Lecture Notes: Systems Competition II.2: Fiscal competition in a second-best world - Safeguard against fiscal expropriation?

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1 Fiscal Competition and Political Agency

So far, we discussed models of fiscal competition which resorted to the view that governments are benevolent.

Political economy aspects were absent unless one is willing to assume that policical process induces economic outcome which are equivalent to the one chosen by a benevolent planer (Wittman, 1980).

The view involves that competition in the political market eliminates the possibility to deviate from the "benevolent" policy. If a politician chooses to do so, an alternative candidate, offering a more favorable policy proposal, will run against him/her.

To the extent that political competition does not eliminate "wasteful" expenditures fiscal competition has been

argued to be one alternaive mode of restraining politicians.

An approximation (albeit imperfect) of political decision-making is the Leviathan-view of government policy.

Most notably advocated by Brennan and Buchanan (1980), it stipulates that governments fiscally expropriate its constituents.

Their objective is to maximize the amount of taxes which can be used for wasteful spending.

In this lecture we will first briefly discuss the Leviathan view of government and to what extent fiscal competition is a second-best instrument in protecting constituents against fiscal expropriation.

In a seocnd step we will discuss the model by Besley and Smart (2003). By resorting to a political agency model allowing for benevolent and selfish politicians, it takes a more refined view of how the polical-process is organized.

1.1 Leviathan government

The set-up is identical to the one in Zodrow-Mieszkowski (1986) except of the government's objective function.

It is given by the total amount of tax revenues tk net of tax collection costs.

We assume that $t \in [0, \bar{t}]$ and that tax collection involves a cost of $c(t)$ with $c(0) = 0$, $c' > 0$, $c'' > 0$, and $\lim_{t \to \bar{t}} c(t) = \infty$.

The Leviathan solves

$$\max_t tk - c(t).$$

At an interior optimum the tax rate satisfies

$$k + tk_t - c' = 0.$$

Recalling $\frac{\partial k^i}{\partial t^i} = \frac{n-1}{n}\frac{1}{f^i_{kk}}$ we get at an interior solution

$$k + t\frac{n-1}{n}\frac{1}{f^i_{kk}} - c' = 0,$$

when evaluated at symmetric tax rate choices.

Comparative statics w.r.t. the number of Leviathan governements engaged in tax competition shows that the level of capital taxation, t, is decreasing in n.

$\Rightarrow$ Fiscal competiton has the boon of protecting constituents against fiscal expropriation (Brennan and Buchanan, 1980).

1.2 Political agency model: Besley and Smart (2003)

The basic qeustion analyzed in the paper is whether political competition will discipline selfish politicians or will even replace them by politicians whose interest is more aligned with the public interest.

The model is a political agency model both with adverse selection and moral hazard.

1.2.1 Model set-up

two-period model

- first period: a randomly drawn politician chooses policy; at the very end of the period elections take place.

- second period: the elected official chooses policy and "retires" after the second period.

Total government spending is:

$$x = \theta G + s$$

G is public spending valued by voters

s is wasteful public spending (rents accruing to the politician).

θ is a cost parameter with $\theta \in \{L; H\}$, $H > L$ and $\Pr(\theta = H) = q$.

θ and s cannot be observed by voters.

$x \leq X$.

Voters evaluate public policy according to

$$W(G, x) = G - \mu C(x) \tag{1}$$

$\mu C(x)$ give the marginal cost of public funds; $\mu > 0$, $C' > 0$ and $C'' > 0$.

$\Rightarrow$ whenever voters observe a large difference between G and x, it can be due to a high cost parameter θ or high rent extraction s.

Politicians may be of a "good" or "bad" type. The type is indexed by $i \in \{b, g\}$.

- A good politician maximizes (1) where $s \equiv 0$.

- A bad politician values spending on wasteful items. It chooses policy to maximize $s_1 + \beta\sigma s_2$.
  - $\beta < 1$ is the discount factor.

– σ is the probability of winning the re-election.

Before turning to equilibrium analysis we will explicitly state the sequence of events:

first period:

1. The first period incumbent is randomly drawn.

2. It observes the first-period realization of θ.

3. It chooses G and x which can be observed by voters; but voters oberseve neither θ nor s.

4. At the end of the period elections take place. The type of the challenger cannot be observed by voters.

second period:

1. The winning candidate observes the second-period realization of θ.

2. It chooses G and x which can be observed by voters; but voters obsereve neither θ nor s.

3. At the end of the period the politician retires (no further elections).

1.2.2 Equilibrium analysis

Equilibrium concept: Perfect Bayesian Nash equilibrium

We work backwardly to identify such an equilibrium.

second period:

In the second period politicians are "lame" ducks. No matter what they do, it does not affect their future career.

Thus:

- A good politician chooses G and x so as to maximize (1).

- A bad politician has no incentive to spend on G. It chooses the maximum amount of s_2. As $x \leq X$, we have $s_2 = X$.

first period:

Exkurs: Perfect Bayesian Nash equilibrium

In identifying such an equilibrium we must specify the beliefs of each player (given the strategies of the other players) and the optimal strategies of each player (given the belief).

In a nutshell, a perfect Bayesian Nash equilibrium exists if beliefs and optimal actions are mutually consistent where beliefs are up-dated according to Bayes' rule (whenever possible).

As a starting point in identifying such an equilibrium we characterize the policy a **good politician** chooses:

If $\theta = H$, it will choose $\left(G_H^*, x_H\right)$.

If $\theta = L$, it will choose $\left(G_L^*, x_L\right)$.

The **bad politician** chooses between the following strategies:

1. He may choose $s_1 = 0$ and implements $\left(G_\theta^*, x_\theta\right)$, $\theta \in \{H, L\}$.

2. He may choose $s_1 = X$. Since $G = 0$, the voter knows that he is of a bad type and sets $\sigma = 0$. Recall, the challenger has a positive probability of being a good politician. The challenger is thus ex-ante preferred to the bad incumbent.

3. A third strategy arises when the bad politician operates in a low-cost environment. In that case he can pretend to operate in a high-cost environment and to be of a good type by choosing $\left(G_H^*, x_H\right)$. The budget surplus $(H - L)\, G_H^*$ is diverted to private rent consumption, i.e. $s_1 > 0$.

$\Rightarrow$ We can already eliminate strategy 1 as an equilibrium strategy. As $\beta < 1$, the expected discounted value of rents under the second strategy is higher than under the first strategy (even when the re-election probability would be $\sigma = 1$).

(x_L, x_H, X) may be observed in equilibrium.

We can already specify $\mathsf{Pr}(g|x_L) = 1$ as the bad politician will not choose x_L when operating in a low-cost enviroment. Instead, he will choose either x_H or X.

The most "interesting" situation arises when voters observe x_H.

Let's define λ as the probability that the bad politician mimicks the good politician in a low-cost environment, i.e.

$$\lambda = \Pr(x_H|\theta = L,\, i = b).$$

Upon observing x_H voters up-date their prior beliefs according to Bayes' rule:

$$\Pr(g|x_H) = \frac{\pi q}{\pi q + (1-\pi)(1-q)\lambda}. \qquad (2a)$$

How will voters decide on whether to re-elect the incumbent based on the observation x_H?

When $\Pr(g|x_H) \geq \pi$, voters will select $\sigma > 0$. Following (2a), this will be the case if $\lambda \leq q/(1-q)$. When $\Pr(g|x_H) < \pi$, it is optimal to vote for the challenger (more likely to be a good politician).

So far, σ is defined as the re-election probability. To save on notation, let's subsequently define σ as the probability of re-election when voters observe x_H.

Strategies: Equilibrium behavior is represented by λ and σ.

Three types of equilibria may exist:

- separating equilibrium ($\lambda = 0$, $\sigma = 1$): Politicians separate in the first-period .

- pooling equilibrium ($\lambda = 1$, $\sigma = 1$): The bad politician mimicks the good politician if $\theta = L$.

- hybrid equilibrium ($0 < \lambda < 1$, $0 < \sigma < 1$): The bad politician randomizes in the first period.

1. A **separating equilibrium** exists if $(H - L)\, G_H^* + \beta X < X$.

Given the belief by voters ($\sigma = 1$), the strategy $\lambda = 0$ is only optimal for the bad politician if $(H - L)\, G_H^* + \beta X < X$.

Why? The left-hand side gives first-period the discounted value of rents when mimicking the good-type and the right-hand side gives the maximum level of rents the politician can extract when revealing his type in the first-period.

Given the strategy by the bad politician, the up-dated belief is $\Pr(g|x_H) = 1$.

Therefore, beliefs and actions are mutually rational.

$\Rightarrow$Along the equilibrium path we either observe x_H, x_L or X. In the former two cases voters know that the incumbent is of a good type. Recall, $\Pr(g|x_L) = 1$. In the latter case voters know that the incumbent is of a bad-type.

2. Similarly, a **pooling equilibrium** exists if $q \geq 0.5$ and $(H - L)\, G_H^* + \beta X \geq X$.

Observing x_H is of no informational value to voters as the incumbent may either be a good politician or a bad politician operating in a low-cost environment. Thus, for $\Pr(g|x_H) \geq \pi$ it is a best-response to choose $\sigma = 1$. For $\lambda = 1$, $\Pr(g|x_H) \geq \pi$ implies $\lambda = 1 \leq q/(1-q)$ $\Rightarrow q \geq 0.5$.

Given the belief by voters, it is optimal for the bad politician to choose $\lambda = 1$ when $(H - L)\, G_H^* + \beta X \geq X$.

3. A **hypbrid equilibrium** exists in which $\lambda = q/(1-q)$ and $\sigma = \left(X - (H-L)\,G_H^*\right)/\beta X$ if $q < 0.5$ and $(H-L)\,G_H^* + \beta X \geq X$.

Assume $q \geq 0.5$. In this case $\Pr(g|x_H) \geq \pi$ (and thus $\sigma > 0$) requires the bad politician to play in pure strategies ($\lambda = 1$).$\Rightarrow$ a mixed strategy equilibrium does not exist.

When $q < 0.5$, indifference between $\sigma = 0$ and $\sigma = 1$ implies on the part of voters implies $\Pr(g|x_H) = \pi$ which gives $\lambda = q/(1-q)$.

The bad politician is indifferent between $\lambda = 0$ and $\lambda = 1$ when $(H-L)\,G_H^* + \sigma\beta X = X$. Thus, $\sigma = \left(X - (H-L)\,G_H^*\right)/\beta X$.

Question: What about the strategy combinations ($\lambda = 1$, $\sigma = 0$) and ($\lambda = 0$, $\sigma = 0$)?

1.2.3 The welfare effects of voting

Two equilibrium effects:

- Disciplining effect: Amount of rent extraction decreases.

- Selection effect: A bad politician can be voted out of office.

Which effect prevails in equilibrium?

- separating equilibrium: no disciplining effect, but selection effect

- pooling equilibrium: disciplining effect, but no selection effect

- hybrid equilibrium: both (in expected terms)

Fiscal competition is measured by μ. A higher value can be interpreted as an increase in the fierceness of tax competition.

Question: How does an increase in μ affect welfare?

See assignment #2.