

# Targeted Sanctions and Redistribution

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## Abstract

Targeted sanctions are often thought to be more efficient than broad-based sanctions at incentivizing policy changes in rival states. This paper develops a formal model that demonstrates that this conclusion holds only conditionally - i.e. only when there exist constraints on domestic redistribution, such as limits to fiscal capacity. If a state can redistribute value between domestic groups at low cost, then targeted sanctions will simply lead to higher levels of redistribution towards the targeted groups. This conditional fungibility of costs leads to a core result: targeted sanctions should be implemented against actors with limited capacity to redistribute, while broad-based sanctions should be used against actors with abundant capacity to do so.

## Introduction

Despite some degree of ambiguity about their effectiveness, sanctions remain a popular tool in the foreign policy toolbox for many countries. This makes sense: compared to a variety of other alternatives in the national security domain (military strikes, etc.) they are a relatively low-cost form of coercion, and it is often difficult to definitively claim that sanctions are *not* effective given the strategic censoring issues that arise from the fact that we usually only observe sanctions when states have decided they are willing to accept their costs

(Nooruddin 2002).

Given the frequency of their use and the possibility that they might be effective, a significant literature has developed that interrogates the factors that might influence their effectiveness. This includes work evaluating the impact of regime type (Peksen 2019), conflict expectations (Drezner 1999), uncertainty arising from leadership tenure (Spaniel and Smith 2015), the number of parties involved in sanctioning (Bapat and Morgan 2009), and the incentives of a state to enforce sanctions given the costs inflicted on domestic firms (Bapat and Kwon 2015). Much of this work has employed game theoretic models, likely due to the aforementioned limitations on data analysis created by strategic behavior.

Another important strand of this literature has focused on the domestic politics underlying sanctions effectiveness (Allen 2005, 2008), examining in what circumstances sanctions actually generate the kinds of costs for political leaders that would be necessary to alter behavior. If the relevant actor in sanctions effectiveness is the *leader* of the sanctioned state (Bueno de Mesquita et al. 2003), then this naturally leads to the argument that sanctions aimed at political elites within a target state will be more likely to be effective (Morgan and Schwebach 1995, Brooks 2002, Lektzian and Souva 2007). Indeed, this line of argumentation has been so successful as to lead to a relative consensus amongst policy-makers on the value of smart sanctions, despite mixed evidence on smart sanctions' effectiveness (Drezner 2011).

This paper adopts a similar leader-centric approach to understanding the effectiveness of sanctions, but demonstrates that targeted sanctions are only more effective than broad-based sanctions under particular conditions. Specifically, this paper develops a game theoretic model that demonstrates that a state's capacity to *redistribute* can significantly im-

pact the effectiveness of targeted sanctions. Even if sanctions could be designed so as to target leaders or political elites precisely, if the leaders possess sufficient capacity to redistribute, they will simply increase redistribution from non-elites in order to compensate for the increased costs they face. In other words, elites may be able to “pass along the costs to ‘consumers’ [non-elites]” via redistribution, creating an issue similar to that which arises in the study of tax incidence; namely, that we cannot simply evaluate the effects of a policy by looking at the “flypaper incidence”, but need to examine the context to determine where the costs will eventually “stick”.

Consequently, this paper contributes to our understanding of sanctions effectiveness by clarifying that even if elites or leaders are the relevant actor, it does not immediately follow that targeted sanctions are a more effective means of influencing them. Indeed, if leaders faced *no* constraints on their ability to redistribute, it is likely that non-targeted sanctions should be more efficient than targeted sanctions at influencing state behavior, if targeted sanctions are even marginally more difficult or costly to implement than non-targeted sanctions.

## **Model**

### **Set up**

The model in this paper includes two states,  $G_1$  and  $G_2$ , where  $G_1$  is attempting to coerce  $G_2$  into adopting some change of policy.  $G_1$  initially chooses whether to pursue targeted ( $T$ ) sanctions or untargeted ( $U$ ) sanctions, i.e.  $S \in \{U, T\}$ , and then chooses a value  $x \in \mathbb{R}^+$  that reflects the level of sanctions imposed. Higher  $x$  increases the costs imposed on  $G_2$ , but  $G_1$  also incurs some costs as a result; this follows because sanctions can hurt domestic firms in the sanctioning state, and there may be other ethical, optical, or political costs associated with imposing sanctions.

$G_1$  thus has a very straightforward objective function, where  $A \in \mathbb{R}$  is the value they get from obtaining the desired policy change in  $G_2$ , and I assume that  $A > \max(x)$ .

$$U_{G_1}(x) = A - x$$

By assuming that  $A > \max(x)$ , I insure that  $G_1$  will always want to impose sanctions high enough to compel  $G_2$  to acquiesce rather than accept the cost of the sanctions. This is obviously unrealistic, but is a simplification to focus the attention of the model towards the choice between targeted or untargeted sanctions, taking as a given that at least one of the two can be an effective tool of coercion. In this sense, the model does *not* address the question of whether sanctions can work in general.

If  $G_2$  chooses not to acquiesce, they obtain utility  $U_{G_2}(x|S)$ , and their objective function incorporates a simple distributive politics model in which there is an elite group and a non-elite group, both of which are weighted positively, but with the elite group weighted more highly. For simplicity, each group starts with income  $y$ , before the imposition of any sanctions. If targeted sanctions are imposed, the income of the elite group is reduced by  $bx$ , without any reduction in the income of the non-elite group. So the initial structure, before redistribution, looks like the following:

$$U_{G_2}(x, T) = \alpha \log(y - bx) + \log(y)$$

Where natural logarithms are used for each group's utility function in order to insure concavity and give the solution a convenient mathematical form, and  $\alpha > 1$ , to reflect the fact that elites are weighted more highly than non-elites. After these sanctions are imposed,  $G_2$  then chooses a tax rate  $\tau_2$  which allows them to transfer income from the non-elite group to

the elite group, but with some the value lost in the process of transferring income; specifically, only  $\theta_2 \in [0,1]$  of the income transferred is actually received by the elites. Thus,  $\theta_2$  captures constraints on a state's ability to redistribute via a "leaky bucket", with  $\theta_2 = 1$  representing a situation where there are no such constraints. The objective function with redistribution thus becomes:

$$U_{G_2}(\tau|x, T) = a \log(y - bx + \tau_2 \theta_2 y) + \log(y(1 - \tau_2))$$

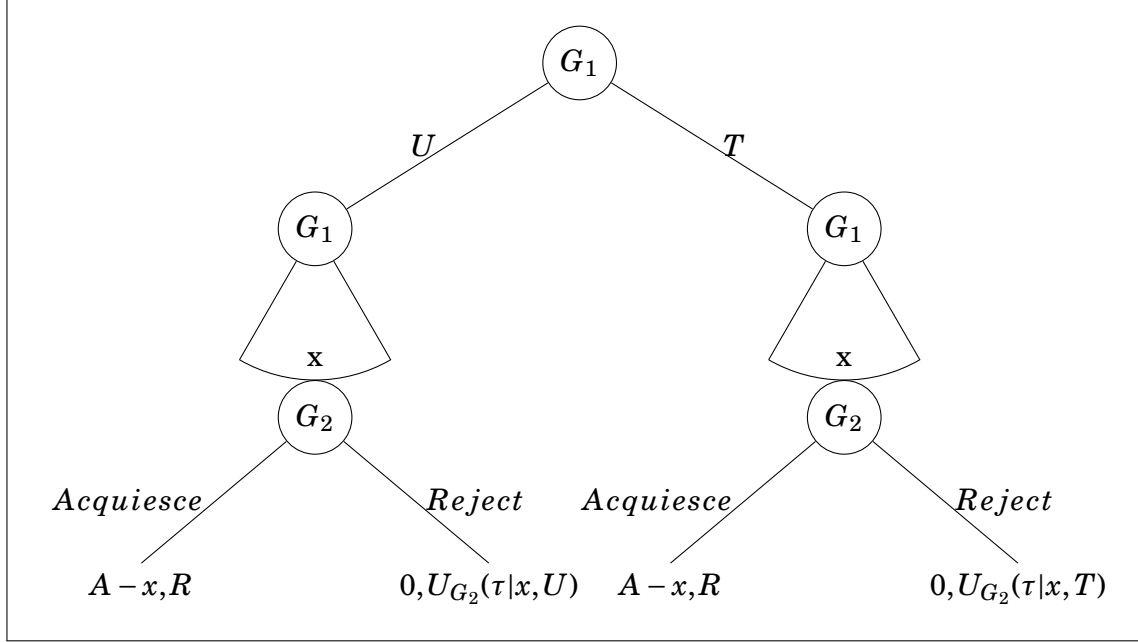
In contrast, if untargeted sanctions are used by  $G_1$ , the costs are felt equally by both elites and non-elites. I assume that these costs are represented by  $cx$ , where  $c > b$ . Here, I make the assumption that untargeted sanctions can impose costs more efficiently than targeted sanctions, i.e. there is some trade-off in focusing on directing sanctions to particular groups instead of simply focusing on maximizing overall costs. Without this assumption, targeted sanctions trivially dominate, but it seems highly likely that this assumption would be satisfied in most real world cases. Thus, for untargeted sanctions, we have the following:

$$U_{G_2}(\tau_2|x, U) = a \log\left(\left[y - \frac{cx}{2}\right] + \theta_2 \tau_2 \left[y - \frac{cx}{2}\right]\right) + \log\left(\left[y - \frac{cx}{2}\right] (1 - \tau_2)\right)^1$$

However, if  $G_2$  acquiesces, they simply obtain  $R \in \mathbb{R}$ . Meanwhile, payoffs to  $G_1$  are zero if  $G_2$  does not acquiesce. The structure of the model thus looks like the following:

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<sup>1</sup>Note here that I assume that there is no redistribution from elites to nonelites. In fact, if we created a parameter  $\tau_1$  to allow for such transfers, it would be at a corner solution of  $\tau_1 = 0$  given the setup of the model, in which each group starts off with equal incomes.



## Analysis

$G_2$  acquiesces to  $G_1$ 's policy demand whenever  $U_{G_2}(\tau_2|x, S) < R$ . To determine whether or not this will occur for any given  $x$ , we need to characterize the optimal  $\tau_2^*$  chosen by  $G_2$ , so that we can determine the level of redistribution that will be chosen in response to sanctions. We can determine this for both targeted and untargeted sanctions by taking first order conditions as follows:

$$\begin{aligned}
 U_{G_2}(\tau_2|x, U) &= \alpha \log \left( \left[ y - \frac{cx}{2} \right] (1 + \theta_2 \tau_2) \right) + \log \left( \left[ y - \frac{cx}{2} \right] (1 - \tau_2) \right) \\
 \frac{\partial U_{G_2}(\tau_2|x, U)}{\partial \tau_2} &= \frac{\alpha \theta_2}{1 + \theta_2 \tau_2} - \frac{1}{1 - \tau_2} = 0 \\
 \leftrightarrow \alpha \theta_2 (1 - \tau_2) &= 1 + \theta_2 \tau_2 \\
 \leftrightarrow \tau_2^*(U) &= \frac{\alpha \theta_2 - 1}{\theta_2 (1 + \alpha)}
 \end{aligned}$$

$$\begin{aligned}
U_{G_2}(\tau_2|x, T) &= \alpha \log([y - bx] + \tau_2 \theta_2 y) + \log(y(1 - \tau_2)) \\
\frac{\partial U_{G_2}(\tau_2|x, T)}{\partial \tau_2} &= \frac{\alpha}{y(1 + \tau_2 \theta_2) - bx} (\theta_2 y) + \frac{1}{y(1 - \tau_2)} (-y) = 0 \\
&= \frac{\alpha \theta_2 y}{y(1 + \tau_2 \theta_2) - bx} - \frac{1}{1 - \tau_2} = 0 \\
\leftrightarrow y(1 + \tau_2 \theta_2) - bx &= (1 - \tau_2) \alpha \theta_2 y \\
\leftrightarrow y - bx - \alpha \theta_2 y &= -\tau_2 \alpha \theta_2 y - \tau_2 \theta_2 y \\
\leftrightarrow \tau_2^*(T) &= \frac{\alpha \theta_2 y + bx - y}{\theta_2 y (\alpha + 1)} \\
\leftrightarrow \tau_2^*(T) &= \frac{\alpha \theta_2 - 1}{\theta_2 (1 + \alpha)} + \frac{bx}{\theta_2 y (1 + \alpha)}
\end{aligned}$$

Thus, this leads to the following important lemma.

**Lemma 1.** *The sanctions receiving state ( $G_2$ ) redistributes more from non-elites when targeted sanctions are used relative to when untargeted sanctions are used.*

*Proof.* The proof follows from the above derivation. Note that  $\tau_2^*(U) = \frac{\alpha \theta_2 - 1}{\theta_2 (1 + \alpha)}$  and  $\tau_2^*(T) = \frac{\alpha \theta_2 - 1}{\theta_2 (1 + \alpha)} + \frac{bx}{\theta_2 y (1 + \alpha)}$ . This implies that:

$$\tau_2^*(T) = \tau_2^*(U) + \frac{bx}{\theta_2 y (1 + \alpha)}$$

Which since the second part is positive, implies that  $\tau_2^*(T) > \tau_2^*(U)$ . □

Having established the optimal  $\tau_2^*(S)$ , we can now begin to consider  $G_1$ 's incentives. Given the earlier assumption that  $A > \max(x)$ , we know that  $G_1$  will choose an  $x$  level sufficient to compel  $G_2$  to acquiesce but no higher. This implicitly defines the optimal  $x^*$  for  $G_1$  as a function of  $S$ , i.e. we have the  $x^*(T)$  implicitly defined by:

$$U_{G_2}(\tau_2^*|x, T) = \alpha \log([y - bx] + \tau_2^*(T) \theta_2 y) + \log(y(1 - \tau_2^*(T))) = R$$

And  $x^*(U)$  implicitly defined by:

$$U_{G_2}(\tau_2^*|x, U) = \alpha \log \left( \left[ y - \frac{cx}{2} \right] + \theta_2 \tau_2^*(U) \left[ y - \frac{cx}{2} \right] \right) + \log \left( \left[ y - \frac{cx}{2} \right] (1 - \tau_2^*(U)) \right) = R$$

So given the set up of the model,  $G_2$  is made indifferent towards whether or not targeted sanctions or untargeted sanctions are chosen. Thus, what drives the choice of targeted or untargeted sanctions is what allows  $G_1$  to coerce policy concessions at the lowest possible cost (so the lowest possible  $x^*$ ). This lines up with the stated goal of this paper of determining when targeted sanctions should be used as a policy tool over untargeted sanctions.

To start, it is useful to examine one key result: namely, what happens when  $\theta_2 = 1$ . This is the case in which there are *no* constraints to redistributing value between parties. This leads to the following proposition:

**Proposition 1.** *When the sanctions recipient can redistribute value between domestic parties costlessly, untargeted sanctions become a more efficient tool for influencing that state.*

*Proof.* In this case, it is straightforward to see that if  $bx < cx$  as assumed, we can construct  $\tau_2 y = bx - \frac{cx}{2}$  such that we would have the following allocation:

$$\alpha \log \left( y - \frac{cx}{2} \right) + \log \left( y - bx + \frac{cx}{2} \right)$$

With this allocation, the elite group is made equally well-off as they are before redistribution occurs with untargeted sanctions, while the non-elite group is strictly better off, as



demonstrated by the following:

$$\begin{aligned}y - bx + \frac{cx}{2} &> y - \frac{cx}{2} \\ \leftrightarrow -bx &> -cx \\ \leftrightarrow bx &< cx\end{aligned}$$

$G_2$  may choose to redistribute more at this point, but this suffices to show that a Pareto-improving allocation is possible, thus demonstrating that if  $\theta_2 = 1$  then targeted sanctions dominate untargeted sanctions for  $G_2$ . However, if targeted sanctions are preferred by  $G_2$ , then  $G_1$  should choose untargeted sanctions if their goal is to coerce  $G_2$  to adopt a policy they would otherwise prefer not to adopt.  $\square$

This result is key, because it demonstrates that a state's capacity to redistribute needs to be taken into account in evaluating the relative efficacy of targeted versus untargeted sanctions. Indeed, without some kind of constraint on this capacity, targeted sanctions become, in the best case scenario, no different than untargeted sanctions, and in the more likely scenario that they are more costly to implement than untargeted sanctions (as is assumed by this model) they are strictly less effective.

However, when  $\theta_2 < 1$ , this conclusion will not necessarily hold. Indeed, whether or not targeted sanctions will be more effective than untargeted sanctions will depend on the relative efficiency of each (i.e.  $c$  versus  $b$ ), and how disproportionately weighted the elites are relative to nonelites (i.e. how high is  $\alpha$ ). This leads to the following proposition:

**Proposition 2.** *As a sanction recipient's ability to redistribute declines, targeted sanctions become a more effective tool at coercing policy concessions.*

*Proof.* We can demonstrate this result by differentiating the different expressions with re-

spect to  $\theta_2$ , then substituting the optimal  $\tau_2^*(S)$  and invoking envelope theorem.

$$\begin{aligned}\frac{\partial U_{G_2}(\tau_2^*|x, U)}{\partial \theta_2} &= \frac{\alpha}{(y - \frac{cx}{2})(1 + \theta_2 \tau_2)} (\tau_2) \left( y - \frac{cx}{2} \right) \\ &= \frac{\tau_2^*(U) \alpha}{1 + \theta_2 \tau_2^*(U)}\end{aligned}$$

$$\begin{aligned}\frac{\partial U_{G_2}(\tau_2^*|x, T)}{\partial \theta_2} &= \frac{\alpha}{y(1 + \tau_2 \theta + 2) - bx} (\tau_2 y) \\ &= \frac{\tau_2^*(T) \alpha}{1 + \theta_2 \tau_2^*(T) - \frac{bx}{y}}\end{aligned}$$

Here, from Lemma 1, we know that  $\tau_2^*(T) = \tau_2^*(U) + B$ , where  $B = \frac{bx}{\theta_2 y(1+\alpha)}$ . We can substitute this expression in, obtaining:

$$\begin{aligned}&= \frac{(\tau_2^*(U) + B) \alpha}{1 + \theta_2 \tau_2^*(U) + \theta_2 \frac{bx}{\theta_2 y(1+\alpha)} - \frac{bx}{y}} \\ &= \frac{(\tau_2^*(U) + B) \alpha}{1 + \theta_2 \tau_2^*(U) - \frac{bx}{y} \left( 1 - \frac{1}{\alpha+1} \right)} \\ &= \frac{(\tau_2^*(U) + B) \alpha}{1 + \theta_2 \tau_2^*(U) - \frac{bx}{y} \left( \frac{\alpha}{\alpha+1} \right)}\end{aligned}$$

Now note that in this expression for  $\frac{\partial U_{G_2}(\tau_2^*|x, T)}{\partial \theta_2}$ , the numerator is higher than in the expression for  $\frac{\partial U_{G_2}(\tau_2^*|x, U)}{\partial \theta_2}$ , because  $\tau_2(U) + B > \tau_2(U)$ , while the denominator is lower because of the subtracted  $\frac{bx}{y} \left( \frac{\alpha}{\alpha+1} \right)$  term. Thus we have that:

$$\frac{\partial U_{G_2}(\tau_2^*|x, U)}{\partial \theta_2} < \frac{\partial U_{G_2}(\tau_2^*|x, T)}{\partial \theta_2}$$

Which demonstrates that targeted sanctions are impacted *more* by the ability to redistribute than untargeted sanctions. □

To restate in words, targeted sanctions are a more useful tool when the recipient state is more limited in its ability to redistribute, e.g. when a state has lower fiscal capacity. Thus, as  $\theta_2$  declines, targeted sanctions become relatively less attractive for  $G_2$ , and thus relatively more attractive for  $G_1$ ; in words, targeted sanctions are a more useful tool when the recipient state is more limited in its ability to redistribute, e.g. when a state has lower fiscal capacity.

## Example Case: North Korean Export Sanctions

To provide a simple illustrative example of how this model would work, we can examine the case of the recently imposed export sanctions in North Korea. North Korea has been subject to sanctions for more than a decade now, and while earlier rounds of sanctions targeted the import of weapons, fissionable materials, etc. into North Korea, one of the most recent rounds of sanctions (starting on November 30 2016) targeted North Korean *exports*, specifically commodities such as coal, iron ore, seafood, and textiles.<sup>2</sup> The goal with these sanctions was to target North Korean elites, whose livelihoods were much more likely to be tied to the relatively small export industry. Indeed, as the New York Times reports, “Mr. Kim and top officials have used this export revenue, as well as the earnings of North Korean workers abroad, to finance nuclear weapons, large projects like Samjiyon and their own privileged lifestyles.”<sup>3</sup>

Perhaps surprisingly, experts have argued that this latest round of sanctions actually seems to be working, suggesting that it has increased pressure on precisely the elite groups it was intended to. Moreover, the *reason* why these sanctions have been working is that the North Korean regime lacks the *capacity to redistribute* more from those who are not targeted by the

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<sup>2</sup>Council on Foreign Relations, July 17 2019.

<sup>3</sup>New York Times, 18 April 2019.

sanctions, because those workers primarily operate in a series of informal markets. As Jiro Ishimaru, a Japanese journalist who reports on North Korea with the help of correspondents there, put it:

“Hardest hit by sanctions are those 20 to 30 percent of the population who stay on the government’s socialist payroll and rations. Enterprising North Koreans can make as much in a day selling vegetables in the market as many military officers can make a month in official wages.”<sup>4</sup>

Responding to these increased pressures, North Korean officials have repeatedly requested that the sanctions be removed during negotiations with the US, and have in fact requested that *only* the sanctions imposed since 2016 (e.g. the export sanctions) be removed. Indeed, when Kim Jong Un returned from the “Hanoi Summit” in February 2019 without any promise of relief from these sanctions, it was widely seen as an embarrassment for the regime that had weakened it in the eyes of many supporters.<sup>5</sup>

In summary, these export sanctions were imposed to target the regime/elites while avoiding imposing significant costs on non-elites, and have been effective in doing so *precisely because the North Korean regime lacks the capacity to redistribute more from those who operate primarily in informal markets*. This is exactly the kinds of constraint to redistribution that this paper discusses, and demonstrates the important conditioning effect that a regime’s capacity to redistribute can have on the effectiveness of sanctions targeting.

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<sup>4</sup>New York Times, 18 April 2019

<sup>5</sup>New York Times, 6 March 2019

## Conclusion

In this paper, I have demonstrated that targeted sanctions will be most effective when a state is constrained in its ability to redistribute value from the broader population. Without any constraints on redistribution, the targeting of sanctions will have no impact on their effectiveness, given that the costs imposed on particular groups will be easily fungible. In these circumstances, a sanctioning state's most effective coercive strategy would be simply to impose the highest possible costs overall in the most efficient manner, rather than focusing on which groups were targeted by those costs.

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