



Cahiers du LASER

n°017-04-05

Lobbying, Spillovers and the Benefits of Decentralization

*Guillaume Cheikbossian**

* LASER-LAEC, Université de Montpellier 1

Laboratoire de Sciences Economiques de Richter
UNIVERSITE DE MONTPELLIER I - Faculté des Sciences Economiques,
Espace Richter - Avenue de la mer, B.P. 9606 - 34 060 Montpellier Cedex, France
Tel : (33) 04 67 15 84 50 Fax : (33) 04 67 15 83 61
E-mail : zantman@univ-tlse1.fr Web : <http://www.sceco.univ-montp1.fr>

Lobbying, Spillovers and the Benefits of Decentralization*

Guillaume Cheikbossian^{a,b†}

^aLAEC-LASER, Université de Montpellier 1, Avenue de la mer, 34960 Montpellier Cedex 2.

^bGREMAQ, Université de Toulouse 1, 21 Allée de Brienne, 31000 Toulouse, France.

April 27, 2005

Abstract

In the presence of spillovers, decentralized provision of local public goods may lead to a higher surplus than centralized provision even if localities have identical preferences. Indeed, free-riding costs associated to decentralization may be larger than the costs of lobbying activities under centralization.

Keywords: (De)centralization, Local Public Goods, lobbying, Spillovers

JEL Classification: H11, H41

1 Introduction

When localities have different preferences over public policies, the choice of a centralized system over a decentralized system depends on the size of the benefits of internalizing externalities relative to the costs of policy uniformity (Oates' (1972) Decentralization Theorem). However, even though localities value local public spending to the same extent, centralized decision-making may not be the most efficient system. Indeed, under centralization, sharing the costs of local public spending gives rise to a distributive conflict, as each region wishes to enlarge its own public sector and to shrink the public sector in the other region so as to reduce tax burden. Thus, from a political economy perspective, the relative performance of centralized and decentralized systems depends upon the costs of this distributive conflict relative to the cost of non-cooperative behavior between localities. More specifically, we model the distributive conflict under centralization as a lobbying game in which two identical regions exert lobbying pressure to influence decision-making in their preferred direction. If both regions have access to the same lobbying technology, the two regions neutralize each other in the political process and local public spending, in each region, is therefore optimal. Centralized decision-making, however, entails influence costs for the two regions. Under a decentralized system, each region provides and finances its own level of public spending given the other region's choice of public policy. Externalities under this system are, in consequence, not internalized. Both regimes yield an inefficient outcome and the question is which regime results in lower inefficiency, centralized provision with its lobbying activities or decentralized provision with its free-riding behavior. In this framework with quasi-linear preferences, it is shown that centralization yields a higher level of surplus only when both the spillover effect from local public spending and the elasticity of the marginal utility of public goods are sufficiently large.

Related works are Lockwood (2002) and Besley and Coate (2003). These authors dispense with the hypothesis that centralized policy is uniform across localities with different preferences and also

*I thank Javier Ortega for comments and suggestions.

†Corresponding author: Guillaume Cheikbossian, GREMAQ, Université de Toulouse 1, Manufacture des Tabacs, Bât F, 21 Allée de Brienne, 31000 Toulouse, France. Tel: 335-61-12-85-52; fax: 335-61-22-55-63; E-mail: guillaume.cheikbossian@univ-tlse1.fr

assume that it is determined by a legislature of locally elected representatives. The cost of legislative failure is then balanced with the cost of decentralized and non-cooperative behavior to determine which regime performs better. In this paper, we present an alternative political economy analysis of the drawbacks of centralization which abstracts from any heterogeneity between localities and that emphasizes the costs of the competition for political influence rather than the inefficiency of the policy implemented by an elected legislature.

2 The Model

Consider an economy of two equally sized regions, indexed by $j = A, B$, with the region size normalized to 1. All individuals have identical endowments y and consume a private good and a public good or service. The per capita or level of public spending in the j th region is denoted g_j and is funded by a lump-sum tax which is levied either at the regional level or at the union-wide level. The tax is non-distortionary and the unit cost of providing the public good is equal to 1. All individuals share the same preferences for public good consumption and individuals in region j have the following utility function

$$v_j = x_j + H[(1 - \beta)g_j + \beta g_k], \quad j \neq k \quad (1)$$

The parameter $\beta \in [0, 1/2]$ captures the spillover effects from other region's public spending on the "home" region. When $\beta = 0$, citizens care only about the public good in their own region, while when $\beta = 1/2$ they care equally about public spending in both regions. The function $H(\cdot)$ is a twice differentiable function and also satisfies the following standard conditions: For all g ; $H_g(\cdot) > 0$, $H_{gg}(\cdot) < 0$, $H_g(0) = \infty$, $H_g(\infty) = 0$.

Pareto efficiency requires maximization of the aggregate surplus: $S = S_A + S_B$ with respect to g_A and g_B where the surplus of region j is $S_j = H[(1 - \beta)g_j + \beta g_k] - g_j$, $j \neq k$. Because the two regions are the same, the Pareto-optimal level of local public spending is identical across regions and is given by the following first-order condition: $H_g[g^*] = 1$. This symmetric Pareto optimal allocation yields an individual (regional) utility of: $S^* = H[H_g^{-1}(1)] - H_g^{-1}(1)$.

3 Decentralization

Under a decentralized regime, public goods are provided and financed at the regional level. The representatives of each region j simultaneously and independently maximize their own regional surplus S_j . The first-order conditions are

$$(1 - \beta) H_g[G_j^0] = 1, \quad j = A, B, \quad (2)$$

where $G_j^0 = (1 - \beta)g_j^0 + \beta g_k^0$, $j \neq k$, is the level of effective public consumption in region j . Therefore, in the Nash equilibrium between the two regions, we have the following common equilibrium level of local public good i.e.

$$g_A^0 = g_B^0 = H_g^{-1}\left(\frac{1}{1 - \beta}\right). \quad (3)$$

This amount decreases in β because of the free-riding incentives and is smaller than the optimal amount $H_g^{-1}(1)$. In equilibrium, the regional surplus reads as

$$S^0 = H\left[H_g^{-1}\left(\frac{1}{1 - \beta}\right)\right] - H_g^{-1}\left(\frac{1}{1 - \beta}\right). \quad (4)$$

Calculating the derivative of S^0 with respect to β , yields

$$\frac{\partial S^0}{\partial \beta} = \frac{\beta}{(1-\beta)^3} (H_g^{-1})_g \left(\frac{1}{1-\beta} \right) < 0 \quad (5)$$

since from the conditions on the H function, we have $(H_g^{-1})_g(\cdot) < 0$. The equilibrium level of surplus is therefore decreasing with the spillover effect.

4 Centralization

Under a centralized regime, the level of public spending g_j in the j th region is decided by a central authority and is funded by a general and uniform lump-sum tax. The level of private consumption for an individual in region j is then $x_j = y_j - \frac{1}{2}(g_A + g_B)$. The central government is assumed to maximize a weighted sum of the surplus of both regions. The respective weights ϕ_A and ϕ_B are determined by the level of lobbying activities T_A and T_B of the two regions in the first stage of the game.¹ Let W be the objective function of the government i.e. $W = \phi_A v_A + \phi_B v_B$.²

In the second stage of the policy game, the levels \tilde{g}_j and \tilde{g}_k chosen by the central government must solve the following first-order conditions for $j = A, B$:

$$(1-\beta)\phi_j H_g(\tilde{G}_j) + \beta\phi_k H_g(\tilde{G}_k) = \frac{1}{2}(\phi_A + \phi_B); \quad j \neq k \quad (6)$$

where $\tilde{G}_j = (1-\beta)\tilde{g}_j + \beta\tilde{g}_k$, $j \neq k$. Solving, this system, we find

$$\phi_j^r H_g(\tilde{G}_j) = \frac{1}{2}, \quad j = A, B \quad (7)$$

where $\phi_j^r = \phi_j / (\phi_A + \phi_B)$ and $\phi_k^r = (1 - \phi_j^r)$. From this equation, we have

$$\begin{aligned} \frac{d\tilde{G}_j}{d\phi_j^r} &= -\frac{H_g(\tilde{G}_j)}{\phi_j^r H_{gg}(\tilde{G}_j)} = \frac{\tilde{G}_j}{\phi_j^r \theta(\tilde{G}_j)} > 0, \\ \frac{d\tilde{G}_k}{d\phi_j^r} &= \frac{H_g(\tilde{G}_k)}{(1-\phi_j^r) H_{gg}(\tilde{G}_k)} = -\frac{\tilde{G}_k}{(1-\phi_j^r) \theta(\tilde{G}_k)} < 0 \end{aligned} \quad (8)$$

where $\theta(\cdot) = -H_{gg}(\cdot) \cdot g / H_g(\cdot) > 0$ is the elasticity of the marginal valuation for public good consumption (which, from now, is assumed to be constant). The level of effective public consumption in region j is increasing in the political influence of that region and decreasing in the political influence of the other region.

In the first stage of the policy game, each region j can raise its political weight ϕ_j by lobbying expenditures. Each region then maximizes its surplus minus the cost of its lobbying pressure i.e. maximizes $H(\tilde{G}_j) - \frac{1}{2}[\tilde{g}_j + \tilde{g}_k] - T_j$ with respect to T_j . The following first-order condition has to be satisfied for $j = A, B$ with \tilde{G}_j and $d\tilde{G}_j/d\phi_j^r$ given by Eq. (7) and Eq. (8) respectively

¹This type of objective function can be micro-founded with a probabilistic voting model in which two candidates compete for votes in a forthcoming elections. It is well-known that in such models, candidates maximize a weighted social welfare function (see, for example, Chapter 4 in Persson and Tabellini, (2000)). Lobbying can be introduced into this political setting in a way that localities spend resources to increase their weights in the objective function of the government.

²Without any lobbying activities from the two regions, the government is assumed to maximize the arithmetic sum of the welfare functions of both regions. This is just a matter of expositional felicity. We can indeed replace the weight ϕ_j of the j th region in the objective function of the government by $1 + \phi_j$ without affecting the analysis and the results.

$$\frac{dv_j}{dT_j} = \left[H_g(\tilde{G}_j) \frac{d\tilde{G}_j}{d\phi_j^r} - \frac{1}{2} \left(\frac{d\tilde{G}_j}{d\phi_j^r} + \frac{d\tilde{G}_k}{d\phi_j^r} \right) \right] \frac{d\phi_j^r}{dT_j} - 1 = 0, \quad j \neq k. \quad (9)$$

Note that $H_g(\tilde{G}_j(\cdot)) = I(\cdot)$ where $I(\cdot)$ is the identity function. From equation (7), we also have $\tilde{G}_j = H_g^{-1}[1/(2\phi_j^r)]$. Therefore, rewriting the above expression, we have

$$\frac{d\phi_j^r}{dT_j} = \frac{2\theta(\phi_j^r)^2(1-\phi_j^r)}{(1-\phi_j^r)^2\tilde{G}_j + (\phi_j^r)^2\tilde{G}_k} \quad j \neq k. \quad (10)$$

It represents equilibrium rent-seeking expenditures T_j , $j = A, B$, that are best responses to each other. We can express the marginal relative political effectiveness of one region relative to the other in the following way

$$\frac{d\phi_A^r/dT_A}{d\phi_B^r/dT_B} = \frac{\phi_A^r(\tilde{T}_A)}{\phi_B^r(\tilde{T}_B)} \Leftrightarrow \frac{d\phi_A/dT_A}{d\phi_B/dT_B} = \left[\frac{\phi_A(\tilde{T}_A)}{\phi_B(\tilde{T}_B)} \right]^2 \quad (11)$$

since $d\phi_j^r/dT_j = \frac{\phi_k(d\phi_j/dT_j)}{(\phi_A + \phi_B)^2}$ for $j \neq k$. Therefore, when the two regions have access to the same influence function (i.e. $\phi_A(\cdot) = \phi_B(\cdot)$), (11) is satisfied by the same level \tilde{T} of lobbying effort of both regions. It follows that both groups have the same influence on policy making i.e. $\phi_A = \phi_B$ and $\phi_A^r = 1 - \phi_A^r = 1/2$. The regions neutralize each other in the political process and the government provides the same levels of local public goods as without influence activities that is: $\tilde{G} = \tilde{g} = H_g^{-1}(1)$. For expositional felicity, let assume a linear influence function i.e. $\phi_j(T_j) = T_j$ for $j = A, B$.

Using (10), the common level of lobbying activities is given by

$$\tilde{T} = \frac{\tilde{G}_A + \tilde{G}_B}{4\theta} = \frac{H_g^{-1}(1)}{2\theta}. \quad (12)$$

The surplus in both regions is

$$\tilde{S} = H[H_g^{-1}(1)] - \frac{1+2\theta}{2\theta} H_g^{-1}(1). \quad (13)$$

This surplus is increasing in θ the elasticity of the marginal utility of public goods.

The welfare difference between centralized and decentralized provision of local public spending is

$$\Delta(\beta, \theta) \equiv H[\tilde{g}] - [(1+2\theta)/2\theta]\tilde{g} - H(g^0) + g^0. \quad (14)$$

This expression is increasing both in β and in θ . When $\beta = 0$, we have $g^0 = \tilde{g}$ and the above expression is negative. The decentralized system yields an efficient outcome and clearly dominates the centralized system since it avoids costly influence activities, whose level is given by (12). When $\beta = \frac{1}{2}$ i.e. when the citizens care equally about public spending in both regions, the above expression can be positive only if θ the elasticity of the marginal utility of public goods is sufficiently large. We can then establish the following result

Proposition 1 *Let $\tilde{\theta}$ such that $\Delta(\frac{1}{2}, \tilde{\theta}) = 0$. Then, (i) if $\theta > \tilde{\theta}$, there exists a threshold value of the spillover parameter $\tilde{\beta} < \frac{1}{2}$ such that for any value below (above) this threshold, decentralization (centralization) produces a higher level of surplus; (ii) if $\theta \leq \tilde{\theta}$, decentralization dominates centralization independently of the level of spillovers.*

5 Conclusion

In this note, we revisit the classic trade-off between centralized and decentralized provision of local public goods. We show that, in the presence of spillover effects from local public spending, centralization may not be desirable even when regions are identical due to the conflict for political influence it may generate. Centralization may perform better only when both the elasticity of the marginal valuation for public goods and the spillover effects are large.

References

- [1] Besley, T. and S. Coate, (2003), "Centralized versus Decentralized Provision of Local Public Goods: A Political Economy Approach," *Journal of Public Economics* 87, 2611-2637.
- [2] Lockwood, B., (2002), "Distributive Politics and the Costs of Centralization," *Review of Economic Studies* 69, 313-337.
- [3] Oates, W., (1972), *Fiscal Federalism*, Harcourt Brace, New-York.
- [4] Persson, T., and G. Tabellini, (2000), *Political Economics*, MIT Press.