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WHY REWARDS ARE BETTER THAN SANCTIONS

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Sanctions are said to fail because of the "rally-round-the-flag effect". This is the main reason why many advocate the use of positive incentives as a viable alternative. Not only do rewards provoke no defensive reaction, but they may elicit a rally in support of compliance – a "fifth-column effect." Yet, positive incentives are vulnerable to extortion – doing wrong in the hope of obtaining larger rewards. As a result, many conjecture that sanction threats and promises of reward are most efficient when used simultaneously. We put this conjecture to a test, staging a formal confrontation of the two forms of incentives. Our model pits a sanctioner and a target in a game allowing for the possibility of rally-round-the-flag, fifth-column, and extortion effects. The game yields unambiguous results: under no circumstances should a sanctioner prefer sanction threats to reward promises. This result holds despite the risk of extortion, a risk that proves to be less of a drawback than the rally round the flag.

1. INTRODUCTION

AMONG THE most significant reasons put forward for the failure of economic sanctions is the so-called "rally-round-the-flag effect." A rally effect occurs whenever a sanction threat arouses a nationalist response within the target's government or population, making compliance with the sanction threat more difficult (Galtung, 1967). The rally effect is one reason why many authors advocate the use of positive incentives as a viable alternative to sanctions (Baldwin, 1971; Crumm, 1995; Long, 1996; Nincic, 2005; Rowe, 2001; Selden, 1999). Positive incentives provoke no defensive reaction. In fact, they may elicit a rally in support of compliance – an effect to which we refer in this paper, to distinguish it from its negative sibling, as the "fifth-column effect." Yet, many of the same authors also point to a limitation of positive incentives – their vulnerability to extortion. It is the idea that offering rewards to the targeted country for quitting wrongdoing will lead this country to engage in more wrongdoing in the hope of obtaining larger rewards (Bernauer, 1999, p. 167; Haass and O'Sullivan, 2000). A partial and analytically uneasy consensus seems to have jelled around the notion that sanction threats and promises of reward are most efficient when used simultaneously (Amini, 1997; Cortright and Lopez, 2000; Dorussen and Mo, 1999; Haass and O'Sullivan, 2000).

Yet, the fact that both types of incentive are second-best policy instruments at most does not necessarily make mixing them optimal. The time has come for a staged confrontation of the two incentives, sanction vs. reward, within the context of a single formal model acknowledging the respective strengths and flaws of each one and determining in what circumstances one is more appropriate than the other, or whether mixing the two, as the literature so far defends, is a better course of action.

The present paper stages a contest along such lines, pitting a sanctioner and a target in a game allowing for the possibility of both types of domestic effects, round-the-flag and

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fifth column, as well as extortion. We posit a target government that maximizes domestic support and, as a result, is not only sensitive to the possibility of popular mobilization, but also welcomes it. The risk of extortion is generated by making the sanctioner uncertain about how much the target values its investment in the objectionable behavior and giving the target the option of overinvesting in such behavior before the sanctioner offers any incentive.

The game yields unambiguous results: under no circumstances should a sanctioner prefer sanction threats to reward promises. This result holds despite the risk of extortion, a risk that proves to be less of a drawback than the rally round the flag. This normative result, at odds with extant practice, raises serious questions with the realism of the assumption of a rational unitary sanctioner in sanction games, a point that we address in a concluding section.

Formal models addressing the domestic politics of the target state are few.[1] Kaempfer and Lowenberg (1988) have offered two models: a first with pure endogenous lobbying with two groups, one that benefit from sanctions, the other that is hurt. A second with a dictator and an opposition (Kaempfer et al., 2004). Both models, however, are indeterminate, because they depend on the relative importance of the various contradictory effects of sanctions. In both models, the rally round the flag effects are not derived from the model but added exogenously.

Our model avoids similar indeterminacy by adding more structure at limited cost to generality. We embed the sanction model in a trade model. So doing we assume that the sanction takes the form of a trade embargo, one of the most-used types of sanction after financial sanctions (Hufbauer et al., 2007). Trade embargo is a sanction with redistributive effects. This has the advantage of clearly identifying two groups, a group that is hurt by the embargo and another that benefits. Depending on the relative economic importance of each group, in turn a function of the nature of the incentive, the government then chooses the policy outcome.

Our model formally implements an instance of Gourevitch's (1978) second-image-reversed argument, by which the international structure shapes states' preferences.[2] It is the kind of argument that Powell (1994) celebrates as offering an alternative approach to constructivism in tackling the problem of the inseparability of agents and structure.

We first introduce the trade model and then the various assumptions and solution to the sanction cum extortion game.

2. A RICARDO–VINER ECONOMY WITH IMPERFECTLY MOBILE LABOR

We assume that the target government is pursuing a foreign policy that antagonizes the sanctioner, but meets with no direct, intrinsic support, or opposition in the target population. The population's interest in the foreign policy is merely indirect, forced on through the linkage that sanctioner establishes between the foreign policy and the population's wealth.

The Ricardo–Viner model assumes that capital is sector specific whereas labor is mobile across sectors (Magee, 1980). We use a specification that assumes imperfect labor mobility (Hillman, 1989, pp. 14–16; see also Grossman, 1983; Hill and Mendez, 1983). The imperfect nature of labor mobility across sectors implies that wages will not be identical across sectors, and thus that labor will not have the same attitude toward trade throughout the entire

[1]We are not considering in this paragraph models that treat the target as a unitary actor.
[2]It is also a case of two-level game (Putnam, 1988).

economy, as such would otherwise have been the case had we assumed costless mobility. The cost of relocation drives a wedge between the two wage rates.

The targeted country's economy features two goods and two sectors: a first sector, referred to as sector 1, produces a good for the domestic market and prefers protection over free trade. A second sector, sector 2, produces a good for export markets and prefers free trade over protection. The wealth of each sector is a function of its market share, domestic or foreign. Both sectors compete for the same labor force.

Formally, sector $i \in \{1, 2\}$ maximizes profit

$$\pi_i = p_i q_i - w_i l_i, \tag{1}$$

with p_i and q_i the price and quantity of good i, respectively, w_i the wage paid in sector i and l_i the amount of labor used in sector i. Each good is produced according to the concave production function

$$q_i = \ln k_i \ln l_i, \tag{2}$$

with k_i and l_i the capital and labor used in sector i, respectively. The total labor force available is set to

$$L \geq \sum_{i=1,2} l_i. \tag{3}$$

Capital is fixed while labor is imperfectly mobile across sectors.[3] Imperfect mobility means that workers can move from one sector to the other at the cost of some workers being unable to find employment.

We posit the following functional form for labor mobility:

$$l_2 = \alpha L - \beta l_1^2, \tag{4}$$

with $\alpha \in (1/2, 1)$ and $\beta \in R^+$. This functional form was chosen so that its first and second derivatives with respect to l_1 are negative, capturing the idea that the move from one sector to the other causes a loss in total labor employment. Further assuming full-employment ex ante, we can write $l_2 = L - l_1 = \alpha L - \beta l_1^2$, extract the value of β as a function of α, and rewrite the labor mobility condition as $l_2 = \alpha L - (1/(4(1-\alpha)L))l_1^2$. The mobility function and the labor constraint are drawn in Figure 1 with total labor L normalized to unity and parameter α given some arbitrary value within the allowed range.[4] The graph makes it clear that the more the labor allocation moves away from the full-employment allocation, the more unemployment is incurred.

We calculate the partial equilibrium of the labor market, partial because the price of each product is exogenously given – it is set by sanctioner through the manipulation of the trade weapon. The demand side of the labor market features firms organized into sectoral trade associations seeking to maximize profit by hiring the optimal amount of labor. The supply side features aggregate labor, say the confederal trade union organization, seeking to maximize aggregate wealth by choosing the allocation of labor between the two sectors.

The main result is summarized in Proposition 1 and proven in the Appendix.

[3]Having capital fixed and labor mobile has no incidence on the generalizability of the results. Alternatively, one could fix labor and allow capital to move.

[4]Parameter α can be interpreted as a measure of the inefficiency of labor reallocation; a higher α makes the mobility function more concave.

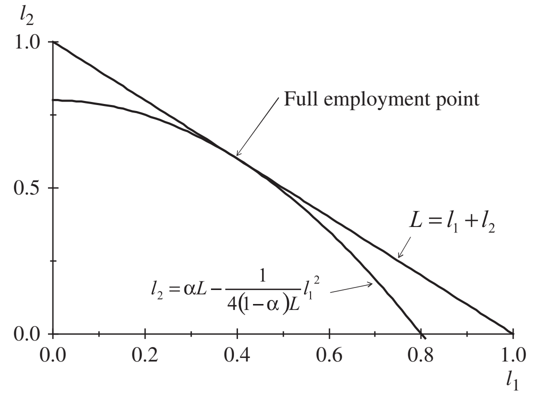

Figure 1. Imperfect mobility function.

Proposition 1. The labor force in domestic-oriented sector 1 favors the trade sanction and opposes the trade reward whereas the labor force in export-oriented sector 2 favors the trade reward and opposes the trade sanction.

The complete alignment of the trade orientations shared by capital and labor within each sector allows us to ignore the political role of capital and essentially reduce the trade orientation and political power of a sector to that of its labor force. Formally, we assume that $k_1 = k_2 = k$. After normalizing $p_2 = 1$ and positing $p = p_1/p_2$, the aggregate wealth of each sector reduces to the remarkably simple following results:

$$l_1(p)w_1(p) = p, \tag{5}$$

and

$$l_2(p)w_2(p) = 1, \tag{6}$$

with p the wealth of the protectionist sector and 1 that of the free-trade sector. Intuitively, the wealth of the protectionist sector is equal to the price of good 1, p_1, and the wealth of the export-oriented sector is equal to the price of good 2, p_2, normalized to unity.

Each sector (qua labor force) has control over political resources – the aggregate wealth of the sector, $l_i w_i$ – that they can mobilize to press their respective policy preferences on the government. Although political resources a priori need not mobilize along sector lines, in practice they will when sanctioner wields the trade weapon and makes trade a salient issue.

The extreme simplicity of the results makes it possible to build a sanction model (or any other kind of model, for that matter) upon the Ricardo–Viner trade model.

3. RALLY ROUND THE FLAG

A rally round the flag occurs whenever a sanction threat arouses a nationalist response within the target's government or population, making compliance with the sanction threat more difficult (Galtung, 1967). In a two-sector economy and polity, the nationalist response takes the form of a policy realignment away from the export sector, who would have favored compliance with the sanction threat, toward the protectionist sector, who is rooting for defiance and the imposition of the sanction.

The typical scenario unfolds like this: the sanction is directed against a government that draws its main support from the export sector. Being averse to sanctions, the sector asks its government to comply with the sanctioner's request. Yet, if enacted, the sanction may give the government an incentive to change horses. Indeed, once imposed, the sanction would redistribute wealth between the tow sectors, shrinking the export sector while expanding the protectionist sector. Drawing its resources from the coalition whose interest it endorses, the government may anticipate greater profits from championing protectionism than free trade. If such is the anticipation, then the government has an interest in defying the sanction threat and siding with the protectionist sector. It is this realignment that in a two-sector model corresponds to the common notion of rally round the flag.

The shift has perverse consequences for the sanctioner. The sanctioner expected the help of the export sector within the target government to sway that government in favor of compliance. Instead, the sanction triggers a realignment of the government to the protectionists, who welcome the sanctions and press for defiance.

A necessary assumption for a sanction to cause a shift in supporting coalition is the endogeneity of support. This assumption is more or less met depending on regimes and circumstances. It is met if the government enjoys enough autonomy to pursue the policy of its choice in the short run. Autonomy allows the government to defer accountability to its new protectionist support base to a date when the sanctions have been given the time to weaken the export sector and strengthen the protectionist sector.

As an illustration of this possibility, consider the case of Iran during the last decade. Differing with the liberalizing policies led by reformist president Mohammad Khatami, Supreme Leader Ayatollah Khamenei insisted in 2003 that Iran had a right to pursue nuclear enrichment, a right unrecognized by the west. After 2 years of unsuccessful negotiations, the west imposed sanctions, cutting contacts between the Iranian society and foreign investors, educators, tourists, and businessmen. The sanctions further provided the new government of Mahmoud Ahmadinejad with the means and rationale to build up the political and economic power of a para-military organization – the Revolutionary Guards – an organization which, today, controls the country's strategic missile forces, with ties to companies in oil, construction, telecommunications, and weapons manufacture as well as black market enterprises smuggling embargoed products, alcohol and nuclear fuel in particular. Four rounds of UN sanctions helped consolidate the regime realignment from the cosmopolitan reformists to the nationalist hard-liners. The Guards' increased power allowed Ahmadinejad to win the 2009 election from the more reformist opponent, Hussein Moussavi, and put down intense protests by demonstrators who claimed that he had stolen the election.

The endogeneity of support assumption will at times be applicable also to democratic settings. This is because sanction threats, irrespective of their economic consequences, never are popular with the voters. A democratic government may take advantage of the public outcry raised by the sanction threat to adopt a defiant attitude, incur the sanction, and willy-nilly experience a recentering of the economy away from the export sector toward the protectionist sector.

However, there are bound to be cases in which the endogeneity of support assumption will not be justified. For instance, if the government enjoys no autonomy from its supporting coalition, that government cannot choose to go against that coalition's policy preferences. Or, conversely, if the government is completely autonomous from either group, the way either group fares under the sanction regime may be immaterial to the government's decision in the first place. The actual frequency of these caveats is an empirical issue that we do not pursue here, yet that calls for further research.

4. FIFTH COLUMN

If we are willing to contemplate the possibility that the threat of a sanction may lead a government to realign itself away from free trade toward protection, then we must be ready to countenance the reverse possibility that the promise of a bribe may trigger an opposite realignment, away from protection toward free trade. We call this effect the "fifth-column effect."

A fifth-column effect starts with a target government that has the support of the protectionists, but which, as a result of the promise of trade openness proffered by the sanctioner, is given an incentive to seek support from export-oriented sectors. Trade openness promises to enrich the export-oriented sector at the expense of the import-sensitive one, thereby giving the government an incentive to cast its lot with the free traders and, to that effect, comply with the sanctioner's demands.

The same Iranian case provides an illustration. As soon as the news that Iran had a secret nuclear enrichment program became public in 2003, the governments of Britain, France, and Germany tried to pursue a fifth-column strategy by which they sought an end to enrichment in exchange for positive incentives aimed at strengthening the reformist government of Mohammad Khatami and its supporting coalition. Among the incentives was a WTO membership, which would have led to an expansion of foreign trade and, thus, of the liberal and promarket base of the reformist coalition.[5] These efforts failed mostly because the United States was opposed to such negotiations and the supreme leader, Ayatollah Khamenei, felt threatened by the reformists' electoral success.

Fifth columns, like rallies round the flag, work only if political support for the government is endogenous to the sanction episode and are thus subject to the same caveats. The target government must enjoy some autonomy but not too much. Zero autonomy means that the government merely is an agent for the dominant sector. Too much autonomy is bound to yield a half-way realignment, if at all.

An illustration of too much autonomy yielding a hesitant realignment is Libyan leader Muammar Qaddafi's foreign policy makeover, by which he dismantled his country's illegal weapons programs, stopped helping terrorists, and compensated the families of the victims of the Lockerby bombing. In return, the west lifted economic sanctions and restored diplomatic ties. Yet, as an observer remarked, "the thaw in relations was not accompanied by any change in the authoritarian nature of Libya . . . ."[6] There was no realignment away from the nationalists to the reformists, most likely because Qaddafi did not need the support of either one of these groups to stay in power.

It is not clear once again how empirically damaging these caveats are to the endogeneity of support assumption. It may be a propos to recall at this point that while the assumption is strong in a two-sector economy, it might raise fewer objections in an *n*-sector economy, where rally and fifth-column effects could take place without involving a 100% shift in support. In the model that follows, we assume that support is endogenous.

5. PAYOFFS

We assume that target and sanctioner are competing for a good of total worth $Z \in [0, \infty)$. This is equivalent to a split-the-dollar game – a zero-sum game – between target

[5] Sciolino (2005).
[6] Slackman (2009).

and sanctioner.[7] Target moves first by claiming $z \leq Z$, with an expected benefit of bz and at a cost of cz^2 (b and c are positive). Target's claim z represents an investment in a behavior that is deemed delinquent by sanctioner; z could, for instance, be the share of a territory of total size Z that sanctioner considers to be his (all players are "he's").

Sanctioner moves next by offering a trade incentive package with the intention to coerce target into either giving up z altogether or keeping it, depending on what works better for sanctioner. The incentive package has two components: a reward t and a sanction s, both positive. One may think of t as the increase in the price of export-oriented good 2 fueled by the trade opening,[8] and of s as the increase in the price of import-sensitive good 1 triggered by the trade embargo.[9] Sanction s is bounded upward, $s \leq S$, so as to rule out the option of threatening Armageddon.[10] Then the target government responds by either complying with the demand (giving up z) or defying (keeping z). We assume that threats and promises are enforceable.[11]

Sanctioner's utility function is that of a unitary actor with no particular a priori preference for reward or sanction. The sanctioner merely finds either kind of incentive costly to implement: a rise in trade hurts domestic producers, whereas a drop hurts exporters. There is always a group of discontented producers who punishes the government. Formally, sanctioner maximizes

$$U = Z - z\xi_1 t - \xi_2 s, \tag{7}$$

with respect to sanction s and reward t. ξ_2 and ξ_1, both strictly positive, are the marginal costs of implementing the sanction and the reward respectively.

Within the target country, two coalitions compete on the basis of relative wealth with initial value set to Ricardo–Viner payoffs 1 for the free trade side and p for the protectionist side, with $p \in [0, \mathrm{R}+]$. Moreover, the free trade coalition benefits from reward t (more trade) but is hurt by sanction s (less trade) whereas it is the opposite for the protectionist coalition. As a result, the free trade coalition earns $W^{FT}|_{z,s,t,C} = 1 + \delta_1 t$ if its government complies and $W^{FT}|_{z,s,t,D} = 1 - \delta_s s$ if its government defies whereas the protectionist coalition earns $W^P|_{z,s,t,C} = p - \delta_1 t$ in the case of compliance and $W^P|_{z,s,t,D} = p + \delta_2 s$ in the case of defiance.

The target government's payoff function shows two components. First, target's government payoff is a positive function of the aggregate wealth of its supporting coalition $f(W^*)$ with $i^* = FT, P$ identifying the supporting coalition. Since this function can take about any form as long as it is positive, we simply write that target government maximizes the aggregate wealth of its supporting coalition: $f(W^{i^*}) = W^{i^*}$. Second, as explained earlier, target's government benefits from investing in the delinquent

[7]This assumption guarantees that sanctioner gets the same utility out of getting target to terminate its initial hostile behavior as out of deterring target from initiating such behavior in the first place.

[8]For instance, assume that p_2 is raised by amount p'. We thus have $1 + t = p_2 + p' \Rightarrow t = p'$.

[9]For instance, assume that p_1 is raised by p''. We have $p + s = (p_1 + p'')/p_2 \Rightarrow s = p''$.

[10]Promising the moon is not an option either, but this possibility is endogenously ruled out by sanctioner's maximization.

[11]This assumption is potentially problematic as one could argue that target may not believe that sanctioner would act upon threats and promises costly to him if he had to. Nevertheless, we assume perfect credibility. Credibility does not result from the way the present game is played, but it does result from the way the larger, unmodelled game would be played. Sanctioner is engaged in subsequent sanction games, involving other targets one at a time. He has an interest in establishing a reputation as credible sanctioner and the only way of doing so is by delivering on the threats and promises that he makes to any target. This is a standard result in reputation games of imperfect information; see Kreps and Wilson (1981).

behavior z. A generic payoff function for target's government can thus be written as

$$V = W^{i^*} + bz - cz^2, \text{ with } i^* \text{ the supporting coalition.} \tag{8}$$

In light of the endogeneity of support assumption that was discussed in the earlier sections, the first component of the payoff is a positive function of the aggregate wealth of the coalition that supports it ex post, i.e. the free trade coalition in case of compliance and the protectionist coalition in case of defiance. Hence, compliance yields $V|_{z,s,t,C} = W^{FT}|_{z,s,t,C} - cz^2$ or, after substitution, $1 + \delta_1 t - cz^2$. Conversely, defiance yields $V|_{z,s,t,D} = W^P|_{z,s,t,D} + bz - cz^2$ or, after substitution, $p + \delta_2 s + bz - cz^2$. The non-investment payoff is 1 if the free traders are dominant ex ante and p otherwise.

The two marginals δ_1 and δ_2 measure the propensity of the regime to respond to an incentive by means of a coalition realignment, i.e. comply in the case where the incentive is positive and defy if it is negative. For instance, assume the free traders to be in power ex ante, i.e. $p < 1$, a large δ_2 means that there exists a sanction threat s that is sufficiently high to make the target government prefer to defy and shift its allegiance to the protectionists ex post. Conversely, if the protectionists are in power ex ante, i.e. $p > 1$, a high δ_1 means that there exists a bribe t that is high enough for the target government to prefer compliance over defiance with the hope of realigning its support coalition from protectionists to free traders ex post.

6. TARGET TYPE AND EXTORTION

A positive incentive, we saw, invites extortion on the part of the target. Extortion implies that target is investing z at cost cz^2 for no other reason than to extract a reward from sanctioner. Extortion is made possible by the fact that sanctioner is not aware of the actual purpose of the investment, for if sanctioner knew about the extortion, he would call the target's bluff and target would end up wasting resources. Sanctioner's ignorance is modeled by positing two possible types of target government, randomly drawn from the set $\Theta_T = \{0, b\}$ featuring two types, a ''security'' type ''S'' with marginal gain $b > 0$ and an ''extortionist'' type ''E'' with marginal gain $b = 0$. The labels refer to the situation in which investment z enhances the security of one type but has no intrinsic value for the other type. Nature draws the security type with probability h and the extortionist type with probability $1 - h$. Target knows its type, but sanctioner only knows the probability distribution.[12]

7. GAME TREE AND EQUILIBRIUM

We are now ready to provide a formal definition of the strategies and draw the tree (Figure 2). A strategy for sanctioner in this game is the mapping $\{\sigma_1 = (I, NI), z \in \zeta = R^+\} \rightarrow \{t \in T = R^+, s \in S = R^+\}$, specifying for each investment decision and z value the values of t and s. A strategy for target is, first, the mapping $\Theta_T \rightarrow \{\sigma_1, \zeta\}$ specifying for each type whether to invest or not, and, if the decision to invest is made, the value of z and, second, the mapping $\Theta_T \times \{\sigma_1, \zeta\} \times \{T, S\} \rightarrow (c, d)$

[12]Not all extortion models require incomplete information. The present one does because we vest all negotiating power in the sanctioner (sanctioner makes a take-it-or-leave-it offer to target). It would be unnecessary if target was making the offer, as such is the case in mafia and corruption models; for such models, see Bueno De Mesquita and Hafer (2008), Polinsky and Shavell (2001), and Schlicht (1996).

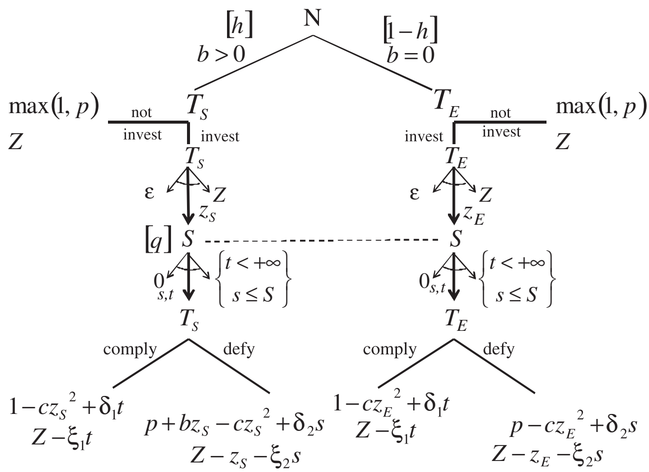

Figure 2. Tree.

specifying for each type, the decision to invest, each choice of z, and in response to all possible sanctioner's proposals the decision whether to comply or defy.

We further deconstructed the target's choice of investment z into two steps: a first in which target chooses whether or not to invest in the delinquent behavior. If he chooses not to invest ($z = 0$), the game is over – sanctioner cannot offer an incentive. Only if he goes ahead with the investment ($z \in (\varepsilon, Z]$), with ε and Z, respectively, the smallest observable and the largest possible investment in the delinquent behavior ($\varepsilon, Z > 0$), does he get to choose the actual value of z and can sanctioner respond.

We denote sanctioner's posterior belief about target type by the conditional probability $q(b|z) = \Pr(b > 0|z)$; q is sanctioner's updated belief, after having observed z, that target is of the security type. The equilibrium concept utilized is the perfect Bayesian Nash, which requires posterior beliefs to be calculated using Bayes' rule and each strategy to maximize expected utility given these beliefs and other players' strategies. We use the trembling hand refinement to pin down actions and beliefs that fall off the equilibrium path and eliminate a few eccentric equilibria.

8. SOLUTION

The solution is stated in Proposition 2 and proven in the Appendix.

Proposition 2. There are four perfect Bayesian–Nash equilibria:

(1) If $p < \underline{p}$, there is a *pooling on the extortionist* type's preference for not investing. Off the equilibrium path, sanctioner offers the same incentives as in (2); $q = h$.

(2) If $\underline{p} < p < \bar{p}$ and $h > \widehat{q}$, there is a *pooling on the security* type's preference for investing

$$z_S^* = \begin{cases} b/2c & \text{if} \quad Z > b/2c \\ Z & \text{if} \quad Z < b/2c \end{cases},$$

with sanctioner offering $t_S^* = (p + bz_S^* - 1)/\delta_1$ and $s^* = 0$, while target complies; $q = h$.

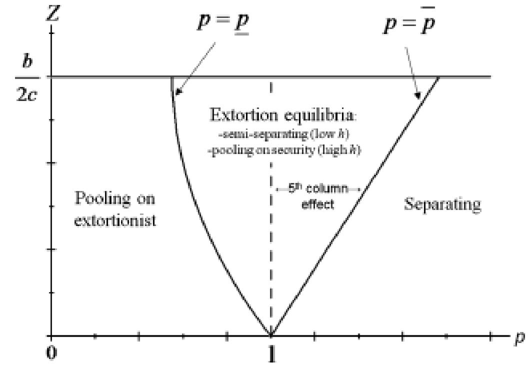

Figure 3. Results.

(3) If $\underline{p} < p < \bar{p}$, and $h \leq \hat{q}$ there is a *semi-separating* in which the security type invests z_S^* while the extortionist type mimics him with probability

$$g^* = \begin{cases} h \dfrac{\delta_1 z_S^* - \xi_1 (p + b z_S^* - 1)}{(1-h)\xi_1 b z_S^*} & \text{if} \quad p \geq 1 \\ h \dfrac{\delta_1 z_S^* - \xi_1 (p + b z_S^* - 1)}{(1-h)\xi_1 (p + b z_S^* - 1)} & \text{if} \quad p < 1 \end{cases}$$

and does not invest with probability $1 - g^*$. Upon seeing an investment, sanctioner offers t_S^* and $s^*(=0)$ with probability

$$r^* = \begin{cases} \dfrac{c z_S^*}{b} & \text{if} \quad p \geq 1 \\ \dfrac{c z_S^{*2}}{p + b z_S^* - 1} & \text{if} \quad p < 1 \end{cases}$$

but

$$t_E^* = \begin{cases} \dfrac{p-1}{\delta_1} & \text{if} \quad p \geq 1 \\ 0 & \text{if} \quad p < 1 \end{cases}$$

and s^* with probability $1 - r^*$. The security type complies in response to t_S^* but defies in response to t_E^*; the extortionist type always complies. $q = \hat{q}$.

(4) If $p > \bar{p}$, there is a *separating* equilibrium in which the security type invests z_S^*, while the extortionist type does not invest. Upon observing the investment, sanctioner offers nothing and the security type defies; $q = 1$. With $\underline{p} = 1 - b z_S^* + c z_S^{*2}$, $\bar{p} = (1/\xi_1)\left(\xi_1 + z_S^* \delta_1 - b z_S^* \xi_1\right)$, and $\hat{q} = \xi_1 (t_S^* - t_E^*)/(z_S^* - \xi_1 t_E^*)$. All results assume $\delta_1 > b\xi_1$.[13]

The intuition behind the solution is best rendered visually in a picture graphing the initial strength p of the protectionist coalition on the horizontal axis and the maximum investment Z on the vertical axis (Figure 3).

[13]The reverse assumption, $\delta_1 < b\xi_1$, eliminates the part of the extortion equilibria marked as fifth-column in Figure 3.

On the very left, the free traders form a robust majority: p is low (below the lower cutpoint $\underline{p}$). Target government, irrespective of type, is already siding with the free traders and will keep doing so in the future. There is no point in making the objectionable investment in the first place. Target invests nothing and the game is over. This is a case where the sanctioner relies on a majority that is favorable to maintaining open trade relations between the two economies to do his bidding. There is no extortion.

On the opposite side of the spectrum, the protectionists are a robust majority: p is high (above the upper cutpoint $\bar{p}$). The sanctioner cannot profitably engineer a shift to the free trade coalition by offering a carrot, for it would be too costly, costlier than doing nothing. As a result, the two types go their separate routes. The security type, who is wired to benefit from the investment in the delinquent behavior, does invest and, absent any incentive from the sanctioner, then defies. The extortionist type, who, in contrast to the security type, has no use for the investment in the first place other than to extract a rent from the sanctioner, anticipating that no incentive will be proffered, shuns from investing. Its governing coalition probably would like more protection and will probably get it, yet for reasons that are extraneous to the present model, where investing just makes no business sense.

Squeezed between these two cutpoints are the extortion equilibria, in which the security type steadfastly invests in the delinquent behavior while the extortionist type mimics the security type's investment, hoping to fool the sanctioner into buying him out of that investment for the same reward than the sanctioner is paying to the security type. Recall that the security type has a better use for the investment than the extortionist type and therefore has a higher opportunity cost than the extortionist does. This plan works fine, provided that the sanctioner believes that there are many security types out there (q is high). If nature did indeed select a world with a high density of security types (h is high), then the sanctioner's belief, q, is guaranteed to be high too and the extortionist's devious scheme works as planned (we have a pooling on security equilibrium).

However, if nature failed to stack the deck with enough security types (h is low), then the sanctioner has a cheaper alternative at his disposal, one that could wreak havoc with the extortionist's plan: sanctioner could tailor the incentive, not to the costly security type, but to the cheaper extortionist type, giving that type just enough for it to comply, thereby nixing the rent component of the incentive. Note that it would make business sense for sanctioner to act like this because the cheaper incentive would more than offset the occasional cases of defiance suffered from the rare security types. But for the extortionist, the sanctioner's counterstrategy would mean the end of extortion.

Unless the extortionist is smart enough to make his presence scarcer than nature did initially. This is the essence of a semi-separating strategy. Basically, the extortionist randomizes the decision to invest, investing with probability g and not investing with probability $1 - g$, in such a way that when getting the opportunity to play, the sanctioner believes that he is facing a security type with a high probability, irrespective of the low initial draw of h. By pumping up q to a level that is high enough, the extortionist is able to bootstrap his payoff to that of the munificent pooling equilibrium, with two caveats. First, he now gets the pooling payoff only g of the time. Second, the semi-separating equilibrium cannot hold unless the extortionist, himself, is indifferent between investing and not investing, for if he found investing better, then he would invest with certainty, unraveling the semi-separating equilibrium. The semi-separating equilibrium thus requires sanctioner in turn to randomize between offering the high incentive that it takes to get the security type to comply and the low incentive that suffices to get the extortionist type to comply so as to bring the extortionist payoff down enough to make him indifferent between investing and not investing.

Between the two cutpoints, consequently, we have a pooling on security equilibrium if nature chose a high frequency of such types in the first place and a semi-separating equilibrium otherwise. Both equilibria involve extortion, in the sense that the state of uncertainty in which sanctioner finds himself forces him to be more generous than if he knew the identity of his protagonist. The difference between the two equilibria is that in the pooling equilibrium, the sanctioner is paying a rent (he pays a higher transfer on average than it would take to elicit compliance) and the extortionist cashing it. In the semi-separating equilibrium, the sanctioner is still paying a rent, but the extortionist is not making a real profit, for the transfer just covers his reservation value for not investing (or, at least, a smaller profit, for, in real life, unlike game theory, it takes more than plain indifference to get an individual to follow one's own wishes).

The two extortion equilibria feature a remarkable case of fifth-column effect: this effect occurs in the range where the protectionists are in power ex ante ($p > 1$) and for values of p below the second cutpoint ($p < \bar{p}$). In this area, by means of a positive transfer, the sanctioner is able to engineer within the domestic politics of the target a power realignment away from the protectionist coalition toward the free trade coalition, with the latter being supportive of compliance with the sanctioner's demand. This equilibrium makes a powerful case in theory for a pure engagement policy, even though the existence of a rent makes the engagement policy second-best as far as sanctioner is concerned.[14]

The starkest result, however, is that sanction threats are not part of any equilibrium solution, even though a sanction would, in other circumstances, make it unnecessary for the sanctioner to pay a rent. It is indeed a property of principal-agent games that no rent needs to be paid to an agent enjoying private information in order to induce that agent to act in the principal's interest provided that this principal enjoys enough room to punish. By means of a sanction threat, sanctioner should typically be able to implement a screening strategy by which he would lure the extortionist type into complying while forcing the security type to defy (for instance, see Verdier, 2009). In our game, the rally round the flag interferes with the freedom to punish, with the consequence that even such a screening strategy, with or without rent, provides sanctioner with no optimal course of action.

In the present game, sanctions are never used either because they are large enough to cause a rally effect, thereby causing defiance, an outcome that hurts sanctioner, or because they are small enough not to cause a rally effect, but come at a cost nevertheless, which sanctioner would rather not pay. The cost is twofold: direct ($-\xi_1 s$), like any other incentive, and indirect as well, in the form of a higher compliance transfer.[15] In sum, large sanctions encourage rather than deter defiance, whereas small sanctions do nothing except drain the sanctioner's budget. Only bribes are used, because they reinforce the fifth-column coalition (free traders) whose interests are aligned with the sanctioner's interest in extracting compliance.

The result is robust to any kind of variation in the two marginals δ_1 and δ_2, which measure the propensity of the regime to respond, respectively, to a positive and negative incentive by means of a coalition realignment as long as these marginals are greater than zero. The results are also robust to any variation in the two other marginals, ξ_1 and ξ_2, the relative marginal costs of the positive and negative incentives for the sanctioner.

[14]Note that the existence of the fifth column depends on parametric assumption $\delta_1 > b\xi_1$.

[15]Raising sanction s by one unit means having to raise the compliance transfer t by δ_2/δ_1.

9. DISCUSSION

Reality is at odds with the main finding of the model. Sanctioners, the United States especially, do use sanction threats. Since the end of the Cold War, sanction regimes have become a ubiquitous tool of foreign policy in the hands of great powers seeking to maintain peace and order in the less developed parts of the world. Although sanctioners also use promises of bribes, the overall impression, for reasons that are not always clear, is that cases of sanction outweigh cases of bribes. Extant datasets are sanction datasets primarily (see Hufbauer et al., 2007). Whether it is governments that are less willing to divulge bribes than sanctions or researcher and the media in general that give more attention to sanctions than bribes, overall, reality is at odds with the prescription that bribes should always be preferred to sanctions.

Surely, the discrepancy between model and reality suggests that the model is leaving out important aspects of reality. There is no doubt about that. Still, finding the missing piece that disqualifies the use of sanctions is not easy. We review four potential candidates – multiple rounds, bilateral information asymmetry, power externalities, and sanctioner's preference for sanctioning – eventually siding with the last one.

Our results do not depend on the one-shot duration of the game. It is tempting to believe that if sanctioner said it were going to pay everyone who contemplated doing bad things, everyone would start doing those and the engagement policy would be unsustainable. This tempting thought leads to another: the idea that allowing for successive targets in a multiround game in the spirit of Selten's (1978) chain-store game would necessarily yield an equilibrium in which sanctioner would at one point or another credibly threaten sanctions. But this is not the case. Once the target has invested in wrongdoing, sanctioning never is in the immediate interest of the sanctioner lest he trigger a rally round the flag. The result does not depend on sanctioner's time-acquired reputation for inflicting sanctions, which is never in doubt in the present game since we assumed perfect credibility. The kind of fix that would be needed for the present game to yield sanction threats is not the addition of more rounds.

Also left out of the model is the fact that in many historical situations information asymmetry is not reserved to the sanctioner but mutual to both players. Would sanction threats be more likely if the target state were unsure about the sanctioner's capacity to punish? This conjecture would seem in tune with the tendency to see the world through the lens of Munich, according to which offering carrots merely makes aggressors hungrier for more concessions, thereby calling for the use of sanctions merely to assert a reputation for toughness. Although it would take a more complex model to sort out this debate, note how this line of reasoning merely takes us back to the argument in the prior paragraph. Here, like there, we do not believe that a tough sanctioner would want to implement a sanction if that sanction hurt him more than benefit.

A third modeling simplification that might alter the outcome is the omission of power externalities. The model does not track the potential negative externalities of transfers – literally, the transfer of resources from sanctioner to target – altering the power ratio favorably to target, a prospect bound to make sanctions relatively more attractive. And, indeed, one reason why rewards were not considered by the United States during the Cold War was that rewards would have strengthened the Soviet Union. Although we acknowledge this limitation, we also note that an overwhelming majority of sanction cases are between countries with such a lopsided power ratio that considerations of relative power should not be relevant in those cases.

Missing, last, is the modeling of domestic politics for the sanctioner along lines similar to those followed for the target. If sanctioner, like target, had a preference for sanctioning, results would look strikingly different. This preference could reflect a political economy similar to the target's own, with two groups, one of them protectionist and partial to sanctions and dominant.[16] Or it could reflect a norm. For instance, Baldwin (1971, p. 34) points to the sanctioner's people general dislike to reward criminal action: "When the North Koreans seized the Pueblo, it was 'unthinkable' that President Johnson should offer to buy it back." There is no doubt that a more realistic model would have to incorporate some form of domestic political constraints. It remains, nevertheless, that from a pure efficiency perspective, the use of sanctions to incentivize behavior in international politics is second best: bribes are more efficient.

APPENDIX

Proof of Proposition 1

On the demand side business $\max_{l_i \geq 0} \pi_i = p_i q_i - w_i l_i$ for $i \in \{1, 2\}$, yielding the internal solution $w_1 = (1/l_1) p_1 \ln k_1$ and $w_2 = (1/l_2) p_2 \ln k_2$. On the supply side, labor $\max_{l_i \geq 0} \sum w_i l_i$ subject to $l_2 = (1/4b)(4L\beta - 1) - \beta l_1^2$, yielding internal solution $w_1 = 2\beta\lambda l_1$ and $w_2 = \lambda$, with λ the Lagrange parameter. Bringing supply and demand together yields after manipulation

$$l_1^* = 2L \frac{\sqrt{\alpha(1-\alpha) p_1 (\ln k_1)(p_1 \ln k_1 + 2p_2 \ln k_2)}}{p_1 \ln k_1 + 2p_2 \ln k_2}, \tag{9}$$

$$l_2^* = 2\alpha p_2 \frac{\ln k_2}{p_1 \ln k_1 + 2p_2 \ln k_2}, \tag{10}$$

$$w_1^* = \frac{1}{2} p_1 (\ln k_1) \frac{p_1 \ln k_1 + 2p_2 \ln k_2}{\sqrt{\alpha(1-\alpha) p_1 (\ln k_1)(p_1 \ln k_1 + 2p_2 \ln k_2)}},$$

and

$$w_2^* = \frac{p_1 \ln k_1 + 2p_2 \ln k_2}{2\alpha}. \tag{11}$$

The comparative statics are $\partial l_1^*/\partial p_1 > 0$, $\partial l_2^*/\partial p_1 < 0$, $\partial w_1^*/\partial p_1 > 0$, $\partial w_2^*/\partial p_1 > 0$, $\partial(l_1^* w_1^*)/\partial p_1 > 0$, $\partial(l_2^* w_2^*)/\partial p_1 = 0$, $\partial(l_1^* w_1^*)/\partial p_2 = 0$, $\partial(l_2^* w_2^*)/\partial p_2 > 0$. In sum, the size and wealth of labor used in each sector increase with the price of the good produced in the sector; the size of labor in each sector decreases with the price of the good produced in the other sector; the aggregate wealth of each sector ($l_i w_i$) increases with the price of good produced in the sector but is indifferent to a change in the price of the good produced in the other sector. Since protection increases the price of import-sensitive good 1, labor in sector 1 is protectionist whereas labor in sector 2 opposes protection. Vice versa, since greater trade with sanctioner increases in the price of export-oriented good 2, labor in sector 2 favors free trade whereas labor in sector 1 opposes free trade.

Proof of Proposition 2

The Extortion Equilibria. Extortion happens when the extortionist type of target government (extortionist from here on) mimics the behavior of the security type (security

[16]See Kaempfer and Lowenberg (1988) for a model along these lines. See also Hiscox (2011).

here on) in order to receive a transfer t_S that is higher than the smallest transfer t_E that it would take to make extortionist comply rather than defy. There are two types of equilibria that meet this condition: a pooling on security equilibrium in which both types invest security's optimal investment z_S and a semi-separating equilibrium in which extortionist randomizes between investing z_S and not investing.

For sanctioner, extortion means that in order to extract compliance from security, he has to offer an expensive incentive to extortionist. A better choice might be to merely offer enough for extortionist to comply ($t = t_E$), while letting security defy, the cheaper incentive more than compensating for the occasional cases of defiance. To capture this possibility, we write sanctioner's extortion problem P as follows:

$$P = \begin{cases} \max\limits_{t_S \geq 0, t_E \geq 0, 0 \leq s \leq S, 0 \leq r \leq 1} \quad U(\cdot) \equiv r(Z - \xi_1 t_S) + (1-r)(q(Z - z_S - \xi_2 s) + (1-q)(Z - \xi_1 t_E)) \\ \text{subject to:} \\ 1 - cz_S^2 + \delta_1 t_S \geq p + bz_S - cz_S^2 + \delta_2 s \,(\text{security's incentive constraint}) \\ 1 - cz_S^2 + \delta_1 t_E \geq p - cz_S^2 + \delta_2 s \,(\text{extortionist's incentive constraint}). \end{cases}$$

Note that $r = 1$ corresponds to the pooling equilibrium, whereas $r < 1$ corresponds to the semi-separating equilibrium.

The system, formed by the Lagrangian $\mathscr{L} = r(Z - \xi_1 t_S) + (1-r)\ (q(Z - z - \xi_2 s) + (1-q)(Z - \xi_1 t_E)) + \lambda\big(1 - cz^2 + \delta_1 t_S - \big(p + bz - cz^2 + \delta_2 s\big)\big) + \eta\big(1 - cz^2 + \delta_1 t_E - \big(p - cz^2 + \delta_2 s\big)\big) + \gamma t_S + \tau t_E + \phi s - \psi(s - S) + \rho r - \pi(r-1)$, the non-negative multipliers γ, τ, ϕ, ψ, ρ, and π, and the complementary slackness conditions (omitted), yield the sanctioner's four choice variables.

Determining s, t_S, and t_E. $\partial\mathscr{L}/\partial s = 0 \Rightarrow \phi - \psi - \lambda\delta_2 - \eta\delta_2 = q\xi_m(1-r)$, meaning that $s^* = 0$. $\partial\mathscr{L}/\partial t_S = 0 \Rightarrow \gamma + \lambda\delta_1 = r\xi_1$, meaning that, conditional on $r > 0$,

$$t_S^* = \begin{cases} \dfrac{p + bz_S - 1}{\delta_1} & \text{if} \quad p \geq 1 - bz \\ 0 & \text{if} \quad p < 1 - bz \end{cases}.$$

$\partial\mathscr{L}/\partial t_E = 0 \Rightarrow \tau + \eta\delta_1 = \xi_1(1-r)(1-q)$, meaning that, conditional on $r < 1$ and $q < 1$,

$$t_E^* = \begin{cases} \dfrac{p - 1}{\delta_1} & \text{if} \quad p \geq 1 \\ 0 & \text{if} \quad p < 1 \end{cases}.$$

Determining r. $\partial\mathscr{L}/\partial r = 0 \Rightarrow \rho - \pi = \xi_1 t_S^* - qz_S + q\xi_1 t_E^* - \xi_1 t_E^*$. If the expression is equal to zero, then $q = (\xi_1(t_S^* - t_E^*))/(z_S - \xi_1 t_E^*)$. Define

$$\widehat{q} \equiv \frac{\xi_1\big(t_S^* - t_E^*\big)}{z_S - \xi_1 t_E^*},$$

with $\widehat{q} \in [0, 1]$ defined over domain $p \in [1 - bz_S, (1/\xi_1)(\xi_1 + z_S\delta_1 - bz_S\xi_1)]$. Define the upper bound of that domain as

$$\bar{p} \equiv \frac{1}{\xi_1}(\xi_1 + z_S\delta_1 - bz_S\xi_1).$$

It directly follows that if $\xi_1 t_S^* - qz_S + \xi_1 t_E(1-q) > 0$, then $q < \widehat{q}$ and $r = 0$. In words, the anticipated occurrence of security types is low and sanctioner tailors incentives to the extortionist type. If that same expression is negative, then $q > \widehat{q}$ and $r = 1$, i.e. there are enough security types for sanctioner to customize incentives to that type. And if it is equal to zero, then $q = \widehat{q}$ and r can take any value between zero and unity.

Determining z_S and Target's Decision to Invest or Not. We move up the tree to determine target's investment-related decisions. Given the analysis so far, we have six cases to consider, depending on the joint values assumed by the couple p and q.

Case 1: $p \geq 1$ and $q > \widehat{q}$: We just determined that, in this case, sanctioner's problem yielded solutions $t_S^* = (p + bz_S - 1)/\delta_1$ and $r^* = 1$. We now investigate target's decision to invest and how much. Security's problem is $\max_{\varepsilon \leq z_S \leq Z} 1 - cz_S^2 + \delta_1 t_S^*$, with two solutions:

$$z_S^* = \begin{cases} b/2c & \text{if } Z > b/2c \\ Z & \text{if } Z < b/2c \end{cases}.$$

The solution must satisfy *sanctioner's incentive constraint*, $Z - \xi_1 t_S^* \geq Z - z_S^* - \xi_2 s^*$, implying $1 < p < \bar{p}$. (The latter condition requires

$$\delta_1 > b\xi_1,$$

a condition which, for simplification, we assume to hold throughout the Appendix.) Note that *target's participation constraint*,[17] irrespective of type, is met. It requires $1 - cz_S^{*2} + \delta_1 t_S^* \geq p$, which, after substitution implies $z_S^* \leq b/c$.

Case 2: $1 - bz < p < 1$ and $q > \widehat{q}$: As seen above, sanctioner's problem, in this case, yielded solutions $t_S^* = (p + bz_S^* - 1)/\delta_1$ and $r^* = 1$. Target's decision to invest, z_S^*, is the same as in the prior case. Sanctioner's incentive constraint, $p < \bar{p}$, is never binding. Target's participation constraint, irrespective of type, is met if $1 - cz_S^{*2} + \delta_1 t_S^* \geq 1 \Rightarrow p \geq 1 - bz_S^* + cz_S^{*2}$. Define

$$\underline{p} \equiv 1 - bz_S^* + cz_S^{*2},$$

as the lower bound of the domain.

Cases 1 and 2, together, establish the existence of a *pooling on security equilibrium* over domain $p \in [\underline{p}, \bar{p}]$ and, given Bayes rule, $h > \widehat{q}$.

Case 3: $p \geq 1$ and $q < \widehat{q}$: Sanctioner's problem yielded solutions $t_E^* = (p-1)/\delta_1$ and $r^* = 0$. Target's maximization yields $z_E^* = \varepsilon$ if $Z > \varepsilon$ and $z_E^* = Z$ if $Z < \varepsilon$. However, the solution does not meet extortionist's participation constraint, for whom not investing and earning p is better than investing and collecting an inferior $1 - cz_E^{*2} + \delta_1((p-1)/\delta_1) = p - cz_E^{*2}$.

Case 4: $1 - bz < p < 1$ and $q < \widehat{q}$: This case suffers from the same deficiencies as case 3.

Case 5: $p \geq 1$ and $q = \widehat{q}$: Sanctioner's problem yielded solutions $t_S^* = (p + bz_S - 1)/\delta_1$, $t_E^* = (p-1)/\delta_1$ and, this is the novelty, $r^* = [0, 1]$. Sanctioner is indifferent between pursuing the high-reward (t_S^*) and the low-reward (t_E^*) incentive strategies. In order to exist, this equilibrium requires a particular belief, $q = \widehat{q}$, with limited empirical relevance

[17] By participation constraint, we refer to what it takes to match target's reservation value and invest.

if the posterior belief is the mere reflection of the prior belief, as such is the case in the pooling equilibrium. Yet, that belief could be manipulated to reach this value. This is the essence of the semi-separating equilibrium, in which extortionist initially randomizes, investing with probability g, not investing with probability $1-g$, in order to make himself rare enough to raise what is a low prior belief ($h<\widehat{q}$) to a posterior that is high enough for sanctioner to be willing to upgrade to the high-reward strategy. But extortionist cannot be trusted to stick to the announced random play unless he is himself made indifferent between investing and not investing. The semi-separating thus cannot exist without sanctioner, in turn, randomizing to that effect.

To characterize the equilibrium, we need to identify the two probability distributions, g and r. Probability g is such that, through Bayes rule, $\widehat{q} \equiv (\xi_1(t_S^* - t_E^*))/(z_S^* - \xi_1 t_E^*) = (h(1))/(h+(1-h)g)$, yielding, after substitution,

$$g^* = h\frac{\delta_1 z_S^* - \xi_1(p + bz_S^* - 1)}{(1-h)\xi_1 bz_S^*},$$

with $g^*=0$ if $p=\bar{p}$, $\partial g^*/\partial p<0$, and $g^*=1$ if $h=\widehat{q}$. Probability r is such that extortionist's payoff for investing z_S^* is equal to his reservation value p, implying $r(1-cz_S^{*2}+\delta_1 t_S^*) + (1-r)(1-cz_S^{*2}+\delta_1 t_E^*) = p$ and thus

$$r^* = \frac{cz_S^*}{b}.$$

The solution must satisfy sanctioner's incentive constraint: $r^*(Z-\xi_1 t_S^*) + (1-r^*)(q(Z-z_S^*-\xi_2 s^*) + (1-q)(Z-\xi_1 t_E^*)) \geq Z - z_S^* - \xi_2 s^*$, yielding the now familiar upper bound $p<\bar{p}$.

Case 6: $1-bz<p<1$ *and* $q=\widehat{q}$: The logic is the same as in case 5 once adjusted for $t_E^*=0$. Hence, $\widehat{q}\equiv \xi_1 t_S^*/z_S^*$,

$$g^* = h\frac{\delta_1 z_S^* - \xi_1(p + bz_S^* - 1)}{(1-h)\xi_1(p + bz_S^* - 1)},$$

with $g^*=0$, if $p=\bar{p}$, $\partial g^*/\partial p<0$, and $g^*=1$ if $h=\widehat{q}$. Probability r is such that extortionist's payoff is equal to his reservation value 1, implying

$$r(1-cz_S^{*2}+\delta_1 t_S^*) + (1-r)(1-cz_S^{*2}+\delta_1 t_E^*) = 1$$

and thus

$$r^* = \frac{cz_S^{*2}}{p + bz_S^* - 1},$$

with r^* defined over the range $p \geq \underline{p}$. Security's participation constraint is met if $r^*(1-cz_S^{*2}+\delta_1 t_S^*) + (1-r^*)(p+bz_S^*-cz_S^{*2}+\delta_2 s^*) \geq 1 \Rightarrow p \geq \underline{p}$.

Cases 5 and 6 together establish the existence of a *semi-separating equilibrium* over the domain $p\in[\underline{p},\bar{p}]$ and, through Bayes rule, $h<\widehat{q}$.

The Separating Equilibrium. The separating obtains when sanctioner's incentive constraint for the extortion equilibria is no longer met, i.e. when $p>\bar{p}$. Past that point, sanctioner is better off offering no incentive at all, thereby eliminating any possibility of extortion and any desire for extortionist to mimic security. In the separating equilibrium, security invests z_S^*, extortionist does not invest, and sanctioner offers $t_S = s_S = 0$ on the equilibrium path and $t_E = s_E = 0$ off the equilibrium path. Payoffs are $U(\cdot|S) = Z - z_S^*$, $U(\cdot|E) = Z$, $V_S = p + bz_S^* - cz_S^{*2}$, and $V_E = \max(1, p)$.

The Pooling on Extortionist Equilibrium. Security pools on extortionist when security's participation constraint is not met, $p < \underline{p}$. Neither target type invests while, off the equilibrium path, the equilibrium is similar to the extortion equilibria. Payoffs are $U = Z$ and $V_S = V_E = \max(1, p)$.

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