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On smart sanctions

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HIGHLIGHTS

- Constructs a game theoretic model of an oligarchic economy.
- Studies the relationship between corruption and autocracy in these economies.
- Studies smart international sanctions.
- The effectiveness of sanctions crucially depends on elasticity of substitutions.
- Compares the effectiveness of smart vs. dumb sanctions.

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ABSTRACT

We construct a game theoretic model of an oligarchic economy that potentially could be targeted by smart international sanctions. Oligarchs in this economy provide support for their leader, a strong man and potentially an autocrat, in return for favors that results in having income higher than the average income in the country. We derive the conditions under which smart sanctions lead to compliance by the target country. Moreover, we draw some comparison between the effectiveness of smart and dumb sanctions for these economies.

1. Introduction

The history of international economic sanctions is long. The effectiveness of sanctions as a policy instrument in international relations has been in dispute. Nevertheless, international sanctions have been continuously used over the past hundred years. The literature on sanctions both in economics and political science is somewhat rich. However, the literature is also inconclusive on the effectiveness of sanctions and the extent of its success on changing the behavior of the target countries (for example, see Eaton and Engers, 1992, Kaempfer and Lowenberg, 1988, Elliott and Hufbauer, 1999 and Beladi and Oladi, 2009). These studies have considered economy-wide sanctions on target countries (i.e., dumb sanctions), whereby the nature of restrictions is usually indiscriminate and would affect all residents of the target countries. While smart sanctions have been addressed in political science literature (for example, see Cortright and Lopez, 2002, Tostensen and Bull, 2002 and more recently Drezner, 2011, among others), economic theory of such type of sanctions is absent from economics literature. A new wave of smart sanctions imposed in recent years has motivated us to fill this important gap in this note.

This note formulates a theory of international smart sanctions, whereby the sender imposes sanctions on influential individuals in the target country. This new wave of imposing sanctions on a target country intends to force these influential individuals to use their leverage to change the behavior of the target government. These sanctions are fundamentally different from the way sanctions are formulated in economic literature, where a sender country imposes country-wide restrictions including asset seizure on targets. The long history of ineffective dumb sanctions has motivated the sender countries to revisit the nature of sanctions. This note is an attempt to show the economics of these new types of sanctions.

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We consider an oligarchic economy where oligarchs support the strong man in a country in return for being given economic favors. Through these favors, the oligarchs will earn income that is substantially higher than the average income in the country. We formulate the interaction between the strong man leader and the oligarchs by a sequential-move game. The leader of this oligarchic country moves first and chooses the extent of his efforts (i.e., using his political capital) toward a particular policy option which concerns international community and toward the well-being of his citizens. Through smart sanctions, the sender tries to use the relationship between the oligarchs and the leader of the target country to influence the behavior of the autocratic leader, which can be any undesirable choice he makes from the sender's perspective. We analyze the condition under which such type of sanctions can be effective. In addition, we revisit the theory of dumb sanctions using our framework for oligarchic economies and draw a comparison between the effectiveness of smart vs. dumb sanctions for these economies.

Following this short introduction, we set up our model in Section 2. Section 3 analyzes the effectiveness of smart sanctions. Section 4 compares smart vs. dumb sanctions and Section 5 draws some concluding remarks.

2. Model

Consider a target country that possibly faces international economic sanctions. The political and economic systems of this target country suffer from corruption. A strong man leads this country either through an authoritarian political regime or through a quasi-democracy. Moreover, there are influential agents within this economy, "the oligarchs", whose support for the strong man is important. These agents' economic interests are closely tied with the support they provide to the leader of target country. Let the utility function of the leader be:

$$u = (\nu^{\alpha} + \rho^{\alpha} + y^{\alpha})^{\frac{1}{\alpha}} \tag{1}$$

where $\nu \geq 0$ is the noncompliance level of the target. Although this can be viewed as any undesirable activity level from the sender's perspective, throughout the rest of this note we assume it to be the level of autocracy. Moreover, $\rho \geq 1$ denotes the level of supports that the oligarchs provide to the leader and y is a per capita income. Finally, we assume $\alpha \leq 1$. Recall that $\sigma = 1/(\alpha-1)$ is the elasticity of substitution. As is well-known, the use of C.E.S. utility function provides extensive functional form flexibility depending on α.[1] C.E.S. utility functions have been extensively used in economics literature (for example see Krugman, 1979). The leader uses his political capital toward advancing autocracy level ν and to improve public well-being represented by per capita income. Thus, his resource constraint is given by: $a_{\nu}\nu + a_y y = P$ where a_{ν} and a_y are political capital requirement of ν and y, respectively, and P is his stock of political capital. The leader's choice variables are the level of per capita income and autocracy level ν.[2]

Consider next a representative oligarch. His corruption technology is represented by corruption production function $x = \rho^{\gamma}$ where $\gamma \in (0, 1)$. Providing support to the leader is the input in this corruption production process, whereas favoritism (i.e., corruption) is a consequence of supporting the leader which will result in income for the oligarch. However, apart from sanctions costs, supporting the leader will also have a direct cost for the representative oligarch. The net benefit of supporting the leader is therefore given by:

$$\pi = (1 - s)xy - c\rho \tag{2}$$

where $s \in (0, 1)$ is the level of sanctions imposed by the sender on the oligarch and $c > 0$ is the unit (direct) cost of supporting the leader. Recall that y is the per capita income in the target country. Therefore, xy is the oligarch's gross income. Note that $x \geq 1$, given our assumption on corruption technology. That is, corruption allows the oligarch to obtain an income level beyond the per capita income due to his corruption rent. Note also that sanctions are "smart" as they target economic interests of specific individuals rather being broad based. Clearly, this is in contrast to the common formulation of economic sanctions in the literature (see for example Beladi and Oladi, 2009).

A two-stage game is played between the leader and the representative oligarch in the country that is potentially a target of economic sanctions. The leader chooses a per capita income level *objective* as well as his level of autocracy in the first stage. Then, the representative oligarch chooses how much support he provides the leader at any given level of sanctions.

To find the unique subgame perfect equilibrium of this game, we solve the representative oligarch's optimization problem that gives us the equilibrium support level $\hat{\rho} = (\gamma(1 - s)y/c)^{1/(1-\gamma)}$. Turning next to the leader's problem in the first stage, we solve $\max_{\nu,y} u(\nu, \rho, y)$ s.t. $a_{\nu}\nu + a_y y = P$ and $\rho = \hat{\rho}$ to obtain the following first order conditions:

$$\nu^{\alpha-1}\Omega - \mu a_{\nu} = 0 \tag{3}$$

$$\left(\frac{\Delta}{1-\gamma} y^{\frac{\alpha+\gamma-1}{1-\gamma}} + y^{\alpha-1}\right)\Omega - \mu a_y = 0 \tag{4}$$

$$P - a_{\nu}\nu - a_y y = 0 \tag{5}$$

where $\Delta \equiv (\gamma(1 - s)/c)^{\alpha/(1-\gamma)} > 0$ and $\Omega \equiv \left(\nu^{\alpha} + \Delta y^{\alpha/(1-\gamma)} + y^{\alpha}\right)^{(1-\alpha)/\alpha}$. Moreover, μ denotes the Lagrange multiplier, i.e., the shadow price of leader's political capital. Eqs. (3)–(5) as well as the unique best response of the oligarch, denoted by ρ, fully determine our unique subgame perfect equilibrium of this game. We will analyze this equilibrium in the proceeding section.

3. Analysis of smart sanctions

We can now analyze how smart sanctions can affect the behavior of an autocratic leader. By differentiation equations (3)–(5) and solving the resulting system of equations we obtain:

$$\frac{d\nu}{d\Delta} = -\frac{\nu y^{\frac{\alpha}{1-\gamma}}}{\Psi(1-\gamma)} \tag{6}$$

where $\Psi \equiv a_y(1 - \alpha)\left(\nu^{\alpha} + y^{\alpha} + [\Delta/(1 - \gamma)]y^{\alpha/(1-\gamma)}\right) - [a_{\nu}\alpha\gamma\Delta/(1 - \gamma)]\nu y^{(\alpha+\gamma-1)/(1-\gamma)}$. It follows from Eq. (6) that $d\nu/d\Delta > 0$ if and only if $\Psi < 0$. Recall also that Δ is strictly decreasing in s. Hence, smart sanctions will result in compliance of the leader in the target country (i.e., $d\nu/ds < 0$) if and only if $\Psi < 0$. What is interesting is that smart sanctions do not necessarily achieve the desired outcome from the sender's perspective since the sign of Eq. (6) is not determinate. That is, imposing smart sanctions may not result in compliance of the leader of the target country. We shall next characterize the conditions under which such type of sanctions are effective.

[1] When α approaches 1 the policy options for the leader are perfect substitute while when α approaches $-\infty$ these policy options are perfect complement (i.e., Leontief functional form).

[2] While we admit that no leader (within autocratic or democratic systems) can choose per capita income, their policy objectives may be growth oriented. We can add another level of complexity to our model to take care of this issue. For example, we could consider a per capital national income function such as $y = f(p, .)$ where p is the leader's choice of political capital used in growth promotion. With this alternative formulation, the leader choice variables would be p and d. However, this does not add any more insight as our object is sanctions and compliance rather than economic growth.