Does the fight against corruption require international cooperation?

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Abstract

This paper explores the role of corruption in a two-country model with fiscal spillovers. In the absence of cooperation on governance issues, countries always have a strategic incentive to appoint policymakers whose aversion to corruption is lower than average. An international agreement is a precondition for placing corruption fighters at the head of governments.

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1. Introduction

It is well-established in economics that society can sometimes make itself better off by delegating decision-making authority to an agent who does not share its own preferences. The present article applies this general principle to the case of developing countries plagued by poor governance and corruption, and looks at the potential incentive to strengthen institutional quality by appointing an agent with a greater dislike for corruption than the rest of society. To this end, I consider a two-country fiscal policy game in which weak governance structures and corruption are modelled as a revenue leakage in the budget constraint (Huang and Wei, 2006; Hefeker, 2010). The model of the paper thus combines the analysis of strategic policy interactions with the issue of institutional quality.

Several results will be highlighted within this framework. In the absence of any cooperation, strategic considerations associated with fiscal spillovers induce countries to be always more permissive towards corruption. Such a choice, however, proves to be beneficial under positive externalities. In fact, the ex ante incentive to appoint corruption fighters can only occur through international collaboration, which seems to be in line with the United Nations Convention against corruption (UNCAC), entered into force in December 2005.

2. The model

Two countries, *A* and *B*, are interrelated through fiscal spillovers. Output (*y*) depends on both domestic and foreign corporate tax rates (τ):

$$y_i = -\alpha\tau_i + \beta\tau_j \tag{1}$$

with $\alpha > |\beta| \geq 0$ ($i, j = A, B$; $i \neq j$).

In the absence of lump-sum taxation, a rise in home taxes leads to a fall in home output owing to distortions. No sign is imposed on β because the cross-country transmission of fiscal shocks has an unclear impact on economic activity. A rise in one country's tax rate may boost the other's output when inducing firms to relocate towards the most attractive fiscal environment. However, an increase in the domestic tax burden can also have a negative effect abroad if the slowdown in domestic activity results in a fall in imports.

Public spending (*g*) is financed solely by taxes. Each country is supposed to suffer from a revenue leakage caused by weak institutions and corruption. The revenue shortage is simply modelled by an additional variable (*c*) in the budget constraint:

$$g_i = \tau_i - c_i \tag{2}$$

c can be interpreted as a rough measure of the corruption level in the economy or, equivalently, as an inverse measure of the effort made to combat corruption. In this model, *c* is a control variable to choose as the same time as the tax rate.

Government *i*'s objective function is:

$$L_{G_i} = y_i^2 + \mu\left(g_i - \overline{g}\right)^2 + \delta_i\left(c_i - \overline{c}\right)^2 \tag{3}$$

Its loss increases in the deviations of output from its natural level, normalised to zero, and in the deviations of public spending from a target $\overline{g}$ ($\overline{g} > 0$). The third argument in the function (3) implies that fighting corruption comes at a political cost (Hefeker, 2010). $\overline{c}$ can be viewed as the average degree of corruption in the economy ($\overline{c} > 0$). A corruption level above $\overline{c}$ entails a loss due to, for instance, a fall in foreign investments or less support from international lending agencies. A level less than $\overline{c}$ is supposed to be costly as well for the incumbent policymaker, because of the resistance of interest groups to institutional reforms, or because of personal income losses. μ and δ_i are both positive and denote the relative weights placed on the last two objectives. In particular, a larger value of δ_i indicates a lower dislike for corruption: the more costly is the gap with respect to $\overline{c}$, the more reluctant are *i*'s authorities to adopt anti-corruption measures and so to set a lower value of c_i.

Society *i*'s welfare function is:

$$L_{S_i} = y_i^2 + \mu\left(g_i - \overline{g}\right)^2 + \lambda\left(c_i - \overline{c}\right)^2 \tag{4}$$

The loss function (4) can be interpreted as that of a benevolent social planner who would represent the voters' median position. λ is an inverse measure of the median distaste for corruption ($\lambda > 0$). Thus, the incumbent policymaker has a reputation as a corruption fighter if $\lambda > \delta_i$ and is more tolerant of corruption if $\delta_i > \lambda$.

The game takes place in two stages. Both countries must first decide on the relative importance to attach to the combat against corruption in their government's objective function (design stage). Then, the tax rate and the institutional effort level are chosen simultaneously (implementation stage). Note that a country-specific weight in the objective function (3) is needed to distinguish the cooperative solution from the non-cooperative one at the design stage: under the Nash regime, *A* and *B* disregard their similar preferences and take the other's weight as a given parameter, whereas cooperation involves $\delta_A = \delta_B = \delta$ ex ante.

3. The non-cooperative case

This section examines the full Nash equilibrium (denoted *N*). The game is solved backwards (see Appendix A for calculation details). Government *i*'s reaction function associated with fiscal policy is ($i, j = A, B$; $i \neq j$):

$$\tau_i = \frac{\mu(c_i + \bar{g}) + \alpha\beta\tau_j}{\alpha^2 + \mu} \tag{5}$$

The impact of a change in the foreign tax rate depends on the sign of fiscal spillovers: taxes are strategic complements if $\beta > 0$ and strategic substitutes if $\beta < 0$.

The first-order condition concerning the anti-corruption effort level gives:

$$c_i = \frac{\mu(\tau_i - \bar{g}) + \delta_i \bar{c}}{\delta_i + \mu} \tag{6}$$

Algebraic substitution yields the following welfare loss for society *i*:

$$L_{S_i} = \frac{(\alpha-\beta)^2 \mu\left[\alpha(\alpha+\beta)\delta_j + \mu\left(\alpha(\alpha+\beta)+\delta_j\right)\right]^2\left[\alpha^2\left(\delta_i^2+\mu\lambda\right)+\mu\delta_i^2\right](\bar{c}+\bar{g})^2}{\left[\mu^2\delta_i\delta_j + \alpha^2\left(\alpha^2-\beta^2\right)\left(\mu+\delta_i\right)\left(\mu+\delta_j\right)+\alpha^2\mu\left[2\delta_i\delta_j+\mu\left(\delta_i+\delta_j\right)\right]\right]^2} \tag{7}$$

The socially optimal weight as regards corruption is determined by solving the first-order condition $\partial L_{S_i} / \partial \delta_i = 0$, which gives:[1]

$$\delta_i^{NN} = \frac{\lambda\left[\mu^2\delta_j + \alpha^2\left(\alpha^2-\beta^2\right)\left(\mu+\delta_j\right)+\alpha^2\mu\left(\mu+2\delta_j\right)\right]}{\left(\alpha^2+\mu\right)\left[\mu\delta_j+\left(\alpha^2-\beta^2\right)\left(\mu+\delta_j\right)\right]} \tag{8}$$

$\delta_i^{NN} > \lambda$ provided that $|\beta| > 0$. An immediate consequence follows:

Proposition 1. *In the absence of international cooperation at the design stage, every country ex ante prefers a government with a lower distaste for corruption, whatever the sign of fiscal spillovers.*

[1] The first and second superscript letters in the expressions of the optimal weight indicate the nature of the game at the first and second stages, respectively.

Greater permissiveness towards corruption thus appears as a strictly dominant strategy in the full Nash game. Note that the manipulation of preferences is due to the existence of policy spillovers (*i.e.* $\delta_i^{NN} = \lambda$ if $\beta = 0$). Both countries are engaged in a tax competition game when $\beta > 0$. As they fail to take into account the expansionary effect of a domestic tax rise on the foreign economy, taxes turn out to be too low in equilibrium. A smaller effort to strengthen institutional quality (*i.e.* a rise in c_i) implies a higher taxation level in order to provide a given amount of public goods (see Eq. (5): $\partial \tau_i / \partial c_i > 0$). Therefore, the acceptance of more corruption can be analysed as a strategic mechanism for encouraging the foreign government to fix a higher tax rate ($\partial \tau_i / \partial \tau_j > 0$ from Eq. (5)), which proves to be mutually beneficial ex post since policy externalities, then, are internalised to some extent.

Conversely, taxes are too high if $\beta < 0$, because no country cares about the damaging effect of a tax rise on output abroad. Ex ante, the choice of a policymaker who is less concerned with the corruption issue is regarded as a strategic device aiming at compelling the foreign country to reduce its tax rate in order to support domestic activity (see Eqs. (5) and (6): $\partial \tau_i / \partial c_j = \partial \tau_i / \partial \tau_j \times \partial \tau_j / \partial c_j < 0$). However, unlike the former case, such a strategy turns out to be counterproductive ex post since it only exacerbates the policy conflict between *A* and *B*. In the latter case, deliberately reducing the importance attached to the combat against corruption is a beggar-thy-neighbour strategy that results in excessive tax rates.

4. The cooperative case

This section turns to the cooperative solution (denoted *C*) for the first stage. It is shown in Appendix B that the social welfare loss in each country can then be written as:

$$L_S = \frac{(\alpha - \beta)^2 \mu \left[\alpha^2 \left(\mu\lambda + \delta^2 \right) + \mu\delta^2 \right] \left(\bar{c} + \bar{g} \right)^2}{\left[\mu\delta + \alpha(\alpha - \beta)(\mu + \delta) \right]^2} \tag{9}$$

Solving the first-order condition $\partial L_S / \partial \delta = 0$ yields the optimal value of δ under cooperation:

$$\delta^{CN} = \frac{\alpha\lambda \left[\alpha(\alpha - \beta) + \mu \right]}{(\alpha - \beta)\left(\alpha^2 + \mu \right)} \tag{10}$$

From Eq. (10), $\delta^{CN} > \lambda$ if $\beta > 0$ and $\delta^{CN} < \lambda$ if $\beta < 0$, which makes it possible to formulate a second proposition:

Proposition 2. *Cooperation at the design stage leads countries to choose policymakers who are more tolerant of corruption when fiscal spillovers are positive. On the other hand, under negative externalities, governments should attach greater importance to the corruption problem.*

If $\beta > 0$, more corruption improves welfare by forcing governments to increase their tax rate, thereby curbing tax competition. The misrepresentation of its relative preferences in the objective function (3) again requires each nation to delegate decision-making authority to an individual who tends to be more permissive on the matter.

The main change with respect to the non-cooperative scenario lies in the choice of corruption fighters (that is, policymakers with a stronger aversion to corruption than average) in the case of negative spillovers. As seen before, taxes are excessive in the Nash equilibrium when $\beta < 0$. Accordingly, a larger anti-corruption effort (*i.e.* a decrease in c) provides each government some additional scope to lower taxes for supporting economic activity. A larger weight put on institutional quality, then, serves as a second-best substitute for fiscal policy coordination, thereby making countries better off.

5. Concluding remarks

This paper claims that the importance attached to institutional quality depends on strategic considerations. Two cases have to be distinguished, according to whether the design stage is played cooperatively or not. In the absence of international cooperation, every country always has an incentive to delegate decision-making authority to an individual known to be less corruption-averse. This result might contribute to explain the persistence of poor governance structures and corruption in some developing and transition economies.

In this model, the cooperative design of the national governments' objective functions appears as a prerequisite for appointing corruption fighters. This seems, *prima facie*, to be in line with the ratification of the UNCAC by many nations to date. This treaty is a legally binding anti-corruption instrument, and obliges its State Parties to implement a wide array of measures for promoting better law enforcement and improving institutional quality. However, cooperation at the design stage can theoretically imply here to distort social preferences in a more permissive direction. Thus, the model also suggests that such an agreement might be counterproductive under certain circumstances.

Appendix A

Substituting Eqs. (1) and (2) into the loss function (3) and then minimising it with respect to τ_i and c_i yields Eqs. (5) and (6) in Section 3. Solving the system made of the first-order conditions for country i and of their counterparts for country j gives the equilibrium expressions of the control variables ($i, j = A, B$; $i \neq j$):

$$\tau_i = \frac{\mu\left[\mu\delta_i\delta_j + \alpha^2\left(\mu+\delta_j\right)\delta_i + \alpha\beta\left(\mu+\delta_i\right)\delta_j\right]\left(\overline{c}+\overline{g}\right)}{\mu^2\delta_i\delta_j + \alpha^2\left(\alpha^2-\beta^2\right)\left(\mu+\delta_i\right)\left(\mu+\delta_j\right) + \alpha^2\mu\left[2\delta_i\delta_j + \mu\left(\delta_i+\delta_j\right)\right]} \tag{A.1}$$

$$\begin{aligned} c_i = &\frac{\left[\mu^2\left(\alpha\beta+\delta_i\right)\delta_j + \alpha^2\left(\alpha^2-\beta^2\right)\left(\mu+\delta_j\right)\delta_i + \alpha^2\mu\delta_i\left(\mu+2\delta_j\right)\right]\overline{c}}{\mu^2\delta_i\delta_j + \alpha^2\left(\alpha^2-\beta^2\right)\left(\mu+\delta_i\right)\left(\mu+\delta_j\right) + \alpha^2\mu\left[2\delta_i\delta_j + \mu\left(\delta_i+\delta_j\right)\right]} \\ &- \frac{\alpha\left(\alpha-\beta\right)\mu\left[\alpha\left(\alpha+\beta\right)\delta_j + \mu\left(\alpha\left(\alpha+\beta\right)+\delta_j\right)\right]\overline{g}}{\mu^2\delta_i\delta_j + \alpha^2\left(\alpha^2-\beta^2\right)\left(\mu+\delta_i\right)\left(\mu+\delta_j\right) + \alpha^2\mu\left[2\delta_i\delta_j + \mu\left(\delta_i+\delta_j\right)\right]} \end{aligned} \tag{A.2}$$

Substituting Eqs. (A.1) and (A.2) and their counterparts for *j* into Eqs. (1) and (2) results in:

$$y_i = -\frac{(\alpha-\beta)\mu\delta_i\left[\alpha(\alpha+\beta)\delta_j+\mu\left(\alpha(\alpha+\beta)+\delta_j\right)\right](\bar{c}+\bar{g})}{\mu^2\delta_i\delta_j+\alpha^2\left(\alpha^2-\beta^2\right)(\mu+\delta_i)(\mu+\delta_j)+\alpha^2\mu\left[2\delta_i\delta_j+\mu\left(\delta_i+\delta_j\right)\right]} \tag{A.3}$$

$$g_i-\bar{g} = -\frac{\alpha(\alpha-\beta)\delta_i\left[\alpha(\alpha+\beta)\delta_j+\mu\left(\alpha(\alpha+\beta)+\delta_j\right)\right](\bar{c}+\bar{g})}{\mu^2\delta_i\delta_j+\alpha^2\left(\alpha^2-\beta^2\right)(\mu+\delta_i)(\mu+\delta_j)+\alpha^2\mu\left[2\delta_i\delta_j+\mu\left(\delta_i+\delta_j\right)\right]} \tag{A.4}$$

Moreover:

$$c_i-\bar{c} = -\frac{\alpha(\alpha-\beta)\mu\left[\alpha(\alpha+\beta)\delta_j+\mu\left(\alpha(\alpha+\beta)+\delta_j\right)\right](\bar{c}+\bar{g})}{\mu^2\delta_i\delta_j+\alpha^2\left(\alpha^2-\beta^2\right)(\mu+\delta_i)(\mu+\delta_j)+\alpha^2\mu\left[2\delta_i\delta_j+\mu\left(\delta_i+\delta_j\right)\right]} \tag{A.5}$$

The substitution of Eqs. (A.3), (A.4) and (A.5) in society *i*'s welfare loss function leads to Eq. (7) in Section 3.

Appendix B

Fiscal policies remain uncoordinated in the second stage, so the reaction function given by Eq. (5) still stands. Cooperation during the design stage means that δ_i is replaced with δ in country *i*'s first-order condition for the effort level (Eq. (6)). Then, the equilibrium values of τ and *c* become:

$$\tau = \frac{\mu\delta(\bar{c}+\bar{g})}{\mu\delta+\alpha(\alpha-\beta)(\mu+\delta)} \tag{B.1}$$

$$c = \frac{\left[\alpha(\alpha-\beta)+\mu\right]\delta\bar{c}-\alpha(\alpha-\beta)\mu\bar{g}}{\mu\delta+\alpha(\alpha-\beta)(\mu+\delta)} \tag{B.2}$$

Substitute the above results for τ and *c* into Eqs. (1) and (2) to obtain:

$$y = -\frac{(\alpha-\beta)\mu\delta(\bar{c}+\bar{g})}{\mu\delta+\alpha(\alpha-\beta)(\mu+\delta)} \tag{B.3}$$

$$g-\bar{g} = -\frac{\alpha(\alpha-\beta)\delta(\bar{c}+\bar{g})}{\mu\delta+\alpha(\alpha-\beta)(\mu+\delta)} \tag{B.4}$$

$$c-\bar{c} = -\frac{\alpha(\alpha-\beta)\mu(\bar{c}+\bar{g})}{\mu\delta+\alpha(\alpha-\beta)(\mu+\delta)} \tag{B.5}$$

By making use of Eqs. (B3), (B4) and (B5), one arrives at the social loss (9) in Section 4.

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