\frac{8}{5} &> H(a_1, a_2)
\end{aligned}$$

where H is the harmonic mean (which is well defined because the weights must be positive by definition). This expression interprets the weights a_j as ratios measuring how much the target values noncompliance relative to how much it values potential lost economic surplus (recall lost economic surplus has weight 1). The target will choose some amount of compliance as long as the average ratio is sufficiently small – targets that weight economic surplus relatively more will be inclined towards compliance. Note that the harmonic mean has the following

property:

$$\lim_{a_1 \to \infty} \frac{2}{\frac{1}{a_2} + \frac{1}{a_1}} = \lim_{a_1 \to \infty} \frac{2a_1 a_2}{a_1 + a_2} = 2a_2$$
$$\lim_{a_2 \to \infty} \frac{2}{\frac{1}{a_2} + \frac{1}{a_1}} = \lim_{a_2 \to \infty} \frac{2a_1 a_2}{a_1 + a_2} = 2a_1$$

Because both limits must hold true simultaneously, and because these functions approach the limit monotonically from below, it must be that $H(a_1, a_2) \leq 2a_1$ and $H(a_1, a_2) \leq 2a_2$. These two inequalities can be written more compactly as $H(a_1, a_2) \leq 2\min\{a_1, a_2\}$. This result forms an upper bound on the harmonic mean of the two weights. Indeed, it directly implies that the harmonic mean is decreasing in the correlation of its inputs. Negative correlation means that there is a higher chance of having one low and one high value. Positive correlation between the inputs is the only way to raise the expectation of the minimum value of the two random variables. Thus, we can already conclude that the probability of the target choosing the interior solution is decreasing in the correlation of the two variables.[1] More formally, we can say that a sufficient condition for the target to choose the interior solution is

$$\frac{8}{5} > 2\min\{a_1, a_2\} \geq H(a_1, a_2)$$
$$\frac{4}{5} > \min\{a_1, a_2\}$$

When seeing the weights as random variables drawn from $F(a_1, a_2)$, the probability of meeting this constraint is

$$\begin{aligned} P(\min\{a_1, a_2\} < 4/5) &= P(a_1 < 4/5 \cup a_2 < 4/5) \\ &= P(a_1 < 4/5) + P(a_2 < 4/5) - P(a_1 < 4/5, a_2 < 4/5) \\ &= F_{a_1}(4/5) + F_{a_2}(4/5) - F(4/5, 4/5) \end{aligned}$$

[1] The monotonicity of the function ensures that the harmonic mean decreases at every point when its minimum input decreases.

where $F_{a_j}(x) = \lim_{a_i \to \infty} F(x, a_i)$ is the marginal distribution of a_j. Let I_{a_1} and I_{a_2} be indicator variables for the events $A : a_1 < 4/5$ and $B : a_2 < 4/5$, respectively. Note that $Var(I_{a_1}) = \mathbb{E}[I_{a_1}^2] - \mathbb{E}[I_{a_1}]^2 = P(A) - P(A)^2 = P(A)(1 - P(A))$. For ease of notation, let $\sqrt{Var(I_{a_1})} = \sigma_{a_1}$. Then:

$$
\begin{aligned}
Cov(I_{a_1}, I_{a_2}) &= \mathbb{E}[I_{a_1} I_{a_2}] - \mathbb{E}[I_{a_1}]\mathbb{E}[I_{a_2}] \\
Cov(I_{a_1}, I_{a_2}) &= P(A \cap B) - P(A)P(B) \\
Cov(I_{a_1}, I_{a_2}) + P(A)P(B) &= P(A \cap B) \\
Cov(I_{a_1}, I_{a_2}) + P(A)P(B) - P(A) - P(B) &= P(A \cap B) - P(A) - P(B) \\
-Cov(I_{a_1}, I_{a_2}) - P(A)P(B) + P(A) + P(B) &= -P(A \cap B) + P(A) + P(B) \\
-Cov(I_{a_1}, I_{a_2}) - P(A)P(B) + P(A) + P(B) &= P(A \cup B) \\
\sigma_{a_1}\sigma_{a_2}\left(-\frac{Cov(I_{a_1}, I_{a_2})}{\sigma_{a_1}\sigma_{a_2}} + \frac{-P(A)P(B) + P(A) + P(B)}{\sigma_{a_1}\sigma_{a_2}}\right) &= P(A \cup B) \\
\sigma_{a_1}\sigma_{a_2}\left(-\rho_{I_{a_1} I_{a_2}} + \frac{-P(A)P(B) + P(A) + P(B)}{\sigma_{a_1}\sigma_{a_2}}\right) &= P(A \cup B)
\end{aligned}
$$

This final line indicates that the probability of a target meeting the condition for an interior solution $P(A \cup B) = P(a_1 < 4/5 \cup a_2 < 4/5)$ is decreasing in the correlation coefficient $\rho_{I_{a_1} I_{a_2}}$. In other words, when the issue weights are anti-correlated there is a better chance of an enforcement limited strategy ultimately proving successful. This is true regardless of the underlying joint distribution of weights on compliance (so long as its moments exist).

To summarize, this section claimed that enforcement limited strategies are more successful when seeking to influence two compatible issues. Two issues are compatible if the target is unlikely to choose noncompliance on both issues simultaneously. In an extension of the previous model I showed that, when faced with the enforcement limited strategy γ, 1) the target will choose nonzero compliance when the harmonic mean of the weights a_1 and a_2 is less than 8/5, 2) an upper bound on the harmonic mean is $2\min\{a_1, a_2\}$, 3) the probability that $\min\{a_1, a_2\} < 4/5$ is decreasing in the correlation of the two events $a_1 < 4/5$ and $a_2 < 4/5$.

This last statement illustrates the conclusion that an enforcement limited strategy has a better chance of success when the two issues are compatible, meaning that the correlation between a_1 and a_2 is negative (more precisely, when the correlation in the two events $a_1 < 4/5$ and $a_2 < 4/5$ is negative).

E Extension for Arbitrary Number of Issues

This section of the appendix extends the simple model to account for an arbitrary number of issues. The purpose of this extension is to illustrate that the model can accommodate real world applications such as trade agreements where it is common for many issues to be linked to a program of economic coercion.

A few notational changes need to be made to accomodate an arbitrary number of issues. The vector $\boldsymbol{\alpha} = [\alpha_1, \ldots, \alpha_J]$ is the **compliance vector** representing the target's compliance on each issue. The issue specific punishment functions are still normally tied to a single issue, but now the total punishment function takes a compliance vector as its argument.

E.1 Proof of Theorem 1 for Arbitrary Number of Issues

First we need to show the following two lemmas. Under what conditions is the total punishment function ϕ consistently enforceable?

E.1.1 Lemma 2

Lemma 2 *The total punishment function ϕ is consistently enforceable if $\sum_j \phi_j(\alpha_j) \leq 1$ for all α_j. Equivalently, the function is consistently enforceable if no dollar of trade is conditioned on more than one issue.*

Proof of Lemma 2: The proof is by construction. Rewriting the total leverage with

respect to an arbitrary issue j:

$$\begin{aligned}\max_{\alpha_j}\phi(\boldsymbol{\alpha})-\min_{\alpha_j}\phi(\boldsymbol{\alpha}) &= \max_{\alpha_j}\left(\min\left\{\sum_t \phi_t(\alpha_t),1\right\}\right)-\min_{\alpha_j}\left(\min\left\{\sum_t \phi_t(\alpha_t),1\right\}\right)\\ &= \max_{\alpha_j}\left(\min\left\{\phi_j(\alpha_j)+\sum_{t\neq j}\phi_t(\alpha_t),1\right\}\right)-\min_{\alpha_j}\left(\min\left\{\phi_j(\alpha_j)+\sum_{t\neq j}\phi_t(\alpha_t),1\right\}\right)\end{aligned}$$

Now we invoke the lemma's condition that $\sum_k \phi_k(\alpha_k)\leq 1$. Then:

$$\begin{aligned}\max_{\alpha_j}\phi(\boldsymbol{\alpha})-\min_{\alpha_j}\phi(\boldsymbol{\alpha}) &= \max_{\alpha_j}\left(\min\left\{\phi_j(\alpha_j)+\sum_{t\neq j}\phi_t(\alpha_t),1\right\}\right)-\min_{\alpha_j}\left(\min\left\{\phi_j(\alpha_j)+\sum_{t\neq j}\phi_t(\alpha_t),1\right\}\right)\\ &= \max_{\alpha_j}\left(\phi_j(\alpha_j)+\sum_{t\neq j}\phi_t(\alpha_t)\right)-\min_{\alpha_j}\left(\phi_j(\alpha_j)+\sum_{t\neq j}\phi_t(\alpha_t)\right)\\ &= \phi_j(0)+\sum_{t\neq j}\phi_t(\alpha_t)-\phi_j(1)-\sum_{t\neq j}\phi_t(\alpha_t)\\ &= \phi_j(0)-\phi_j(1)\end{aligned}$$

The above expression is not a function of any compliance level except for α_j, so the total punishment function is consistently enforced. ■

E.1.2 Proof Extension – Generalized Punishment Functions

Note that a slightly limited version of the above proof can be extended to an even more general class of punishment functions. Let an issue specific punishment function be defined as $\phi_j : \mathbb{R}^J \to \mathbb{R}$ which is a nondecreasing function in all its arguments. This issue specific punishment function can also include cases where the compliance levels are not separable. For example, the issue specific punishment function $\phi_1(\alpha_1,\alpha_2) = 1-\alpha_1-\alpha_2-\alpha_1\alpha_2$ is now permitted.

Let $\sum_k \phi_k(\alpha_k) = \xi_j(\boldsymbol{\alpha})+\xi_{-j}(\boldsymbol{\alpha})$ be a partition of the total punishment function where ξ_j is the the sum of all issue specific punishment functions where the issue j appears and ξ_{-j} is the sum of issue specific punishment functions where it does not. Rewriting the total

leverage with respect to an arbitrary issue j:

$$\begin{aligned}\max_{\alpha_j}\phi(\boldsymbol{\alpha})-\min_{\alpha_j}\phi(\boldsymbol{\alpha}) &= \max_{\alpha_j}\left(\min\left\{\sum_t \phi_t(\alpha_t),1\right\}\right)-\min_{\alpha_j}\left(\min\left\{\sum_t \phi_t(\alpha_t),1\right\}\right)\\ &= \max_{\alpha_j}\left(\min\left\{\xi_j(\boldsymbol{\alpha})+\xi_{-j}(\boldsymbol{\alpha}),1\right\}\right)-\min_{\alpha_j}\left(\min\left\{\xi_j(\boldsymbol{\alpha})+\xi_{-j}(\boldsymbol{\alpha}),1\right\}\right)\\ &= \min\left\{\xi_j(0,\boldsymbol{\alpha}_{-j})+\xi_{-j}(\boldsymbol{\alpha}),1\right\}-\min\left\{\xi_j(1,\boldsymbol{\alpha}_{-j})+\xi_{-j}(\boldsymbol{\alpha}),1\right\}\end{aligned}$$

There are two cases. First, let $\sum_k \phi_k(\alpha_k) > 1$ for some $\boldsymbol{\alpha}$. In that case there exists a compliance vector $\boldsymbol{\alpha}$ such that $\xi_j(0,\boldsymbol{\alpha}_{-j})+\xi_{-j}(\boldsymbol{\alpha})>1$. In that case:

$$\min\left\{\xi_j(0,\boldsymbol{\alpha}_{-j})+\xi_{-j}(\boldsymbol{\alpha}),1\right\}-\min\left\{\xi_j(1,\boldsymbol{\alpha}_{-j})+\xi_{-j}(\boldsymbol{\alpha}),1\right\}=1-\xi_j(1,\boldsymbol{\alpha}_{-j})-\xi_{-j}(\boldsymbol{\alpha})$$

Thus, the total leverage is absolutely a function of compliance on issues other than j because $-\xi_{-j}$ appears in the expression. This term, unless it is empty, will ensure that the total leverage is increasing in compliance on other issues.

Second, consider the case that $\sum_k \phi_k(\alpha_k) \leq 1$. Then:

$$\begin{aligned}\min\left\{\xi_j(0,\boldsymbol{\alpha}_{-j})+\xi_{-j}(\boldsymbol{\alpha}),1\right\}-\min\left\{\xi_j(1,\boldsymbol{\alpha}_{-j})+\xi_{-j}(\boldsymbol{\alpha}),1\right\} &= \xi_j(0,\boldsymbol{\alpha}_{-j})+\xi_{-j}(\boldsymbol{\alpha})-\xi_j(1,\boldsymbol{\alpha}_{-j})-\xi_{-j}(\boldsymbol{\alpha})\\ &= \xi_j(0,\boldsymbol{\alpha}_{-j})-\xi_j(1,\boldsymbol{\alpha}_{-j})\end{aligned}$$

The above expression is potentially increasing in variables other than α_j. However, we know that each term in $\xi_j(\alpha_j,\boldsymbol{\alpha}_{-j})$ is nonincreasing in $\boldsymbol{\alpha}_{-j}$. Thus, the only way that the expression is increasing in compliance of issues other than j is when $\xi_j(0,\boldsymbol{\alpha}_{-j})$ is decreasing in its arguments faster than $\xi(1,\boldsymbol{\alpha}_{-\boldsymbol{j}}$. More precisely, the function is not consistently enforceable in this case if, for all $\boldsymbol{\alpha}_{-j}$ and $\boldsymbol{\alpha}'_{-j}$ such that $\boldsymbol{\alpha}'_{-j}$ is strictly greater in at least one component, $\xi_j(0,\boldsymbol{\alpha}_{-j})-\xi_j(0,\boldsymbol{\alpha}'_{-j})>\xi_j(1,\boldsymbol{\alpha}_{-j})-\xi_j(1,\boldsymbol{\alpha}'_{-j})$. In all other cases the function is consistently enforceable. ■

E.1.3 Lemma 3

Now we must investigate the other direction of the implication. Does a consistently enforced total punishment function necessarily require $\sum_k \phi_k(\alpha_k) \leq 1$ for all α_k?

Lemma 3 *If the total punishment function ϕ is consistently enforceable then it must be that $\sum_j \phi_j(\alpha_j) \leq 1$ for all α_j.*

Proof of Lemma 3:

Suppose not. Then there must exist some $\alpha_j = \bar{\alpha}$ such that $\phi_j(\bar{\alpha}) + \sum_{t \neq j} \phi_t(\alpha_t) > 1$ where the issue specific punishment functions ϕ_j are part of a consistently enforceable total punishment function.

Because we know that $\phi_j(\bar{\alpha}) + \sum_{t \neq j} \phi_t(\alpha_t) > 1$ we can conclude that $\max_{\alpha_j} \left(\phi_j(\alpha_j) + \sum_{t \neq j} \phi_t(\alpha_t) \right) > 1$. At this point there are two cases. If $\min_{\alpha_j} \left(\phi_j(\alpha_j) + \sum_{t \neq j} \phi_t(\alpha_t) \right) < 1$ then the total leverage with respect to the issue j is

$$\begin{aligned} \max_{\alpha_j} \phi(\boldsymbol{\alpha}) - \min_{\alpha_j} \phi(\boldsymbol{\alpha}) &= \max_{\alpha_j} \left(\min \left\{ \sum_t \phi_t(\alpha_t), 1 \right\} \right) - \min_{\alpha_j} \left(\min \left\{ \sum_t \phi_t(\alpha_t), 1 \right\} \right) \\ &= 1 - \phi_j(1) - \sum_t \phi_t(\alpha_t) \end{aligned}$$

which is a contradiction because the total leverage with respect to issue j depends on compliance with the other issues and thus is not consistently enforceable.

In the second case we have that $\min_{\alpha_j} \left(\phi_j(\alpha_j) + \sum_{t \neq j} \phi_t(\alpha_t) \right) \geq 1$. In this case the total leverage is always zero because $\sum_{t \neq j} \phi_t(\alpha_t) > 1$. But this means that the total leverage is indeed a function of some other compliance value, since it is always possible to reduce at least one compliance value such that $\sum_{t \neq j} \phi_t(\alpha_t) < 1$. ■

The interpretation of Lemmas 2 and 3 is that a total punishment function is consistently enforceable if and only if no dollar of trade is conditioned on more than one issue. The intuition is that interrupting a dollar of trade as a penalty for noncompliance on one issue means that dollar cannot be interrupted as a penalty for noncompliance on other issues. If

the punishment function does not allow any trade to be tied to more than one issue then the enforcement of conditionality on one issue cannot undermine leverage over other issues.

Proof of Theorem 1 Suppose not. Let the issue specific punishment function ϕ_i exhibit maximum leverage and be a component of the total punishment function ϕ which is consistently enforceable. By definition of maximum leverage it must be that $\phi_i(0) - \phi_i(1) = 1$. Since all issue specific punishment functions are bounded on the unit interval it must be that $\phi_i(0) = 1$ and $\phi_i(1) = 0$. By Lemma 2 the total punishment function is consistently enforceable if and only if $\sum_t \phi_t(\alpha_t) \leq 1$ for all α_t. But since $\phi_i(0) = 1$ then there must exist a compliance vector such that $\phi_i(0) + \sum_{t \neq i} \phi_t(\alpha_t) = 1 + \sum_{t \neq i} \phi_t(\alpha_t) \geq 1$. If the inequality holds with equality then $\sum_{t \neq i} \phi_t(\alpha_t) = 0$ for all α_t where $\alpha_i = 0$. If $\phi_t = 0$ for all t and α_t with $t \neq i$ then the sender is only exerting influence on issue i. Therefore, unless i is the only issue tied to conditionality, there is a contradiction because ϕ must not be consistently enforceable. ■

E.2 Proof of Proposition 3

Enforcement limited program designs are effective when trade is very important to the target. If the target always prefers no punishment (free trade) to full punishment (no trade) regardless of its chosen compliance on every issue then there will exist a total punishment function consisting only of maximum leverage issue specific punishment functions that elicits full compliance. The formal statement is given in Proposition 3. The target complies because it is so dependent on trade that no amount of noncompliance can overcome the costs of punishment.

Proposition 3 *Let $U_t(\boldsymbol{\alpha}; \phi(\boldsymbol{\alpha}))$ be the target's utility function such that $U_t(\boldsymbol{\alpha}; \phi(\boldsymbol{\alpha}) = 1) < U_t(\tilde{\boldsymbol{\alpha}}; \phi(\tilde{\boldsymbol{\alpha}}) = 0)$ for all $\boldsymbol{\alpha}$ and $\tilde{\boldsymbol{\alpha}}$. Then there exists an enforcement limited total punishment function ϕ consisting only of maximum leverage strategies which elicits full compliance from the target.*

Proof: Suppose not. Then every total punishment function ϕ consisting of all maximum leverage functions ϕ_j does not elicit full compliance from the target on at least one issue. Let this issue be denoted i such that the target's optimum choice of $\alpha_i < 1$. Issue specific punishment functions are nonincreasing, which means that $\phi_i(\alpha_i) \geq 0$. Therefore, the total punishment must be $\phi(\boldsymbol{\alpha}) \geq 0$ where α_i is a component of $\boldsymbol{\alpha}$. Because every issue has the maximum leverage property it is possible to choose α_i and a vector $\boldsymbol{\alpha}_{-i}$ such that $\phi_i(\alpha_i) = 0$. Since $U_t(\boldsymbol{\alpha}; \phi = 1) < U_t(\tilde{\boldsymbol{\alpha}}; \phi = 0)$ it must be that α_i is not optimal since choosing 1 instead of α_i on issue i in combination with the compliance vector $\boldsymbol{\alpha}_{-i}$ would have yielded higher utility. Note that the total punishment function ϕ is not consistently enforceable by Lemma 2. ■