Optimal Compellence*

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Abstract

In many scenarios, a protagonist tries to compel a political leader (the antagonist) to cooperate. The protagonist can impose targeted measures (e.g., "smart" sanctions) that hurt the antagonist directly, and comprehensive measures (e.g., trade embargoes) aimed at provoking a popular uprising against the antagonist. However, there is no uprising if the citizens think the antagonist is defending their interests against a hostile protagonist: the *rally-'round-the-flag* effect. The effectiveness of the protagonist's compellent policy depends on the complex ways in which it influences the rally-'round-the-flag effect. First, there is the direct impact on costs and benefits. Second, the policy may signal the protagonist's level of hostility. Third, the policy influences the antagonist's "political bias", i.e., the misalignment between his interests and those of the representative citizen. We study the optimal mix of targeted and comprehensive measures, and whether the different measures are substitutes or complements.

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"Compellence usually involves *initiating* an action that can cease, or becomes harmless, only if the opponent responds" (Schelling [40], p. 72).

1 Introduction

A protagonist uses compellence to change the behavior of an antagonist who takes a non-cooperative (hostile) action at the status quo. In international relations, the protagonist may be the leader of a hegemonic power who uses economic sanctions to compel the leader of a minor power (the antagonist) into disarming. In a civil conflict, the protagonist may be a rebel group that uses terrorism to compel the government (the antagonist) into power-sharing. Our aim is to study when and how compellence might be effective. In particular, we will contrast comprehensive measures that impose costs on the population as a whole (comprehensive economic sanctions, the bombing of marketplaces) with measures that target the political elite ("smart" sanctions, the assassination of political leaders). Will these policies unite or divide the population and the elite? What is the optimal mix of targeted and comprehensive measures? Do these different instruments of compellence work with or against each other?

The United States has frequently imposed comprehensive economic sanctions (e.g., trade embargoes) on countries that are perceived as threats against international peace and stability. More recently, there has been a push towards targeted sanctions (blocking the elite's financial assets and transactions, restricting their ability to travel and to consume luxury goods, etc.). The recent sanctions against Russia have both targeted and comprehensive components. Similar strategies have been pursued in the past against Iran and North Korea.[1] By contrast, South Africa, Iraq and Libya faced mainly comprehensive sanctions. After the collapse of the Soviet Union, Russia also used economic coercion against the newly independent states which relied on Russia to export their products, import energy and other inputs in production and to transport oil and natural gas to the West (Drezner [14]).

[1] Comprehensive U.S. sanctions restrict trade and damage the North Korean economy; targeted sanctions on foreign financial transactions were introduced after nuclear tests. See Reynolds and Tan [39] for an overview of sanctions on Iran, North Korea and others.

In a civil conflict, a rebel group faces a similar strategic choice of targeted versus comprehensive measures. It may target the government directly, in order to compel it to share power or relinquish territory. Or it may attack the population at large, hoping to destabilize the government. For example, the Taliban attacked the Afghan government as well as civilian targets (see the U.N. report [48] on civilian casualties and Sediqi [41]). The IRA staged "spectaculars" or "massive attacks with maximum impact" such as the bombing of a military procession and a military band in Hyde Park and Regent's Park in 1982 (Foxwell [18]). These attacks harmed both civilians and soldiers. The IRA also bombed Prime Minister Margaret Thatcher and her Cabinet in Brighton in 1984, killing or injuring members of the ruling Conservative Party. However, to simplify the exposition, we will emphasize the international sanctions interpretation of the model.

In general, targeted measures are meant to incentivize the political elite to change course by directly impacting its cost-benefit analysis. Comprehensive measures have an indirect purpose: to cause social and popular unrest which either destabilizes the regime or forces it to change course to avoid being destabilized. For example, strategic bombing of population centers in wartime is meant to compel the enemy to seek peace or else be destabilized by popular unrest. However, such policies will backfire if the population "rallies around the flag" (Ostrom and Job [35]). In an important study, Galtung [20] used British actions against Rhodesia to argue that international sanctions can create a sense of solidarity within the sanctioned country, triggering political integration rather than disintegration. The "conspicuous sacrifices" of Rhodesia's (white) leaders, including symbolic acts such as the Prime Minister cycling to work, signalled that they shared the plight of the (white) citizens and defended their interests against the British: "We would rather suffer at your hands than give in" (Galtung [20], p. 395). More dramatically, Germany's bombing of Buckingham Palace during World War II endeared the monarchy to its citizens,[2] and Margaret Thatcher and the Conservative Party gained popularity after the Brighton attack (Lanoue and Headrick [28]). In general, the citizen's response to coercive measures will depend on his beliefs about how well his government represents his interests. We model

[2] Queen Elizabeth the Queen Mother said, "I am glad we have been bombed. Now we can look the East End in the eye" (Shew, [44], p. 76). King George VI said, "[W]e have found a new bond with them [the citizens] as Buckingham Palace has been bombed as well as their homes and nobody is immune" (Shawcross [43]).

how these beliefs depend on the nature of the protagonist's policy, and how the optimal policy take this dependence into account.

Our model has three players: the protagonist, the antagonist, and a third party who is the representative citizen of the antagonist's country. The antagonist is taking a non-cooperative action at the status quo, but can switch to cooperation. In the leading interpretation of the model, the protagonist is the leader of a major power and the antagonist the leader of a minor power. The non-cooperative action could be to develop WMDs; cooperation then means giving up the weapons.[3] The protagonist is either a hostile "Hawk" or a benevolent "Dove". If he is a Dove then cooperation generates a peace-dividend. But if he is a Hawk, then cooperation puts the antagonist's country at risk. For example, a minor power without WMDs may be at risk if a hostile major power wants to control its oil fields.[4] A key aspect of our model is that the citizen has less information than the antagonist about the threats facing their country. For simplicity, we assume the antagonist, but not the citizen, knows the protagonist's true type.

The antagonist's preferences are imperfectly aligned with those of the representative citizen, i.e., there is a "political bias" in the sense of Jackson and Morelli [25]. Neither the antagonist nor the citizen would like to cooperate with a Hawk. However, the citizen would like to cooperate with a Dove, while the antagonist may prefer non-cooperation even in this case. The reason is that the antagonist derives a private benefit from non-cooperation. For example, a leader of a minor power may use WMDs to deter local competitors for regional influence, to control a restive population, or simply as a source of personal prestige. A leader of a nuclear power is treated with respect on the world stage and may gain legitimacy at home. The size of the private benefit is the antagonist's privately known type. If the citizen does not trust the antagonist to make the right decision, then he may stage an uprising. If the uprising is successful, then the antagonist is removed from office ("regime change") and there is a switch to cooperation. However, an uprising is a gamble which puts the country at risk if the protagonist is a

[3] In the alternative interpretation, there is only one country. The protagonist is the leader of a rebel group, the antagonist is the government, and cooperation means power-sharing or ceding territory.

[4] Even allowing weapons inspections may be considered risky. North Korea sees nuclear inspections "as only the first wedge in opening the entire North Korean state to penetration...The North would be accepting a sure path to change in regime and society and ultimately, state survival" (Bracken [5], p. 150).

Hawk. Therefore, the citizen prefers to delegate decision-making to the (better informed) antagonist if, in the citizen's estimation, the political bias is not too big. We refer to this as the rally-'round-the-flag effect.

The protagonist uses coercive policies to compel cooperation. The antagonist will never cooperate with a Hawk, so the Hawk favors comprehensive measures, hoping to provoke an uprising. But if comprehensive measures signal that the protagonist is a Hawk, then the citizen will rally around the flag, being united with the antagonist in favor of non-cooperation. Therefore, a separating equilibrium does not exist; the Hawk prefers to pool with the Dove.[5] Targeted measures change the antagonist's cost-benefit calculation in favor of cooperation with a Dove, reducing the political bias. The antagonist's "conspicuous sacrifice" (Galtung [20]) therefore makes an uprising less likely (the rally-'round-the-flag effect). Our model thus echoes some themes of Galtung's [20] argument that sanctions can create political integration within the sanctioned country, but based on the citizen's rational expectations rather than a psychological feeling of solidarity.

Although the two types of protagonist disagree over compellent policies, there is a pooling equilibrium which is best for each type in the following sense: the expected payoff for each type is greater than in any other pooling equilibrium. Moreover, this pooling equilibrium satisfies standard equilibrium refinements. The policy chosen in this equilibrium is the *optimal compellent policy*. Being best for each type, this policy also maximizes the protagonist's *ex ante* expected payoff. We characterize the optimal compellent policy and show how it depends on the parameters. In the most interesting case, there are two possibilities. The optimal compellent policy is either a *targeted policy*, with maximum targeted measures but no comprehensive measures, or a *comprehensive policy*, with maximum comprehensive measures and limited targeted measures. The targeted policy maximizes the antagonist's incentive to cooperate; the comprehensive policy maximizes the representative citizen's incentive to stage an uprising. Maximizing both targeted and comprehensive measures simultaneously is sub-optimal, because targeted measures make the citizen rally around the flag, defeating the purpose of comprehensive measures.

The comprehensive policy aims to provoke an uprising. This is the optimal compellent policy if the antagonist is unlikely to cooperate voluntarily,

[5] In Section 7, we show that a partially separating equilibrium can exist if the protagonist knows the antagonist's benefit of non-cooperation.

but an uprising has a good chance of success. The comprehensive policy employs only weak targeted measures, making sure the antagonist's and the citizen's interests are sufficiently misaligned to prevent the rally-'round-the-flag effect. Comprehensive and targeted measures are complements: if, for exogenous reasons, the protagonist is forced to soften the comprehensive measures, then targeted measures must be reduced even further to prevent the citizen from rallying around the flag. This makes the antagonist less inclined to cooperate with a Dove, making the peace dividend less likely and leaving the representative citizen no better off than before.

If the optimal compellent policy is the targeted policy, then comprehensive measures should be abolished, since the aim is to elicit cooperation from the antagonist without provoking an uprising. The targeted policy is optimal if an uprising is difficult to provoke or unlikely to succeed, and if the antagonist is not too unwilling to cooperate voluntarily. It is also likely to be optimal if the rally-'round-the-flag effect is very strong, since in this case the targeted measures would have to be severely limited in a comprehensive policy. An uprising is difficult to provoke if the protagonist is *ex ante* likely to be a Hawk, or if the peace dividend is small. An uprising is unlikely to succeed in highly authoritarian countries. Thus, the comprehensive policy is more likely to be optimal against democratic countries. The representative citizen prefers a targeted policy, not only because he dislikes comprehensive measures, but also because targeted measures reduce his leader's political bias. In this sense, the representative citizen may benefit from living in a less democratic country.

An optimal comprehensive policy corresponds to a pooling equilibrium where both types of protagonist refrain from using targeted measures. This equilibrium exists because the antagonist's type (i.e., his private benefit from non-cooperation) is his private information. Indeed, if a benevolent protagonist (a Dove) knew that the antagonist had a low private benefit, then he would surely use targeted measures to induce voluntary cooperation. In Section 7, we show that if the protagonist knows the antagonist's type, then the best equilibrium for the protagonist is partially separating: the Hawk and the Dove choose different compellent policies against antagonists with low private benefits from non-cooperation. If the protagonist is a Dove and he knows that the antagonist's private benefit is small, then he induces cooperation by targeted measures. Otherwise, the protagonist tries to provoke an uprising using comprehensive measures. Thus, observing comprehensive

measures partially reveals information about both the protagonist and the antagonist: it becomes more likely that the protagonist is a Hawk (which discourages an uprising), but also that the antagonist's political bias is big (which encourages an uprising). For this to be an equilibrium, the information about the antagonist has to dominate, otherwise the comprehensive measures will not be used. Ex ante, the partially separating equilibrium is worse for the protagonist than the optimal comprehensive policy, so he prefers to be uninformed about the antagonist's type.

2 Related Literature

Kaempfer, Lowenberg and Mertens [26] argued that regime sympathizers may benefit from broad-based trade sanctions, making them even more loyal to the regime. In addition, severe economic sanctions may make uprisings less likely, because an impoverished population is easier to police and repress.[6] If this effect is very powerful, then comprehensive sanctions become self-defeating and our model is not relevant. Our model captures a scenario where comprehensive sanctions can trigger uprisings if the citizens do not think their leader defends their interests. Peksen and Drury [38] show empirically that authoritarian regimes often react to sanctions by increasing repression, and this increase is greater for comprehensive than for targeted sanctions. Since repression is costly, the regime would have to trade off increased repression against a policy change that may lead to a lifting of sanctions. This trade-off could be included in our model.

Major and McGann [30] argue that sanctions that hurt the general population may be very effective, since previously indifferent agents may try to change their country's current policy in order to escape the sanctions. However, they do not consider the key issue we focus on, namely, how *beliefs about the state of the world* determine whether they *want* their country to change policy. In our model, the representative citizen may either oppose the current regime or rally around the flag, depending on whether he thinks the current policy (say, developing WMD) is appropriate in the current state of the world (are the foreigners hostile?). Principal-agent models of labor coercion (Acemoglu and Wolitzky [1]) or indirect control (Padró i Miquel and Yared [36]) also do not allow for the channels we study as they are concerned

[6] This argument suggests that an autocratic leader may have an incentive to deliberately make his country impoverished in order to more easily repress the population.

with other issues such as labor incentives and optimal size of mutually costly punishments given limited commitment.

Another theory of the interaction between international and domestic politics was proposed by Di Lonardo, Sun and Tyson [12]. If it is commonly known that the interests of the domestic opposition are misaligned with those of a foreign power, then the targeted country's leader can economize on domestic security and yet be more likely to stay in power, because the opposition knows that an uprising may trigger a foreign intervention. A key force in our model is that the representative citizen of the targeted country does not know what motivates the leader of the major power (or, for that matter, his own leader). Thus, the models capture rather different scenarios. While Di Lonardo, Sun and Tyson [12] may describe the conflict between President Assad of Syria and ISIS (a domestic opposition whose interests are surely misaligned with those of the United States), our model may better capture some aspects of the current situation in Russia (where the Russian citizens don't know whether their interests are better aligned with the interests of the United States or with those of President Putin).[7]

Whang, McLean and Kuberski [49] considered a model of sanction threats. But they treat the targeted country as a unitary actor, while we focus on the interaction between the political elite and the population, and how to optimally manipulate their divergent interests. Eaton and Engers [17] and Spaniel and Smith [45] allow asymmetric information between a protagonist and an antagonist with private information of their resolve. The sanctions may fail if the antagonist's resolve is strong. In contrast, we focus on the beliefs of a third party, the representative citizen of the antagonist's country, who knows neither the level of hostility of the protagonist nor the political bias of the antagonist. Grillo and Nicolò [21] study the complementarity of sanctions and military aid in interstate conflict. Military aid is used to influence learning by an attacker who learns about his own strength. Hence, they study a different problem and the information asymmetries we focus on are not present.

Empirical research shows that sanctions have a mixed record. Years of debilitating comprehensive sanctions did eventually lead to the end of apartheid

[7] In a complementary analysis, Di Lonardo and Tyson [13] allow for disagreement between a protagonist leader and an elite. They show that domestic conflict can undercut the effectiveness of deterrence as either dovish elites or dovish leaders face pathological incentives.

in South Africa. Iran did agree to limit its nuclear program, and open it up to monitoring, after comprehensive and targeted sanctions. But severe sanctions against Iraq did not lead to the desired outcome. In a dataset consisting of 115 cases between 1914 and 1990, Hufbauer et.al. [23] found that sanctions were successful in a third of these cases.[8]

The empirical literature has also investigated the relative efficacy of different kinds of sanctions. Several studies concluded that if the targeted nation is a democracy, then comprehensive sanctions are more likely to succeed than targeted sanctions (Allen, ([2], [3]), Bolks and Al-Sowayel [4], Brooks [6], Lektzian and Souva [29]). After reviewing the United Nations sanctions of the 1990's, Cortright and Lopez ([10], p. 8) concluded that "the obvious conclusion is that comprehensive sanctions are more effective than targeted or selective measures. Where economic and social impact have been greatest, political effects have also been most significant". Empirical evidence supports the hypothesis that comprehensive sanctions cause social unrest (Allen [3]) and even regime change (Marinov [31]). Some studies have found that financial sanctions can be more effective than trade sanctions (Shagabutdinova and Berejikian [42]). But overall, the empirical literature does not seem to justify the recent push towards targeted sanctions. Drezner [16] concludes, based on a review of the empirical literature, that policymakers and scholars need to look beyond targeted sanctions, with specific attention to the domestic political constraints of non-democratic countries. Our model contributes to this agenda. We argue that the efficacy of different types of sanctions depend not only on the political system, but also on the beliefs of the citizens of the sanctioned country, which in turn depend on the mix of sanctions. Moreover, while most studies assume targeted sanctions are a substitute for comprehensive sanctions, in our model targeted sanctions can become less effective if comprehensive sanctions are removed. This interaction may be a topic for empirical research.

In the alternative interpretation of our model, the protagonist is a rebel group who can attack government buildings or market places (or both). The

[8] Pape [37] re-examined these cases and argued that the success rate was much lower, mainly because many of the "successes" could be attributed to the use or threat of force. Drezner [14] argued, however, that sanctions may be more successful than it appears in these datasets. In many cases, the *threat* of sanctions causes a change in behavior: "If the target prefers conceding to incurring the cost of sanctions, it has an incentive to acquiesce before the imposition of sanctions" (Drezner, [14], p.644). These successful cases do not appear as such in the datasets because the sanctions are not actually imposed.

group's chosen tactics drive the interaction between the targeted government and the representative citizen, who are asymmetrically informed about the group's motives. As far as we know, this problem was not previously studied in the literature on rebel group tactics – this literature has asked questions that are interesting but quite different from our main focus. Kydd and Walter [27] provide a useful taxonomy of the objectives and strategies or terrorist groups. For example, different groups may compete for support from a domestic audience which does not know which group would best represent it against a foreign power. Bueno de Mesquita [7] studies factors that might cause a terrorist organization to split into extreme and moderate factions. Bueno de Mesquita [8] allows a rebel organization to choose between conventional tactics (warfare), unconventional tactics (guerilla attacks), or to withdraw from conflict entirely. He studies how the optimal method to mobilize the population varies with the outside option of not joining a rebel group. He finds an interesting non-monotonicity: when outside options are very good, no-one will mobilize so the rebel group withdraws from conflict, but when options are very bad, mobilization is high so the rebel group uses conventional tactics. Only when options are intermediate does the rebel group use unconventional tactics.

3 The Game

3.1 Players and Actions

There are three players. Player P, the Protagonist (or Principal), is the leader of a major power, country P. Player A, the Antagonist (or Agent), is the leader of a minor power, country A. Player C is the representative Citizen of country A. Player P wants player A to make a cooperative decision (i.e., to cooperate with player P). We think of non-cooperation as a status quo where country A does something player P dislikes (e.g., develops WMDs, or occupies a contested territory). The cooperative decision is to change this behavior. Hence, we study *compellence*: player A's undesirable behavior is ongoing, and player P wants to incentivize player A to cooperate instead (Schelling [40]). For now, we take as given that coercive measures (sanctions) have already been imposed. Player P's choice of coercive measures will be considered in Section 6.

Player C may attempt an uprising. If the uprising is successful then player

A is removed from office ("regime change").[9] The only reason for player C to stage an uprising is that, from player C's perspective, player A is biased in favor of non-cooperation. Therefore, we assume without loss of generality that the cooperative decision will be taken after a successful uprising. If there is no uprising, then player C in effect delegates decision making to player A.

At the end of the game, player P can take a hostile action. The major power may attempt to subjugate the other country in order to control its natural resources or to fundamentally change its political system.

3.2 Time-line

The three players play the following three-stage game.

Stage 1: Player C chooses whether or not to attempt an uprising. If an uprising is attempted, it is successful with probability $\alpha \in (0, 1)$.

Stage 2: If there was a successful uprising in stage 1 then the cooperative action is implemented. Otherwise, player A chooses whether or not to take the cooperative action.

Stage 3: Player P may decide to take the hostile action.

All actions in the three stages are publicly observed.[10] We think of players A and C as belonging to country A. If the cooperative action is implemented in stage 2, either because there was a successful uprising or player A decides to cooperate, then we say that country A cooperates (or is cooperative). Otherwise, country A is said to have chosen non-cooperation (or is non-cooperative). Sanctions are lifted if country A cooperates, but remain in place otherwise.

In a different version of the model, player A would first decide whether to cooperate, then player C decides whether to attempt an uprising. This alternative time-line yields the same basic insights as the current version, which is chosen for ease of exposition.

[9] Alternatively, "successful uprising" may signify social and political unrest which causes player A to cooperate without actually losing office. The conclusions would be the same.

[10] The assumption that the decision to cooperate is publicly observed may seem strong. However, in this model there is no point in cooperating unless this is verified so that sanctions can be lifted. For example, a country that gets rid of its WMDs will have an incentive to allow weapons inspections to verify it.

4 Types, Payoffs and Beliefs

4.1 The Protagonist

Player P has two possible types, Hawk (H) and Dove (D). His type is denoted $\theta_P \in \{H, D\}$. A key aspect of our model is that player A knows more than player C about player P's type. Indeed, while a government can use espionage, expert advisors, diplomacy and other forms of information gathering to learn about external threats, citizens do not have this ability. For simplicity, we assume players P and A know the true θ_P. Player C thinks $\theta_P = H$ with probability h, where $0 < h < 1$.[11]

Both types of player P want country A to cooperate, but for different reasons. Roughly speaking, the Dove wants peace and the Hawk wants war. That is, a dovish major power wants country A to withdraw troops or disarm (i.e., to cooperate) so that the two countries can coexist peacefully. A hawkish major power wants country A to cooperate so that it can exploit country A's weakness. To be more precise, if country A is non-cooperative, then both types of player P get payoff -1 from taking the hostile action, and 0 otherwise. If country A is cooperative, then a hawkish player P (with $\theta_P = H$) gets +1 if he takes the hostile action and 0 otherwise; a dovish player P (with $\theta_P = D$) gets 0 if he takes the hostile action and +1 otherwise.[12] Thus, dovish player P will never choose the hostile action. Hawkish player P will choose the hostile action if and only if country A cooperates.

4.2 Payoffs for Antagonist and Citizen when country A is non-cooperative

If country A does not cooperate in stage 2, then player A gets a private benefit $\theta_A \geq 0$ from non-cooperation but incurs a cost $t \geq 0$ from targeted sanctions, while player C incurs a cost $c \geq 0$ from comprehensive sanctions.[13]

[11] More generally, we could assume players A and C observe noisy signals that are correlated with player P's type. This would complicate the exposition without adding new insights.

[12] For simplicity, we assume regime change *per se* does not have any value to player P. It does have indirect value, as an instrument for ensuring that country A cooperates. In the Conclusion, we discuss the implications of dropping this assumption.

[13] For now, the value of t and c are considered as fixed parameters. Player P's choice of t and c will be endogenized in Section 6. Note that non-cooperation at stage 2 implies there was no successful uprising.

Concretely, θ_A might represent the antagonist's benefit from building a position as a superpower that can dominate weaker neighbors. Turning a neighbor into a vassal state confers strength and perhaps helps deter a revolution. A successful weapons program has similar effects. The important point is that this private benefit is not (fully) shared with the representative citizen.

Only player A knows the true value of θ_A.[14] Players P and C think θ_A is distributed on $[0, \bar{\theta}]$ with cumulative distribution function F. We assume F is differentiable and strictly increasing on $[0, \bar{\theta}]$, with $F(0) = 0$ and $F(\bar{\theta}) = 1$. The two types, θ_P and θ_A, are uncorrelated.

4.3 Payoffs for Antagonist and Citizen when country A cooperates with a Hawk

If country A cooperates when player P is a Hawk, then sanctions are lifted and player P chooses the hostile action in stage 3. Player P's hostility imposes a cost $\Omega_A > 0$ on player A and a cost $\Omega_C > 0$ on player C.[15] To rule out the uninteresting case where cooperation is guaranteed, we make the reasonable assumption that the cost of non-cooperation is smaller than the cost of the hostile action for players A and C:

Assumption 1: $t < \Omega_A$ and $c < \Omega_C$.

Thus, if player P is a Hawk then the interests of players A and C are aligned: since $-c > -\Omega_C$, and $\theta_A - t > -\Omega_A$ for all $\theta_A \geq 0$, both prefer non-cooperation.

[14] Thus, there is an asymmetry: player A knows θ_P but player P does not know θ_A. The assumption that player A observes θ_P without error is for convenience only. The key assumption we need is only that player A knows more than player C about θ_P. This seems reasonable, especially if country P is a democratic country where a free press provides information about the motives of the political elite, while country A is a dictatorship where the citizens have limited access to information. Conversely, the dictator's private benefit θ_A may be hard to estimate for both his citizens and outsiders. However, it may be reasonable to assume that player P knows more than player C about θ_A. To investigate this, in Section 7 we consider the symmetric case where player A observes θ_P and player P observes θ_A.

[15] Without loss of generality, we assume sanctions are automatically lifted when country A cooperates. If the hawkish player P refuses to lift sanctions then Ω_A and Ω_C would include t and c. Nothing changes.

4.4 Payoffs for Antagonist and Citizen when country A cooperates with a Dove

If country A cooperates when player P is a Dove, then sanctions are lifted and player P does not choose the hostile action in stage 3. Player A gets 0 while player C gets a benefit $\lambda > 0$, a "peace dividend". The peace dividend λ includes the value of resources freed up by ending an invasion or a weapons program, and from the return of trade.

To rule out the uninteresting possibility that player A always wants cooperation when player P is a Dove and player C always wants cooperation when he does not know player P's type, we assume:

Assumption 2: $\bar{\theta} > t$ and $h\Omega_C > (1-h)\lambda$.

If player P is a Dove then player C surely prefers cooperation (as $\lambda > -c$). However, if $\theta_A > t$, then player A prefers non-cooperation even with a Dove, since $\theta_A - t > 0$. Thus, if player P is a Dove and $\theta_A > t$, then the interests of players A and C are *not* aligned.

4.5 Alternative Interpretation of the Model

In the alternative interpretation, there is only one country, country A. Player P is the leader of a rebel group, player A represents the government of country A and player C its representative citizen. The cooperative decision is to share power with the rebels. In this interpretation, t and c represent the cost of attacks against the government and the average citizen, respectively, which are only terminated if there is a power-sharing deal. The government's type θ_A represents its private benefit of "looking tough" when dealing with the rebels. The peace dividend λ includes the value of resources released by ending counter-insurgency warfare.

Dovish and hawkish rebel leaders have moderate and extreme objectives, respectively. The rebel leader's type may be determined by an internal power struggle between a dovish wing and a hawkish wing. For example, the IRA had a moderate political arm Sinn Fein as well as an violent extremist arm.

The latter found the former to be lacking in its embrace of Catholic doctrine.[16] The Palestinian resistance to Israel has some who are willing to coexist in peace and others, like Hamas, who are committed to continuing resistance.[17] Uncertainty about the Taliban's motives was the main concern in negotiations with the Taliban (International Crisis Group [24]): did the Taliban have circumscribed motives and mainly seek United States withdrawal (a Dove), or did they seek imposition of extreme Islamic law with violations of women's and minority rights (a Hawk)? Despite this uncertainty, it is plausible that the government knows more about the rebel group than the representative citizen, as the government has spies and informants and other sources of information.

If a successful uprising leads to regime change, then a dovish rebel leader is assumed to share power with the new (cooperating) government. If power-sharing with a new government would be impossible, there would be no peace dividend and no incentive to start an uprising, so attacking the population would be pointless. However, if "successful uprising" is interpreted to mean that the government is forced to cooperate (share power) without actually losing office (see footnote 9), then power-sharing with a new government never becomes an issue.

5 Equilibrium

We solve the three stage game by backward induction and find the unique Perfect Bayesian Equilibrium. At stage 3, player P will take the hostile action if and only if $\theta_P = H$ and country A cooperates. Now consider stage 2. Suppose there was no successful uprising, so player A makes a decision at stage 2. Recall that player A knows θ_P. If $\theta_P = H$ then player A will get $-\Omega_A$ if he cooperates at stage 2 and $\theta_A - t$ if he does not. Since $\theta_A \geq 0$ and $\Omega_A > t$ by Assumption 1, player A will surely choose non-cooperation in order to deter the Hawk from taking the hostile action.

[16] I.R.A. member Gerry McGeough said: "You would never get a leader of Sinn Fein condemning abortion, homosexual 'marriage' or anything of that nature. I, as an Irish nationalist and Catholic, never want to see the day when there are abortion clinics in every market town in Ireland. But looking around there is no political grouping willing to take a stance against that" (McDonald [33]).

[17] See Kydd and Walter [27] for many relevant examples and also an analysis of how extremist might deliberately try to sabotage peace negotiations. Bueno de Mesquita [7] studies factors that feed into increasing extremism.

If $\theta_P = D$ then there is no threat of a hostile action from player P. Player A will get 0 if he cooperates, and $\theta_A - t$ if he doesn't. Thus, player A will cooperate if and only if $\theta_A - t < 0$. The probability that player A will cooperate when $\theta_P = D$ is

$$\Pr\{\theta_A < t\} = F(t). \tag{1}$$

Since player C thinks $\theta_P = D$ with probability $1 - h$, he thinks player A will cooperate at stage 2 with probability $(1-h)F(t)$. If player A cooperates then player C's payoff is λ, otherwise it is $-c$. (Note that player A never cooperates when $\theta_P = H$). Thus, if there is no successful uprising at stage 1 then player C's expected payoff is

$$(1-h)F(t)\lambda + [1-(1-h)F(t)](-c) = -c + (1-h)F(t)(\lambda + c) \tag{2}$$

If there is a successful uprising then country A will cooperate, and player C gets $-\Omega_C$ if $\theta_P = H$ and λ if $\theta_P = D$. Thus, player C's expected payoff is

$$-h\Omega_C + (1-h)\lambda \tag{3}$$

Hence, player C will stage an uprising if and only if[18]

$$-h\Omega_C + (1-h)\lambda \geq -c + (1-h)F(t)(\lambda + c) \tag{4}$$

If $c < h\Omega_C - (1-h)\lambda$ then (4) is violated for all $t \geq 0$, so there is no uprising. If $c \geq h\Omega_C - (1-h)\lambda$ then (4) holds if and only if $t \leq \tau(c)$, where $\tau(c)$ satisfies

$$F(\tau(c)) = \frac{c - h\Omega_C + (1-h)\lambda}{(1-h)(\lambda + c)}. \tag{5}$$

Because $c < \Omega_C$, the right hand side of (5) is less than 1, so $0 \leq \tau(c) < \bar{\theta}$. Player C wants cooperation with player P if and only if player P is a Dove. If $t > \tau(c)$ then the probability h that player P is a Hawk and the probability $F(t)$ that player A cooperates with a Dove are enough to discourage an uprising. In this case, player A's interests are sufficiently likely to be aligned with player C's, so that player C prefers to delegate decision-making to player A. This is the manifestation of the rally-'round-the-flag effect.

To summarize:

[18] We assume an uprising, whether successful or not, has no direct cost to player C. Thus, when deciding whether or not to start an uprising, player C can assume the uprising will be successful, since if it is unsuccessful he gains or loses nothing from the attempt. This is why α does not appear in (4). A direct cost could be added without adding any insights.

Proposition 1 *The three-stage game has a unique Perfect Bayesian Equilibrium. If* $c \geq h\Omega_C - (1-h)\lambda$ *and* $t \leq \tau(c)$ *then there is an uprising; country A cooperates with probability* $\alpha + (1-\alpha)F(t)$ *if* $\theta_P = D$ *and with probability* α *if* $\theta_P = H$*. Otherwise there is no uprising; country A cooperates with probability* $F(t)$ *if* $\theta_P = D$ *and with probability* 0 *if* $\theta_P = H$*.*

Note that

$$\tau'(c) \equiv \frac{h}{1-h} \frac{\Omega_C + \lambda}{(\lambda + c)^2} \frac{1}{F'(\tau(c))} > 0.$$

If comprehensive sanctions are high, then player C has a big incentive to engage in an uprising even if targeted sanctions are high. But when comprehensive sanctions are low, player C has no such incentive as player A's incentives to cooperate are already well-aligned with player C's. Therefore, targeted sanctions have to be lower, so player A will not in effect do player C's bidding, for player C to have the incentive to stage an uprising.

6 Optimal Compellent Policy

We now endogenize the choice of compellent interventions by adding an initial stage, stage 0, to the game. In stage 0, the protagonist makes a publicly observed choice of $(t, c) \in [0, \bar{t}] \times [0, \bar{c}]$. The remaining stages 1,2 and 3 are as described above. Thus, targeted interventions impose a cost t on player A, and comprehensive interventions impose a cost c on player C, unless country A cooperates. For simplicity, interventions have no direct cost for player P up to $\bar{t}$ and $\bar{c}$, and infinite costs thereafter. Hence, we ask what interventions player P should impose if there are no political constraints up to some maximum. Lower $\bar{t}$ and $\bar{c}$ capture stronger constraints. Assume Assumptions 1 and 2 hold for $t = \bar{t}$ and $c = \bar{c}$, so the analysis of Section 5 applies for all $(t, c) \in [0, \bar{t}] \times [0, \bar{c}]$.

In a *separating* (perfect Bayesian) equilibrium, player P reveals his true type by choosing (t_H, c_H) when he is Hawk and $(t_D, c_D) \neq (t_H, c_H)$ when he is a Dove. By Assumption 2, there is no uprising following (t_H, c_H), because player C does not want cooperation with a Hawk. But player C would respond to (t_D, c_D) with an uprising because he strictly prefers cooperation with a Dove, and without an uprising there is always a positive probability that player A refuses to cooperate (see Section 4.4). But then the Hawk prefers to announce (t_D, c_D) at stage 0, because it makes it more likely that country A will cooperate. This shows that no separating equilibrium exists.

Now consider *pooling* (perfect Bayesian) equilibria, where player P chooses the same (t, c) regardless of type. Along the equilibrium path, player C's stage 1 beliefs about player P must equal the prior beliefs, since no information is revealed at stage 0. Off the equilibrium path, player C's stage 1 beliefs about player P may differ from the prior. But player C's stage 1 beliefs about player A must equal the prior both on and off the equilibrium path, because player P's choice at stage 0 cannot signal player A's type.[19] We are interested in the best pooling equilibrium for player P. If player P is indifferent, then we break the tie using the Pareto criterion, which amounts to breaking ties in favor of the citizen and minimizing comprehensive interventions. (Also, if comprehensive interventions do impose some small cost on player P, this is optimal for player P.)

One might expect player P's types to disagree about the best equilibrium. However, among all pooling equilibria there is one that is best for both the Hawk and the Dove. The compellent policy (t, c) chosen by both types in this equilibrium maximizes each type's expected payoff over all equilibria. We therefore refer to it as the *optimal compellent policy*. It turns out to be the same policy (t, c) that maximizes the Dove's expected payoff over all $(t, c) \in [0, \bar{t}] \times [0, \bar{c}]$, when (t, c) is exogenously given as in Section 5.[20] Also, this equilibrium satisfies reasonable restrictions on out of equilibrium beliefs. We now characterize the optimal compellent policy.

There are two cases where finding the optimal compellent policy is trivial. First, if $\bar{c}$ is very small, specifically $\bar{c} < h\Omega_C - (1-h)\lambda$, then Proposition 1 implies that provoking an uprising is impossible, so the optimal compellent policy is $(\bar{t}, 0)$.[21] Second, if $\bar{c}$ is very big, specifically $\bar{c} \geq \tau^{-1}(\bar{t})$ so that $\tau(\bar{c}) \geq \bar{t}$, then player P can get his bliss point: $(\bar{t}, \hat{c})$ such that $\tau(\hat{c}) = \bar{t}$ will result in an uprising with maximum targeted sanctions $\bar{t}$. This is clearly the optimal compellent policy in this case.

From now on we focus on the remaining, non-trivial case. Assume $\bar{c}$ is in the intermediate range, where the following *uprising feasibility condition*

[19] This is the "no signaling what you don't know" condition of Perfect Bayesian Equilibrium (Fudenberg and Tirole [19]).

[20] That is, find the $(t, c) \in [0, \bar{t}] \times [0, \bar{c}]$ that maximizes the Dove's expected payoff, assuming the policy is exogenously given as in Section 5, not chosen by player P. It turns out that for both types to choose this policy is a pooling equilibrium.

[21] Since comprehensive sanctions are not useful for player P in this case, and we break ties in favor of Pareto optimality, we set $c = 0$.

holds:

$$h\Omega_C - (1-h)\lambda \leq \bar{c} < \tau^{-1}(\bar{t}) \tag{6}$$

In this case, it is possible to provoke an uprising, but there is a trade-off: for an uprising to occur, the targeted measures must be reduced below $\bar{t}$ to counteract the rally-'round-the-flag effect.

The only justification for imposing comprehensive measures is to provoke an uprising. By Proposition 1, an uprising occurs if $c \geq h\Omega_C - (1-h)\lambda$ and $t \leq \tau(c)$. If $t < \tau(c)$ (which implies $c > 0$) then reducing c slightly makes player C better off without eliminating his incentive to start an uprising. Thus, if (c,t) is Pareto optimal and there is an uprising, then $t = \tau(c)$. Moreover, raising both c and t until c has reached the upper bound $\bar{c}$ will make both types of player P better off. Thus, the best policy which provokes an uprising is $(\tau(\bar{c}), \bar{c})$, where $\tau(\bar{c}) < \bar{t}$ since we assume (6) holds. Since comprehensive measures are maximized at $c = \bar{c}$, we refer to $(\tau(\bar{c}), \bar{c})$ as the *comprehensive policy*. It gives the Dove an expected payoff

$$\alpha + (1-\alpha)F(\tau(\bar{c})) \tag{7}$$

since his payoff equals the probability of cooperation. Note that this is the sum of two terms: the probability that the uprising is successful (and so brings about cooperation), and the probability that there is no successful uprising times the probability that player A cooperates voluntarily.

If (c,t) is such that no uprising occurs, then comprehensive measures do nothing to help player P, and Pareto optimality requires $c = 0$. To encourage player A to cooperate, targeted measures should be maximized. Thus, the best policy which does *not* provoke an uprising is $(\bar{t}, 0)$. Since the comprehensive measures are eliminated, but the targeted measures are maximized, we refer to $(\bar{t}, 0)$ as the *targeted policy*. Since there is no uprising, the Dove's expected payoff is

$$F(\bar{t}) \tag{8}$$

A Dove prefers the comprehensive policy $(\tau(\bar{c}), \bar{c})$ to the targeted policy $(\bar{t}, 0)$ if and only if (7) exceeds (8), i.e.,

$$\alpha + (1-\alpha)F(\tau(\bar{c})) \geq F(\bar{t})$$

Using (5), this is equivalent to the *comprehensive sanctions feasibility condition*

$$\bar{c} \geq \frac{h(1-\alpha)\Omega_C - (1-h)(1-F(\bar{t}))\lambda}{1 - h\alpha - (1-h)F(\bar{t})} \tag{9}$$

A Hawk can only get cooperation if there is an uprising, so he surely prefers the comprehensive policy. Thus, if inequality (9) holds then both types prefer the comprehensive policy. Moreover, this policy can be supported by the (plausible) out-of-equilibrium beliefs that if player P deviates from the comprehensive policy at stage 0, then he is a Hawk (so there is no uprising). Thus, if inequality (9) holds then the optimal compellent policy is the comprehensive policy.

If the comprehensive sanctions feasibility condition (9) is violated, then there is disagreement in the sense that the Hawk prefers the comprehensive over the targeted policy while the Dove have the opposite preference. However, there is no pooling equilibrium which implements the comprehensive policy $(\tau(\bar{c}), \bar{c})$. The reason is that the Dove can unilaterally deviate to the targeted policy $(\bar{t}, 0)$ and benefit. There is no out-of-equilibrium belief that player C could have about player P's type that would make the deviation unprofitable. Hence, there is in fact no disagreement over pooling *equilibria*: $(\bar{t}, 0)$ is the preferred pooling equilibrium policy for both types when the comprehensive sanctions feasibility condition (9) is violated. Again, this is supported by the (reasonable) out-of-equilibrium beliefs that if player P deviates at stage 0, then he is a Hawk. Thus, if the comprehensive sanctions feasibility condition (9) is violated then the optimal compellent policy is the targeted policy. In general, the optimal compellent policy is the Dove's most preferred policy if payoffs are derived as in Section 5 (with exogenously given policies).

Proposition 2 *Suppose the* uprising feasibility condition *(6) holds. The optimal compellent policy is the comprehensive policy* $(\tau(\bar{c}), \bar{c})$ *if the* comprehensive sanctions feasibility condition *(9) holds, and the targeted policy* $(\bar{t}, 0)$ *otherwise.*

An analysis of the comprehensive sanctions feasibility condition (9) reveals that the comprehensive policy $(\tau(\bar{c}), \bar{c})$ is more likely to be optimal if Ω_C is small, h is small, λ is big and α is big. Player C is less concerned about player P's hostility if the costs Ω_C are small and the chance h that player P is a Hawk is small. Furthermore, these expected costs might be curtailed by a large peace dividend λ if player A cooperates and player P is a Dove. These factors reduce the rally-'round-the-flag effect and hence favor the comprehensive policy.

A higher α signifies that the population is more able to influence political decisions. This also favors the comprehensive policy. Thus, countries that

are more democratic in this sense would be more likely to have comprehensive interventions imposed on them. Other things being equal, citizens are better off under a less democratic government, where they do not face comprehensive sanctions. Formally, with the comprehensive policy, player C's payoff is

$$\alpha\left(\left(1-h\right)\lambda-h\Omega_C\right)+\left(1-\alpha\right)\left(1-h\right)\lambda F(\tau(\bar{c}))$$

and with the targeted policy it is $\left(1-h\right)\lambda F(\bar{t})$. Since $\left(1-h\right)\lambda-h\Omega_C<0$ and $\tau(\bar{c})<\bar{t}$, the citizen prefers the targeted policy. From the perspective of our model, comprehensive sanctions created enough domestic pressure to end apartheid in South Africa, but white citizens might have been better off if their government had been known not to care about such pressure. For reasons not modeled in this paper, constraints on social media, ability to hoard weapons and to vote, etc., reduce citizens' welfare. The possible silver lining is that the citizens' inability to achieve regime change might imply less comprehensive sanctions.

Next consider changes in $\bar{c}$. Consider a status quo scenario without significant restrictions on comprehensive interventions, so the comprehensive sanctions feasibility condition (9) holds with strict inequality.[22] The optimal policy is the comprehensive policy $(\tau(\bar{c}),\bar{c})$, whereby the protagonist hopes to trigger a successful uprising. Now suppose the comprehensive interventions are restricted for some exogenous reason: $\bar{c}$ falls by an amount small enough that the comprehensive sanctions feasibility condition (9) still holds.[23] In the optimal policy, targeted measures also fall, because $\tau'(\bar{c})>0$. Intuitively, for an uprising to occur the antagonist must be sufficiently biased in favor of non-cooperation, and this is accomplished by relaxing the targeted measures. Thus, a small exogenous reduction in the comprehensive measures leads to less, not more, targeted interventions in the optimal policy. In this sense, the two measures are complements. Player A is made better off by the restriction on comprehensive measures, because the targeted measures

[22] In the leading interpretation, there is no significant public opinion within the major power that makes it hard to impose tough comprehensive sanctions. In the case of the rebel group, it feels unconstrained in its use of violence against the general population.

[23] In democratic nations, public opinion may impose constraints on comprehensive sanctions. Constraints may also be due to technological factors. During World War II, German bombing of British population centers at first seemed to reduce public support for the war effort. However, until the development of the V-2 rocket Hitler did not have the military technology to hurt the British population sufficiently. The V-2 came too late to have a significant impact, and targeting the elite made the British rally around the flag.

are reduced. However, the citizen is not made better off. If $(t, c) = (\tau(\bar{c}), \bar{c})$ then, using (2), (3) and (5), player C's expected payoff is

$$\begin{aligned} & \alpha \times (h(-\Omega_C) + (1-h)\lambda) + (1-\alpha) \times (-\bar{c} + (1-h)F(\tau(\bar{c}))\,(\lambda + \bar{c})) \\ = \;& h(-\Omega_C) + (1-h)\lambda \end{aligned}$$

which is independent of $\bar{c}$. Thus, restricting the comprehensive measures does not increase player C's expected payoff. Holding t constant, the fall in $\bar{c}$ would indeed make player C better off. However, the protagonist's optimal policy changes, so t also falls which makes player C worse off. The two effects balance.

Now suppose $\bar{c}$ falls by an amount large enough that the comprehensive sanctions feasibility condition (9) is no longer satisfied. Provoking an uprising is no longer optimal for the protagonist: targeted measures would have to be reduced by so much that the antagonist would be very unlikely to cooperate voluntarily. It is better to maximize the targeted measures and forget about the uprising. That is, the optimal policy is the targeted policy $(t, c) = (\bar{t}, 0)$. Switching to a targeted policy makes player A worse off, but player C is strictly better off as above. In summary, there is a non-monotonicity: a small reduction in $\bar{c}$ leads to a relaxation of the targeted measures, but a large fall in $\bar{c}$ leads to an increase of the targeted measures.

7 Symmetric Information

So far we have assumed player A knows θ_P but player P does not know θ_A. In this section, we consider a symmetric situation where players P and A know each other's types. Player C still does not know either type. We show two results. First, for some parameter values the best equilibrium for both types of player P is partially separating, in the sense that the Hawk and the Dove choose different compellent policies against some types of antagonist. Second, player P might actually prefer to be uninformed about player A's type, because having the information undercuts his ability to use comprehensive measures to provoke an uprising.

If player P is a Dove and knows that $\theta_A \leq \bar{t}$, then he can make sure country A cooperates by imposing a targeted policy $(t, 0)$ such that $\theta_A \leq t \leq \bar{t}$. Therefore, in any equilibrium, dovish player P must get payoff $+1$ when $\theta_A \leq \bar{t}$. Note that any targeted policy such that $t \geq \theta_A$ will work, i.e., will induce player A to cooperate, therefore all such policies give the same

payoffs to all players. Without loss of generality, assume the Dove chooses the policy $(\bar{t}, 0)$ when $\theta_A \leq \bar{t}$.

If player P is a Hawk, or if he is a Dove and $\theta_A > \bar{t}$, then the only way to get cooperation is to provoke an uprising – if this is possible. The following equilibrium is therefore the best possible for player P. If $\theta_P = D$ and $\theta_A \leq \bar{t}$, then player P chooses $(\bar{t}, 0)$. Otherwise, player P chooses $(0, \tilde{c})$, where $\tilde{c}$ is the smallest comprehensive measure that provokes an uprising. Feasibility requires $\tilde{c} \leq \bar{c}$, which we check later. If there is no successful uprising, then player A chooses the cooperative action if and only if $\theta_P = D$ and $t \geq \theta_A$. If player P chooses $(\bar{t}, 0)$ then player C concludes that $\theta_P = D$ and $\theta_A \leq \bar{t}$ and therefore there is no reason for an uprising. If player P chooses an off-the-equilibrium-path policy, then player C believes that $\theta_P = H$, and again there is no uprising. Finally, suppose player C observes that player P chose $(0, \tilde{c})$. Player C then knows that player P is either a Dove who knows that $\theta_A > \bar{t}$, or a Hawk. Bayes Rule implies that $\theta_P = H$ with probability

$$h^* = \frac{h}{h + (1-h)\left(1 - F\left(\bar{t}\right)\right)}. \tag{10}$$

We need to make sure that player C is willing to stage an uprising when he observes $(0, \tilde{c})$. If there is a successful uprising then his expected payoff is

$$-h^*\Omega_C + (1 - h^*)\lambda.$$

If there is no successful uprising following $(0, \tilde{c})$, then player C's expected payoff is $-\tilde{c}$, because player A will choose non-cooperation (since either $\theta_P = H$ or $\theta_P = D$ and $\theta_A > \bar{t}$). Thus, the smallest $\tilde{c}$ such that player C is willing to stage an uprising satisfies

$$-h^*\Omega_C + (1 - h^*)\lambda = -\tilde{c}. \tag{11}$$

Using (5) and (10), we see that $\tilde{c}$ given by (11) satisfies the feasibility condition $\tilde{c} \leq \bar{c}$ if and only if $\tau(\bar{c}) \geq \bar{t}$. We therefore refer to $\tau(\bar{c}) \geq \bar{t}$ as *the informed protagonist's uprising feasibility condition.*

Thus, if $\tau(\bar{c}) \geq \bar{t}$, then we have found the best equilibrium for both Hawk and Dove. Player P imposes targeted measures if he is a Dove who knows that targeted measures will work ($\theta_A \leq \bar{\tau}$), and comprehensive measures otherwise. If player C observes the comprehensive policy $(0, \tilde{c})$, then there are two opposing effects on his incentive to stage an uprising. On the one

hand, the probability that player P is a Hawk, conditional on observing $(0, \tilde{c})$, exceeds the prior probability, $h^* > h$. This favors rallying around the flag (i.e., no uprising). On the other hand, while the conditional probability that player P is a Dove is smaller than the prior, $1 - h^* < 1 - h$, the policy $(0, \tilde{c})$ will never elicit voluntary cooperation from player A. This favors an uprising, since otherwise comprehensive sanctions remain in place and there is no peace dividend. To incentivize an uprising, the comprehensive sanctions have to be severe enough to overcome the rally-'round-the-flag effect. Mathematically, the condition for this to be possible is *the informed protagonist's uprising feasibility condition* $\tau(\bar{c}) \geq \bar{t}$. If $\tau(\bar{c}) < \bar{t}$ then it is impossible to incentivize an uprising, and if either $\theta_P = H$ or $\theta_A > \bar{t}$ then player A cannot be induced to cooperate either, so player P might as well set $c = t = 0$. To summarize:

Proposition 3 *If player P knows θ_A then his best equilibrium is partially separating. When $\theta_P = D$ and $\theta_A \leq \bar{t}$, he sets $(t, c) = (\bar{t}, 0)$. In all other situations, he sets $(t, c) = (0, \tilde{c})$ if* the informed protagonist's uprising feasibility condition $\tau(\bar{c}) \geq \bar{t}$ *holds, and $(t, c) = (0, 0)$ otherwise (where $\tilde{c}$ is defined by equation (11)).*

It is instructive to compare with the scenario where player P does not know θ_A. If the *uprising feasibility condition* (6) holds, and player P does not know θ_A, then he can provoke an uprising by setting $(c, t) = (\bar{c}, \tau(\bar{c}))$, where $\tau(\bar{c}) < \bar{t}$ (see Section 6). Player C knows that player A's political bias precludes voluntary cooperation whenever $\theta_A > \tau(\bar{c})$, so the incentives are misaligned with probability $1 - F(\tau(\bar{c}))$, and this provides (just) enough incentive to stage an uprising. Note that the uninformed player A deliberately reduces the targeted measures below $\bar{t}$ in order to provoke an uprising. But this is not possible when player P knows θ_A, because a Dove will then use targeted measures to induce cooperation whenever $\theta_A \leq \bar{t}$. In this case, when player C observes comprehensive measures, he knows that his incentives are misaligned with player A's only if $\theta_A > \bar{\tau}$. That is, the incentives are misaligned only with probability $1 - F(\bar{\tau}) < 1 - F(\tau(\bar{c}))$, which does not provide enough incentive to stage an uprising. This is why *the informed protagonist's uprising feasibility condition* is violated whenever the *uprising feasibility condition* (6) is satisfied.

Suppose the *uprising feasibility condition* (6) holds and the comprehensive policy is optimal when player P is uninformed about θ_A (see Section 6). Since

uprisings are infeasible when player P knows θ_A, both types of player P are worse off knowing θ_A. In order to provoke an uprising, player P must make it publicly known that he is not gathering information about the antagonist – this creates a de facto commitment not to exploit any knowledge of θ_A. In view of (9), he should not gather information about antagonists who are likely to have a small private benefit of non-cooperation, where the peace dividend is likely to be big and where an uprising is more likely to be successful. Intuitively, spying on open market democracies might not be optimal.

8 Concluding Comments

Major powers use comprehensive and targeted sanctions to compel minor powers to cooperate. Rebel groups bomb marketplaces and government buildings in order to compel the government to share power or give up land. Currently, Russia is attacking Ukraine's civilian infrastructure, including its power plants.[24] But comprehensive measures (trade embargoes, strategic bombing) are criticized as being not only immoral, but ineffective. Accordingly, policy discussions focus on replacing comprehensive with targeted measures (e.g., Drezner [16]). In our model, the representative citizen is unsure about two things: the political bias of his country's elite, which determines how well the political elite represents his interests, and the threat facing his country, which determines whether cooperation is the best policy. The citizen's beliefs determine whether he will attempt an uprising or rally around the flag. We made an attempt at studying the complex interaction between these beliefs and the compellent policy.

If comprehensive sanctions reveal that the protagonist is sure to be hostile, then the representative citizen will rally around the flag, and since this makes comprehensive sanctions self-defeating, there is no (fully) separating equilibrium. However, comprehensive sanctions can reveal partial information about a protagonist who knows the antagonist's benefit of non-cooperation. If a dovish protagonist knows that targeted sanctions will work, then he will not impose comprehensive sanctions. Thus, comprehensive sanctions reveal that the protagonist is either hostile, in which case the citizen would like to rally around the flag, or the protagonist is benevolent but the antagonist is greatly

[24] The former Russian President and Prime Minister promised on his Telegram account that if Ukraine recognizes the legitimacy of Russia's demands "then the light will come on" (Medvedev [32]).

biased in favor of non-cooperation, in which case the citizen would like to stage an uprising. In order to incentivize an uprising in a partially separating equilibrium, the comprehensive sanctions have to be large enough to overcome the rally-'round-the-flag effect. This means incentivizing an uprising is very difficult when the protagonist knows the antagonist's type.

If the protagonist does not know the antagonist's type, then only pooling equilibria exist: the protagonist chooses the same compellent measures, whether he is hostile or benevolent. Since cooperation can be either a voluntary decision by the antagonist, or triggered by a successful uprising, it seems intuitive that targeted measures can substitute for comprehensive measures. However, if comprehensive measures must be softened for some exogenous reason, then the protagonist has two options. He can try to provoke social unrest by eliminating targeted measures, which increases the antagonist's political bias. In this case, comprehensive and targeted interventions are complements, not substitutes. Or, he can give up on creating social unrest, and switch to a targeted policy which abolishes comprehensive measures. Proposition 2 shows that the optimal choice depends on parameters such as Ω_C, h, λ and α. For example, against more democratic countries (high α), the targeted policy is less likely to be optimal. More generally, the model suggests that empirical studies of the relative efficacy of different kinds of sanctions may suffer from selection bias. For example, according to the optimal policy, comprehensive sanctions are more likely to be imposed on more democratic countries (high α) and on countries with a large peace-dividend (high λ), all else equal.

To analyze this complex problem, we made very strong assumptions. For example, both types of protagonist simply want to maximize the probability that country A cooperates. One can imagine adding other types of protagonist. For example, a "Neoconservative Dove" would want regime change for its own sake (perhaps signifying a new political system), and would therefore like to encourage uprisings. At the other extreme, a "Realist Dove" fears the unintended consequences of regime change and would therefore like to discourage uprisings. Equilibrium analysis would become much more complex than in our current model.

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