Is it reasonable to allocate power to appointed regional authorities?

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Abstract

Political decentralization involves an incentive game in which the President and regional authorities have to share power to provide public goods. In such a game, it is never reasonable to allocate political power to appointed Governors. In fact, when formal authority goes to the President - i.e. under administrative decentralization -, no real authority is allocated to Governors. In other words, mere delegation does not exist because regional incentives are never high enough. On the other hand, if formal authority is given to regions - i.e. under democratic decentralization where regional authorities are elected -, Governors may receive some real authority if their incentives are high enough. Additionally, other results of the model say that communication between regions makes the President more accountable and may revert a decentral allocation made under no communication. Finally, asymmetric regions prefer different power allocations and power concerns lead national politicians to avoid proposing decentralizing reforms.

JEL codes: D72, H70

1 Introduction

Decentralization of political power, like authority in private firms, may have two forms: formal authority, or the allocation of responsibility to politicians facing voters, and real authority, or the allocation of power among politicians. Political responsibility is the formal authority politicians have facing citizens who are, in a democracy, the principal. Real authority or power in this framework is the participation politicians have in the process of making policy decisions. In this sense they can be also called tasks in a political team, but the notion of power is better adapted in a political game.

Decentralization can take many forms, for example, James Manor (1999) for the World Bank developed a typology for decentralization including:
• “Deconcentration, or administrative decentralization, occurs when agents in higher levels of government move to lower levels.

• Fiscal decentralization occurs when higher levels of governmentcede influence over budgets and financial decisions to lower levels.

• Devolution, or democratic decentralization, occurs when resources, power, and often tasks are shifted to lower-level authorities who are somewhat independent of higher authorities, and who are at least somewhat democratic”

In a democracy, the President is always accountable to citizens because only they can decide whether to keep him in power or not. However, from the definitions of decentralization, regional authorities can take at least two forms: in the first case of administrative decentralization, they are part of the political team of the President, while in the second case of democratic decentralization, they are independent entities. Being part of the political team of the President implies that the main goal is to get reelection of the whole team, while being different entities lead the agents to work with separate objectives.

O’Neill (2005) defines four concepts normally associated with decentralization. Deconcentration or delegation is the situation in which the political power remains in the hands of the central authority while some fiscal attributions (or tasks) are allocated to decentral authorities. Devoluiton, on its side, gives political power to decentral intitutions while keeping the fiscal power in the hands of the central intution. Finally, decentralization combines both allocation of political and fiscal power to decentral institutions.

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Fig. 1: Defining decentralization (Source: O’Neill 2005)

This paper studies how independent elections of regional authorities affects the allocation of power among politicians that have to work in teams. In other words, how allocation of formal authority affects the allocation of real authority. The result is that, in O’Neill’s terms, delegation can not exist.

Aghion and Tirole (1997) present a model of delegation of real vs. formal authority between a principal and an agent that have different private values over the projects they can undertake. They show that formal authority increases the effort made by the agent. In this sense, political independence gives regional authority formal responsibility and increases their effort and it is the only way they can receive real authority.

In this political model in which the President is a particular type of agent who has to participate in all the regional teams for them to provide regional public goods, independent election for regional authorities gives them formal

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1 citation from Anderson (2003)
authority and this increases their effort, making it reasonable to give them more power.

Politicians exert effort because of career concerns and in this framework, accountability acts through three channels:

1. *Private incentives to stay in office.* The importance that politicians give to staying in office makes them to exert effort to keep it. In this case it is assumed to be higher for the President than for regional authorities. There are two main interpretations for this assumption. The first is that, since private values for politicians are related to their ego or the influence they can exert on ruling the society, it is reasonable to think that the value of being in charge of the whole country is higher than being in charge only of a region. The second is that higher level authorities can coordinate better policies in the country, therefore, they can extract higher rents from their office than any particular region.

2. *Political responsibility.* The competence or power politicians have in affecting public good provision is known by the citizens, therefore, a politician having more responsibility or being in charge of more political tasks is willing to exert more effort because his work is better observed by voters. In this sense, Ortega (2003) in a career concern model, shows that *visibility* of managers makes efficient to share power asymmetrically between two managers to benefit from increased effort of the one receiving this power. In the same way politicians that receive more power are more *visible* and have to exert higher effort.

3. *Change on the probability of being reelected.* Politicians exert effort because of career concerns. A higher effort would signal more ability and, hence, increase the probability of being reelected. In this sense, if ‘all politicians are the same’, i.e. there is a low variance in the distribution of abilities among them, the probability that effort signals being better than the average is higher, hence, it is profitable for politicians to exert higher effort. Finally, the electoral system also matters: indirect election makes the President less accountable than direct election (see Seabright (1996) and Gelbach (2004)).

This paper compares the situation of administrative decentralization, in which regional authorities depend on the President, with democratic decentralization, in which regional authorities are independent and directly reelected by citizens. The first result is that if the system is centralized, i.e. only the President is politically responsible for the provision of public goods, no power is allocated to regional authorities. This means that it is not reasonable to talk about administrative decentralization, because regional authorities should receive no power if they are not elected by citizens but appointed by the President. In fact, regional authorities stay in office only if the President is reappointed, and their effort has the same effect on the change on the probability of being reelected than the effort of the whole political team. However, the higher incentive of the
President for staying in office, leads him to exert higher effort. In other words, if the rents of being President are higher than those of being regional authority, and their effort acts in the same way over the probability of being reelected, it is better to allocate all the power in the hands of the President because he would exert more effort in every region than any regional authority.

On the other hand, democratic decentralization allocates formal authority to regional authorities. This allocation of responsibility increases their effort, hence if the value of their private incentives is high enough, it is reasonable to give them more power.

The possibility that people can observe not only the provision of public good in their own region but also in other regions changes the way accountability affects the effort of politicians. In fact, the usual effect of accountability is that regional authorities exert more effort than national authorities because the effect of their effort on production of public goods is observed with less noise. However, the existence of perfect communication between regions may reverse this effect. If there is perfect communication between regions and national authorities exert effort in local projects, they generate several signals of their ability, therefore they may be more accountable than regional authorities instead of less accountable. Observability of public goods in other regions may depend on several characteristics both of the economy or the nature of public goods, for example, amenities or neighborhood’s security are goods for which people may have data but not believe until they actually see it. And in this point, communication channels are essential. If TV, radios or newspapers are biased to inform about murders, accidents or traffic jams occurred mainly in the capital city more than in other cities, since more audience is affected, this may create a disproportionate perception about politician’s performances.

However, the size of the population does not only distort communication channels, it also affects the effort made by politicians in each region when they are responsible for the provision of local public goods. People know that if the President decides on the effort to exert in two different regions, he will take into account the effect of the effort made in that region in his probability of being reelected. Hence, a bigger region will receive more effort because it gives more votes for President’s reelection. Therefore, a bigger region prefers to give more power to the President than to a little region since the effort from regional authorities is unchanged, but a higher proportion of the national attention is paid to a big region.

This model uses a framework in which power is allocated in teams with career concerns with agents that are motivated by private values. Alesina and Tabellini (2006) present a model of allocation of tasks between politicians and bureaucrats in which both are motivated by career concerns. In the case of politicians, career concerns are aimed to be reelected, while for bureaucrats it the view their peers (or the market) have about their ability. Their main result is that the bureaucrat is preferable for technical tasks for which ability is more important than effort, or if there is large uncertainty about whether the policymaker has the required abilities.

Gehlbach (2004) also compares accountability between centralized and de-
centralized systems and he founds that decentralization enhances efficiency on public good provision because locally elected politicians are more accountable than their nationally elected counterparts, but this is only due to the fact that national authorities are elected through indirect systems. In that case, national authorities only need to please the half of the voters of the half of the regions, instead of the half of the voters pleased by the decentralized system. However, under majoritarian national-wide elections the link performance-accountability remains intact.

Finally, Savelieva (2007) points the trade off between the ability of appointed governors to internalize spillovers and the lack of flexibility the central government has to impose in order to evaluate them. The difference of this model is that it takes a big country which delegation has to be taken in some form.

Section 2 of the paper presents the basic model in which there is no communication between regions and compares the situation of administrative decentralization with democratic decentralization. Section 3 allows for perfect communication between regions in a way such that President’s performance in every region is observed by all the citizens in the country. Up to this point, regions are symmetric, however in Section 4 they have different sizes which lead them to differ in their preferences about power allocation. Section 5 studies the incentives of politicians for proposing decentralizing reforms and Section 6 concludes.

2 Model

The framework of this model is inspired in the work of Ortega (2003) that models allocation of power between two agents in a team. His result is that giving more power to one of the agents has increasing returns, therefore, the allocation is never symmetric.

This model presents an economy with two regions in which both the President and regional authorities provide regional public goods. The President should, at least, participate in the provision of regional public goods. Even in the most extreme case of decentralization, the President should make an effort to know regional projects to avoid possible miscoordinations among regions, or controlling spillovers.

The model is defined by the production technology that allows to produce local public goods in region \( i = A, B \) using politicians’ effort and abilities.

\[
y_i = \varphi (\eta_P + E_i) + (1 - \varphi) (\eta_i + e_i) + \varepsilon_i
\]

where \( \varphi \in [0,1] \) is the power given to the President, \( \eta_P \sim N (\eta_0, \sigma^2) \), \( \eta_i \sim N (\eta_0, \sigma^2) \) are the ability of the President, and regional authorities in regions A and B. There is also an independently distributed random shock, \( \varepsilon_i \sim N (0, \sigma^2) \) affecting production in both regions. Finally, \( E_i \) is the effort exerted by the President in each region, while \( e_i \) is the effort made by each regional authority in their own region.

Timing is as follows:
0. Formal authority is allocated. Regional authorities are decided to be appointed by the President or elected.

1. Power is allocated between political levels, i.e. \( \varphi \) is chosen.

2. Period 1:

   (a) Politicians decide how much effort to exert in each region, without knowing their abilities.
   
   (b) Abilities and random shocks are realized. This gives the amount of public good provided in each region.
   
   (c) Local public good provision is perfectly observed by people living in that region, only.

3. Incumbent politicians are reelected or not.

4. Period 2:

   (a) Politicians decide how much effort to exert in each region.
   
   (b) Public good is provided in each region.
   
   (c) Local public good provision is only observed by people living in that region.

5. End of the game.

Citizens know that in the second period they will only receive public goods coming from politicians’ ability because there is no incentive for them to exert effort. However, at the end of period 1 they can infer politicians’ abilities because they have the same information that the President has at the moment of making the decision. Following Persson and Tabellini (2000, ch. 4), the inferred ability is:

\[
\tilde{\eta}_{P_i} = \frac{1}{\varphi} \left( y_i - \varphi E_i^* - (1 - \varphi) e_i^* \right) - \frac{1}{\sqrt{\varphi}} \eta_0
\]  

(1)

Notice that efforts are replaced by the equilibrium efforts because they are already known by everybody at the end of period 1. This inferred ability is distributed normally centered in \( \eta_0 \). This distribution is called \( F_P (\eta) \).

\[
\tilde{\eta}_{P_i} \sim N \left( \eta_0, \frac{1}{\varphi^2} \left( \varphi^2 \sigma^2 + (1 - \varphi)^2 \sigma^2 + \sigma^2 \right) \right) = F_P (\eta)
\]

If a politician is not reappointed, a random one is appointed from the pool of politicians defined by \( N (\eta_0, \sigma^2) \), therefore citizens reelect any politician that shows that he is more able than the average. Therefore, the probability that people in region \( i \) vote for reelection is \( \Pr \left[ \tilde{\eta}_{P_i} \geq \eta_0 \right] \).

The effort exerted by the President comes from maximizing

\[ U^P = -C (E_A, E_B) + p^P B \]
where \( p^P = \frac{1}{2} \Pr [\eta_{PA} \geq \eta_0] + \frac{1}{2} \Pr [\eta_{PB} \geq \eta_0] \). Therefore, using \( C (E_A, E_B) = \frac{1}{2} (E_A^2 + E_B^2) \), equation (1) and the fact that \( \frac{dp^C}{dec} = \frac{1}{2} f_0^P (\varphi) \) where \( f_0^P (\varphi) = F^{P^P} (\eta_0) \),

\[
E_A = E_B = \frac{1}{2} f_0^P (\varphi) B
\]

Notice that the effort can be divided in two parts. The first, \( \frac{1}{2} f_0^P (\varphi) \), is the probability that the effort made by the President marginally moves him to be recognized as better than average; and the second, \( B \) is the incentive received if staying in office.

### 2.1 Administrative Decentralization

The first possibility is to have a political team working for the reelection of the President. In this case, regional authorities are designed by the President and not elected by citizens.

If regional authorities are not elected, their reappointment in office depends on the reappointment of the President. Therefore, their effort comes from maximizing

\[
U^R = -c (e_i) + p^P b
\]

where \( p^P \) is the same as before because it is assumed that a President will always re-appoint his team after being reelected and no regional authority can remain in his office after no reelection of the President.

The assumption of a regional authority replaced by the President after period 1 is not reasonable. If the President could fire a regional authority out of the team at the end of period 1 he would always do because in doing so he would signal his own ability, therefore, it becomes a dominant strategy. Hence, he commits (or the Constitution makes him commit) to keep regional authorities if he stays in power to preserve incentives of the regional authority to exert effort. It is also reasonable that if the President is not reappointed, there is no possibility for the regional authority to stay in office. These assumptions are made to look for the highest possible motivation of regional authorities under no political responsibility on them.

Using \( c (e_i) = \frac{1}{2} e_i^2 \), equation (1), the definition of \( p^P \), and the fact that

\[
\frac{dp^C}{dec} = \frac{1 - \varphi}{2 \varphi} f_0^P (\varphi),
\]

\[
e_A = e_B = \frac{1 - \varphi}{\varphi} \frac{1}{2} f_0^P (\varphi) b
\]

Note that there are two changes with respect to the effort of the President: the incentive of staying in office is now \( b \) and a new term appears. This term is the relative power of the regional authority with respect to the President and enters the equation because the effort of the regional authority changes the probability that the President is reelected and not himself. If he has more power, his effort would have a higher effort in the probability of staying in office, but this would depend on how this effort affects the perceived ability of the President, therefore, they should “correct” for this fact.
Proposition 1 If regional authorities are not elected, power is always allocated to the President, i.e. $\varphi = 1$.

Proof. The expected public production is,

$$y(\varphi) \equiv E[y_i] = \eta_0 + \varphi E_i(\varphi) + (1 - \varphi) e_i(\varphi)$$

The proof need two stages. In the first, it is shown that for every $\varphi$ lower than $\frac{1}{2}$ it exist one higher than $\frac{1}{2}$ that provides more public production. Then, it is shown that the slope of $E[y_i]$ is always positive after $\frac{1}{2}$.

First, let $\alpha \in [0, \frac{1}{2})$

$$y_i(\alpha) - y_i(1 - \alpha) = \frac{1}{2\alpha} f_0^P(\alpha) (2\alpha - 1) (B - b)$$

Therefore, if it is assumed that $b < B$, $y_i(\alpha) < y_i(1 - \alpha)$. Therefore, $\varphi \geq \frac{1}{2}$.

In words, the allocation of power is, at least, relatively centralized in the sense that the President receives more power than the regional authorities.

For the second step, the derivative of the expected public production with respect to power is studied.

$$\frac{dy_i(\varphi)}{d\varphi} = E_i(\varphi) - e_i(\varphi) + \varphi \frac{dE_i(\varphi)}{d\varphi} + (1 - \varphi) \frac{de_i(\varphi)}{d\varphi}$$

This expression can be split in two parts, the first taking the difference between efforts made by politicians, that is positive when $\varphi \geq \frac{1}{2}$ and the second is the convex combination between the derivatives of efforts with respect to power.

The first part is

$$E_i(\varphi) - e_i(\varphi) = \frac{1}{2} f_0^P(\varphi) \left( B - \frac{1 - \varphi}{\varphi} b \right) > 0$$

since $\varphi \geq \frac{1}{2}$. While for the second part,

$$\varphi \frac{dE_i(\varphi)}{d\varphi} + (1 - \varphi) \frac{de_i(\varphi)}{d\varphi} = \frac{(\varphi - 1)(\varphi^2(B - b) + (\varphi B - (1 - \varphi) b) \sigma_e^2)}{2\sqrt{2\pi} \sqrt{2\sigma_e^2 \varphi^2} - 2\sigma_e^2 \varphi + \sigma_e^2} > 0$$

since $\varphi \geq \frac{1}{2}$. (3) and (4) imply that $\frac{dE[y_i]}{d\varphi} \geq 0$ for $\varphi > \frac{1}{2}$. Hence there is a corner solution in $\varphi = 1$.

If regional authorities are not independent, in the sense that they have to work for President’s reelection and not for themselves’, they never exert more effort than the President himself in any of the regions and there is no reason to give them any power. There are two reasons for that: the first is that the incentives for staying in office are higher for the President, and the second is that regional authorities’ effort does not signals their ability but that of the President, hence it has to be transformed when updating beliefs which makes it inefficient to give them any power.
2.2 Democratic Decentralization

If regional authorities are made independent and responsible in front of citizens, there is room for them to receive power.

In this case, regional authorities maximize their utility with their own probability of being reelected, that comes from the inferred ability, that as before follows a normal distribution called $F_R(\eta)$ (note that it has a different variance than $F_R(\eta)$).

$$
\tilde{\eta}_i = \frac{1}{1-\varphi} \left( y_i - (1-\varphi) \epsilon_i^* + \varphi E_i^* \right) - \frac{\varphi}{1-\varphi} \eta_0
$$

$$
\tilde{\eta}_i \sim N \left( \eta_0, \frac{1}{(1-\varphi)^2} \left( \varphi^2 \sigma^2 + (1-\varphi)^2 \sigma^2 + \sigma_i^2 \right) \right) = F_R(\eta)
$$

Therefore, regional authorities maximize their utility as before but taking into account a different probability of being reelected, $p_i^R = \Pr[\tilde{\eta}_i \geq \eta_0]$

$$
U^R = -c(e_i) + p_i^R b
$$

Hence, taking $c(e_i) = \frac{1}{2} e_i^2$, regional authorities’ efforts are

$$
e_A = e_B = f_0^R (\varphi) b \quad (5)
$$

Notice that in this case there are two differences with the effort made by regional authorities under dependency. In the first place, the probability of reelection does not take into account the size of the region – one half – and $f_0^R (\varphi)$ is different from $f_0^P (\varphi)$. In other words, they are not restricted by the fact that their effort will have a weighted effect in national elections but there is a direct effect in their reelection probability. Second, their effort does not have to be corrected or taken by somebody else: they are responsible for their own performance directly.

Also note that the variance of the inferred ability is different. In fact, it is equivalent to that of the President, taking into account that regional authorities are allocated $(1-\varphi)$ instead of $\varphi$. Therefore, some relations can be written

$$
f_0^R (\varphi) = f_0^P (1-\varphi)
$$

$$
\varphi f_0^R (\varphi) = (1-\varphi) f_0^P (\varphi)
$$

Using these relations, it is clear that the effort provided by regional authorities is lower under administrative decentralization than under democratic decentralization. In fact, $e_i^D = \frac{1}{1-\varphi} f_0^P (\varphi) b = 2e_i^A$.

**Proposition 2** Under politically responsible regional authorities and no communication between regions, $\varphi \leq \frac{1}{2}$ if and only if $\frac{b}{f_0^P} > \frac{1}{2}$.

**Proof.** Using (2) and (5), the expected public production is

$$
y_i (\varphi) = \eta_0 + \frac{\varphi}{2} f_0^P (\varphi) B + (1-\varphi) f_0^R (\varphi) b
$$
As before, let $\alpha \in \left[0, \frac{1}{2}\right)$, and using the transformations proposed above,

$$y_i(\alpha) - y_i(1-\alpha) = f_0^P(\alpha) \frac{2\alpha - 1}{\alpha} \left(\frac{B}{2} - b\right)$$

$$y_i(\alpha) - y_i(1-\alpha) > 0 \Leftrightarrow \frac{b}{B} > \frac{1}{2}$$

$$y_i(\alpha) - y_i(1-\alpha) < 0 \Leftrightarrow \frac{b}{B} < \frac{1}{2}$$

Therefore, if $\frac{b}{B} > \frac{1}{2}$, for every $\varphi \geq \frac{1}{2}$, there exists a $\varphi' \leq \frac{1}{2}$ for which $y_i(\varphi') > y_i(\varphi)$, i.e. for every centralized allocation of power there is a decentralized one that yields a higher public provision if $\frac{b}{B} > \frac{1}{2}$. ■

Allowing regional authorities to be directly responsible for their political performance increases their accountability in two ways. The first is that it makes them indifferent from the size of their region and the second is that it makes their effort to be controlled directly by citizens. Therefore, these two differences, added to the fact that power reduces the variance of the inferred ability, makes it possible for regional authorities to receive power if their private motivation is high enough.

3 Communication

The initial assumption about communication between regions was motivated by the fact that in some cases the nature of public goods or the communication channels do not allow people to have an accurate perception of their level elsewhere. However, in the following section, the observation stage of public goods provision is changed in the political game: instead of allowing only citizens of the region receiving the public goods to observe it, citizens of all the country can observe what happens in every region. This communication has two effects in President’s effort: it makes the President more accountable and, therefore pushes him exert more effort; and may revert the decision of having a decentralized allocation of power.

Under administrative decentralization or not-relected regional authorities the result is kept and the solution is always to allocate all the power in the hands of the President. Hence, the following analysis is for the case of democratic decentralization.

If there is perfect communication between regions, President’s inferred ability is changed to allow updating using two signals instead of one (see DeGroot (1970)). This new inferred ability follows a normal distribution called $G^P(\eta)$.

$$\hat{\eta}_P = \frac{1}{2\varphi}(y_A + y_B - \varphi E_A^* - \varphi E_B^* - (1-\varphi) e_A^* - (1-\varphi) e_B^*) - \frac{1-\varphi}{\varphi} \eta_0$$

$$\hat{\eta}_P \sim N\left(\eta_0, \frac{1}{4\varphi^2} \left(4\varphi^2 \sigma^2 + 2(1-\varphi)^2 \sigma^2 + \sigma_\zeta^2\right)\right) = G^P(\eta)$$
Therefore, using (6) and the definition of \( p^R \), as above, their effort is

\[
E_A = E_B = \frac{1}{2} g_0^R B
\]

Notice that the structure is the same as before but with a new marginal effect of effort in the probability of being recognized as a able politician. Comparing these two, it is clear that the lower variance of the communication version makes the effort to be higher in this section.

\[
\frac{g_0^P (\varphi)}{f_0^P (\varphi)} = \sqrt{\frac{4 \varphi^2 \sigma^2 + 4 (1 - \varphi)^2 \sigma^2 + 4 \sigma^2}{4 \varphi^2 \sigma^2 + 2 (1 - \varphi)^2 \sigma^2 + \sigma^2}} > 1
\]

Hence, \( g_0^P (\varphi) > f_0^P (\varphi) \) which leads the President to exert more effort in both regions under perfect communication than under no communication.

In the case of regional authorities, the inferred ability is the same as in the case of no communication, therefore, the effort takes the same form

\[
e_A = e_B = f_0^R (\varphi) b
\]

Notice that there is no yardstick competition between regions because every politician is trying to prove that he is more able than his expected replacement and people know how much power they have to provide public goods. There is no reason for the citizens of a region to punish their own governor because the neighbors have better provision of public goods. If their own provision is higher than the expected one, it makes no sense to take the risk of having a worse governor because the neighbors are doing better because the pool of replacement politicians is independent of actual types and regional shocks are also independent.

\textbf{Proposition 3} \textit{Under politically responsible regional authorities and perfect communication between regions, }\varphi \leq \frac{1}{2}, \textit{if } \frac{b}{\sigma} > \frac{1}{2} \frac{g_0^P (\varphi)}{f_0^R (\varphi - \varphi)}.

\textbf{Proof.} Expected public provision is

\[
\mathbb{E} [y_i] = y_i (\varphi) = \eta_0 + \frac{\varphi}{2} g_0^P (\varphi) B + (1 - \varphi) f_0^R (\varphi) b
\]

Let \( \alpha \in [0, \frac{1}{2}] \), then, as \( g_0^P (\cdot) \) is increasing and \( f_0^R (\cdot) \) is decreasing,

\[
y_i (\alpha) - y_i (1 - \alpha) = \frac{\alpha}{2} g_0^P (\alpha) B - \frac{1 - \alpha}{2} g_0^P (1 - \alpha) B + (1 - \alpha) f_0^R (\alpha) b - \alpha f_0^R (1 - \alpha) b
\]

\[
y_i (\alpha) - y_i (1 - \alpha) > (2 \alpha - 1) \left( \frac{g_0^P (\alpha) B}{2} - f_0^R (1 - \alpha) b \right)
\]

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Therefore, \( \varphi \leq \frac{1}{2} \) if regional private value is high enough.

\[
y_i (\alpha) - y_i (1 - \alpha) > 0 \text{ if } \frac{b}{B} > \frac{g_0^R (\alpha)}{2f_0^R (1 - \alpha)}
\]

Note that the new threshold is higher than the threshold under no communication. In fact, using equation (7) and the relations between \( f_0^P \) and \( f_0^R \) it is easily proved. \( \blacksquare \)

In addition, note that there is a zone in which a decentralized allocation of power is efficient for isolated regions but not for communicating ones, namely when \( \frac{1}{2} < \frac{b}{B} < \frac{g_0^R (\alpha)}{2f_0^R (1 - \alpha)} \). In fact, \( \frac{b}{B} > \frac{1}{2} \) is a sufficient condition under no communication but it is not under perfect communication, where it is only a necessary condition. For the intuition, assume that \( B = 2b - \xi \) with \( \xi \) close to zero. If there is no communication between regions would decentralize power \( (\varphi \leq \frac{1}{2}) \). However, changing information technologies between regions in the sense that perfect communication is allowed between regions makes the President more accountable without changing anything to regional authorities, therefore decentralization may not be a good idea anymore.

4 Asymmetric Regions

Politicians’ accountability depends on the value they give to staying in office and on effect their effort has on the probability of being reelected. However, this effect depends on the size of regions. In the sections above it was assumed that both regions were equivalent in size. However in this section, regions are considered to be different size for studying the way the President divides his effort in this case.

If regions have different sizes, the bigger region receives more attention from the national authorities, therefore it would prefer to allocate power to the national level more often. Therefore, the definition of the borders and size of regions become an issue itself, however in this extension it is assumed that regions are given exogenously by, say, geographical or historical characteristics.

Note that the only relevant case is the case in which there is democratic decentralization and no communication between regions because the result for administrative decentralization is still kept and, under perfect communication, voters are equivalent, independent on the region they live in.

**Proposition 4** If regions are asymmetric, they will disagree in the allocation of power they vote on. In fact, a bigger region prefers to allocate more power to the President than a little region.

**Proof.** The first change in the model is the change in the reelection probability that becomes \( p^P = \lambda_A \Pr[\hat{\eta}_{PA} \geq \eta_0] + \lambda_B \Pr[\hat{\eta}_{PB} \geq \eta_0] \) with \( \lambda_A + \lambda_B = 1 \). Using the same procedure as before, the effort exerted by the President in region \( i \) is

\[
E_i = \lambda_i f_0^P (\varphi) B
\]
Notice that the effort now depends on the size of the region, $\lambda_i$, i.e. a bigger region receives more effort from the President than a little region. However, regional authorities’ efforts are unchanged

$$e_i = f_0^R(\varphi) \cdot b_i$$

Note that regional incentives can vary from one region to the other, since it is more important to be authority of a big region, but it is still the case that no region is more important than the whole country.

Replacing these efforts, expected provision of public good is different in each region

$$E[y_i] = \eta_0 + \lambda_i \varphi f_0^R(\varphi) \cdot B + (1 - \varphi) f_0^R(\varphi) \cdot b_i$$

$$y(\varphi, \lambda_i) = \eta_0 + \frac{\varphi^2 \lambda_i \cdot B + (1 - \varphi)^2 \cdot b_i}{\sqrt{2\pi} \sqrt{\varphi^2 \sigma^2 + (1 - \varphi)^2 \sigma_z^2}}$$

Implicit function theorem and SOC imply that

$$\frac{d\varphi}{d\lambda_i} = -\frac{\frac{d^2 y_i}{d\varphi^2}}{\frac{d^2 y_i}{d\lambda_i^2}} > 0 \text{ iff } \frac{d^2 y_i}{d\varphi d\lambda_i} > 0$$

$$\frac{d^2 y_i}{d\varphi d\lambda_i} \propto \frac{2\sigma^2 (1 - \varphi)^2 + \sigma^2 \varphi + 2\sigma_z^2}{\sqrt{2\sigma^2 \varphi^2 - 2\sigma^2 \varphi + \sigma^2 + \sigma_z^2}} > 0$$

Therefore, a bigger region will prefer to allocate more power in the hands of the President. ■

A more intuitive case is when there are only corner solutions, $\varphi \in \{0, 1\}$. Without lose of generality, assume that $\lambda_A > \lambda_B$. Region $i$ would vote for $\varphi = 0$ if and only if $\frac{b_i}{\lambda_i} > \lambda_i$. Therefore, the is a zone in which $\lambda_B < \frac{b_i}{\lambda_i} < \lambda_A$ where region A prefers centralization and region B prefers decentralization. If this decision is taken by majority voting, a natural picture arises: the capital city receives more effort than provinces that claim for decentralization.

**Migration** If migration was allowed between regions, independent on the time in which is realized, citizens would anticipate (or observe) that the best solution for the President is to spread his effort equally between regions because his costs are convex. Therefore, public good provision would be the same in both regions under any system and migration would leave two identical regions.

However, if President’s cost were concave, he would prefer to exert all his effort in only one region and this would attract people because of the higher provision of public goods. Therefore, a circle leads the President to exert more effort in the bigger region looking for votes and people to migrate there because the higher provision of public goods. This phenomenon could be called Political Agglomeration, following the literature on Economic Geography, e.g. Krugman (1991) in which increasing returns and transport costs lead to agglomeration. These features are replaced here by concave effort costs and no-communication between regions, but a serious analysis is beyond the scope of this paper.
5 Politicians’ Preferences

In this model, citizens are considered the principal. However, it is important to study the preferences of agents because they may be in charge of implementing the different allocations of power or proposing the laws that allocate power in practice.

Indirect utility of the President and regional authorities are

\[ V^P (\varphi) = -\frac{1}{4} f_0^P (\varphi)^2 B^2 + \frac{1}{2} B \]
\[
\frac{dV^P}{d\varphi} = -\frac{1}{2} f_0^P (\varphi) B^2 \frac{df_0^P}{d\varphi} < 0
\]

\[ V^R (\varphi) = -\frac{1}{2} f_0^R (\varphi)^2 b^2 + \frac{1}{2} b \]
\[
\frac{dV^R}{d\varphi} = - f_0^R (\varphi) b^2 \frac{df_0^R}{d\varphi} > 0
\]

In fact, receiving a higher allocation of power makes the politicians to exert more effort without receiving any extra value for staying in office the next period. Politicians prefer to free-ride, i.e. to receive less power and to let his “colleagues” to be politically responsible. This results does not seem realistic since by simple observation this is not what happens in practice. Normally politicians prefer to keep power in their hands, instead of leaving power to others.

Therefore, it is reasonable to think that the private values politicians extract from staying in office come from the power they receive from being in office. In practice, it is assumed that \( B = B (\varphi) \wedge b = b(1 - \varphi) \) with \( B' \geq b' > 0 \). This dependency can be understood in two ways. The first naive one is that politicians want to make the society a better place, therefore having no power to do it gives them no incentive to stay in office. The second reason is that a politician can extract more rents from office if he has more power to decide on public policies.

**Proposition 5** If private values’ elasticities are high enough, power concerns would make politicians to prefer keeping power instead of free-riding.

**Proof.** The relevant case is when regional authorities can receive power. The indirect utility of the President is

\[ V^P (\varphi) = -\frac{1}{4} f_0^P (\varphi)^2 B^2 + \frac{1}{2} B \]
\[
\frac{dV^P}{d\varphi} = \frac{1}{2\varphi} f_0^P (\varphi)^2 B^2 \left( -\frac{df_0^P}{d\varphi} \frac{\varphi}{f_0^P (\varphi)} - \frac{B' \varphi}{B} + \frac{B' \varphi}{f_0^P (\varphi)^2 B^2} \right)
\]

This expression is positive if and only if the elasticity of the private value with respect to power is higher than the elasticity of \( f_0^P (\varphi) \) with respect to
power times a factor.

$$\frac{B'\varphi}{B} > \frac{df^R_0}{d\varphi} \frac{\varphi}{R^R_0(\varphi)} \left( \frac{f^R_0(\varphi)^2 B(\varphi)}{1 - f^R_0(\varphi)^2 B(\varphi)} \right)$$

And for regional authorities.

$$U^R = -\frac{1}{2} f^R_0(\varphi)^2 b^2 + \frac{1}{2} b$$

$$\frac{dU^R}{d\varphi} = \frac{1}{1 - \varphi} f^R_0(\varphi)^2 b^2 \left( -\frac{df^R_0}{d\varphi} \frac{1 - \varphi}{f^R_0(\varphi)} + \frac{(1 - \varphi)b'}{b} - \frac{1}{2f^R_0(\varphi)^2} \frac{(1 - \varphi)b'}{b^2} \right)$$

This expression is negative if and only if the elasticity of the private value with respect to power is higher than the elasticity of $f^R_0(\varphi)$ with respect to power times the factor in parenthesis. Note that $b$ is defined for $(1 - \varphi)$ for having a positive derivative, while $f^R_0(\varphi)$ depends negatively on $\varphi$.

$$\frac{(1 - \varphi)b'}{b} > -\frac{df^R_0}{d\varphi} \frac{1 - \varphi}{f^R_0(\varphi)} \left( \frac{2f^R_0(\varphi)^2 b}{1 - 2f^R_0(\varphi)^2 b} \right)$$

The result is very intuitive: if politicians care enough about having power, they would always prefer to keep it. ■

6 Conclusions

Political systems require politicians to work in teams. However, the fact that elections are on the whole team or on each politician separately affects the way in which power is allocated between levels in the team hierarchy. It has been shown that when lower level politicians are appointed (or not directly elected), all the power is allocated to the President because incentives for lower level offices are not sufficient to make them exert more effort than the President.

On the contrary, if regional authorities have enough incentives, even if they are lower that those of the President, they can exert more effort than him. In this sense, democratic decentralization is always preferred by citizens because it ensures them to have the highest possible outcome in local public goods.

However, the threshold for giving power to regional authorities depends also on the communication between regions. In fact, accountability of the President is increased when allowing communication between cities. Therefore, regional authorities are relatively less accountable and they receive power less often. Under perfect communication, signals about the ability of the President are more precise, therefore easier to control by citizens. Decentralization could still be a solution, but it requires incentives to be high enough to revert the information advantage on the President.

The size of the regions is also important. National governments put a higher part of the budget in bigger cities and this is not only due to fairness but
also to the interest of the President of increasing his probability of reelection. Therefore, it is in the interest of little regions to claim for decentralization. They are willing to give more power to regions because they know that this would increase the effort made by regional politicians, increasing the local provision of public goods. The problem is that such a reform would affect the big region who is, in fact, majority and would veto the reform.

On the other hand, there is a trade off for politicians to propose decentralizing reforms. In the first place there is the possibility of free riding in their colleagues’ effort when not having much power and in the second place there may be a loose in private rents if they depend on the power allocated to the office.

To fix ideas, an example illustrate these phenomena. After a long history of centralization, a decentralizing reform started during the 70’s. Under the military regime at that moment, it was impossible to implement democratic decentralization but the government proposed administrative decentralization that would become democratic when conditions allow it (namely, the return to democracy). After almost 20 years of democracy, there has been no democratic decentralization reform and it is still the case that the highest part of the budget goes to the capital. For example, the Transantiago project of transport in the capital needed US$290 millions and only US$100 millions were assigned to all the other regions in the law No 20.206 of the 06/07/2007. The fact of assigning 74% of the budget to a region having 40% of the population and other older centralizing policies, motivated the creation of ‘federalist’ groups of opinion asking for democratic decentralization. (see e.g. http://federales.cl/, http://www.conarede.cl/conarede/index.php or http://www.corbiobio.cl/).

These facts support the idea that private values perceived by politicians in office actually depend on the power they receive in that office. Therefore, for the President, a democratic decentralizing reform may lead to a decrease in the power in his hands, hence he will never propose a law allowing for direct election of regional authorities, as it has to be in Chile where the President has the legislative initiative.

On the other hand, little regions would prefer decentralization while the biggest region (or the capital) prefers centralization, as in Section 4. This is clear in the Chilean case, since ‘federalists’ groups are mostly composed by people coming from regions different from the Metropolitan one.

References


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