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Pooling Sovereignty and Subsidiarity Principle

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Abstract

This paper focuses on the choice of centralization of public policy in an economy with two government levels. It argues that centralization by subsidiarity principle stresses a conflicting interest between different jurisdictions instead of working it out. The extent of the conflict of interest is affected by spillovers and differences in public spending tastes. Spending decisions are made by negotiation in the centralized legislature of local representatives, unless they fail to reach an agreement. In the latter case, policy is provided non-cooperatively by local governments. Results show that pooling sovereignty by subsidiarity principle fails to fully internalize spillovers and may produce misallocation of public resources.

Key words: Public goods; Centralization; Bargaining.

JEL Classifications: D78, H0, H40.

"Pooling sovereignty means, in practice, that the member states delegate some of their decision-making powers to shared institutions they have created, so that decisions on specific matters of joint interest can be made democratically at European level". (Europe, n.d.)

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1 Introduction

The fundamental principle of subsidiarity has largely driven the European discussion about which competencies should be given to the European Community and which, instead, retained for the member states alone. The subsidiarity principle applies to those areas that do not fall within the exclusive competence of the European Union. It states that the European Union will be in charge of providing a particular policy if it cannot be sufficiently, or efficiently, provided by the member states by either the national or regional governments. The principle implies a benefit criterion stating that the European provision of policies must bring added value over and above what could be achieved by individual governments provision alone.

This paper develops a decision-making model in which two polities bargain the delegation of their sovereignty upwards to a centralized inter-governmental institution. The model may be used to study policy formation in both national and international federations as, for instance, the European Union. The aim is to investigate how the implementation of the subsidiarity principle influences the centralized provision of policy. Results show that pooling sovereignty by subsidiarity principle fails to fully internalize spillovers and may produce misallocation of public resources.

The paper focuses on the traditional issue raised by the classical fiscal federalism literature of what level of government should be responsible for taxing and spending. It defines a bargaining context in which independent jurisdictions conduct negotiations in order to allocate power to provide policies to a common supra-jurisdictional legislature. Thus, if member delegates reach agreement, then the centralized government implements policy uniformly across jurisdictions and levies a proportional income tax to cover the cost. Conversely, if delegates do not come to agreement, jurisdictional governments are free to provide policy at the decentralized level.¹ Therefore, the centralized government chooses policy cooperatively, while the decentralized governments set policy competitively. Hence, the choice between centralized and decentralized provision implies a trade-off between cooperative and competitive outcome which is a central issue in the process of pooling sovereignty. In this framework, The decentralized provision of public goods may constrain the centralized outcome leading to spillovers and differences in tastes for public spending generating a conflicting interest which affects the centralized formation of policy decisions.

A major advantage of centralization occurs by the internalization of spillovers.² As Besley and Coate (2003) explained, positive spillovers produce a situation in

¹The common European defence policy, which offers potentially large efficiency gains, provides an example in which national governments implement policy separately because European states fail to reach an agreement that would transfer this power to the EU. Here, a major cost of pooling sovereignty regards the sacrifice of national powers and interests in favour of a common European Policy. Benefits from pooling sovereignty are produced by economics of scale, sharing costs and internalizing spillovers. The case concerning a common European defence policy is well discussed in Fontanel and Smith (1991).

²See Oates (1972), Besley and Coate (2003) and others.

which, a policy implemented by a decentralized government benefits the citizens of the jurisdiction in which it is located, but also has beneficial effects on the citizens of other jurisdictions. As a result, in the presence of spillovers, decentralized governments neglect benefits going to other jurisdictions by under providing public goods at the local level. Therefore, larger spillovers enhance cooperation at the centralized level. Weyerstrass et al's (2006) empirical assessment of the magnitude of economic spillovers and welfare gains from economic policy coordination in the Euro Area concludes that larger spillovers usually increase interdependence and cooperation in the European Union.

This paper shows that the influence spillovers has on the decentralized outcome also affects policy formation under the centralized system. In particular, the decentralized outcome determines the relative bargaining power of the delegates involved in the negotiation. Therefore, even if spillovers are internalized under centralization, they have a noteworthy impact on centralized policy formation. As a result, the representative of the jurisdiction that is in the position to benefit more from spillovers in the decentralized outcome has more leverage and therefore more bargaining power in the centralized policy formation. Of course, this phenomena is not possible when the centralized government can make decisions without involving the subsidiarity principle. This happens, for instance, when exclusive decision making power is assigned to the centralized government by Constitution.

The starting point of this analysis is in the building up of a bargaining model over centralization in a fiscal federalism context. To do so, Giuranno's (2005, 2008) and Besley and Coate's (2003) models are developed. Besley and Coate introduced a political economy approach into Oates' (1973) decentralization theory. They studied the role of spillovers in the centralized versus decentralized provision of public goods. Giuranno (2005, 2008) extended the working of the centralized legislature in Besley and Coate (2003) by developing a bargaining approach in the legislature's decision-making process in order to study how inter-jurisdictional income inequality affects the provision of public goods. This paper extends Giuranno's framework in order to represent the process of political integration, typical to many federations such as the European Union.

Related literature. National constraints play an important role in the international arena. International agreements, for example, must be ratified by national legislatures. Several models of international negotiations have shaped disagreements over the so called Schelling conjecture (Schelling, 1960). This implies that negotiators with the greatest domestic constraints hold an advantage during international negotiations (Bailer and Schneider, 2006). Putnam (1988) has suggested that the negotiation process can be broken down into two analytical stages: in the first stage, bargaining takes place between negotiators at the international level; in the second stage, national legislatures ratify or reject agreement. Putnam stated that negotiators have to go back to their domestic constituents if they want negotiations to succeed. Whereas Putnam's theory inspired several bargaining models mainly based on the application of Rubinstein's (1982) alternating-offer model (Mo, 1994; Lida,

1993; Tarar, 2001), this paper builds on it to include national constraints in a Nash cooperative bargaining framework. In our model, the disagreement utility for each jurisdiction is equivalent to the welfare produced by the jurisdictional provision of public goods, which would substitute the centralized provision in the case of disagreement. Specifically, we assume that the utility each jurisdiction receives from the supra-jurisdictional implementation of policy must be greater than the welfare produced by the jurisdictional provision as a necessary condition for ratification of agreement.

Stokman and Thomson (2004), Thomson et al (2006), and Schneider et al (2006) support the choice of a cooperative bargaining model as a tool for our means. They assessed the empirical relevance of alternative models of legislative decision-making in the European Union. Their results find cooperative bargaining models, which focus on the informal bargaining that takes place before the legislative proposals are adopted as laws, generate more accurate forecasts of decision outcomes than procedural models.

The paper is organized as follows. The next section defines the framework and reproduces some standard results concerning policy determination under decentralization and the social optimum under centralization. Section three develops a model of bargaining over centralization. Four presents the results and section five makes conclusions. The appendix contains derivations and proofs.

2 The framework

We use a basic framework similar to that in Besley and Coate (2003). Consider two independent equal sized jurisdictions or states comprising a federation. Each jurisdiction has the same number of people with a mass of unity. There are two types of goods in this economy, a public good g such as, for example, pollution control³ and a private good y , which we consider to be individual income or endowment that is used for private consumption. Individual endowments y contribute to finance the public good. All citizens are endowed with the same income but have different tastes, λ , regarding the public good. Therefore, jurisdictions are not homogeneous. The parameter $\lambda > 0$ tells us how much a citizen prefers g with respect to y . Those with higher λ value the public good more highly.

Jurisdictions are represented by their respective median voters. To simplify the exposition, we assume that median voter 1 values public goods consumption less than median voter 2, i.e. $\lambda_1 < \lambda_2$. Preferences for the median voter of jurisdiction i are

$$y + \lambda_i [(1 - k) \ln g_i + k \ln g_{-i}], \quad \text{with } i = 1, 2. \quad (1)$$

The parameter $k \in [0, 1/2]$ measures the degree of spillovers; when $k = 0$ the median voter only cares about the public good in his own jurisdiction, while when $k = 1/2$ he cares equally about the public good in both jurisdictions. Spillovers, k , are the same for all citizens.

³Another example could be the degree of regulation and protection of financial markets.

2.1 Policy determination at the decentralized level

The two jurisdictional median voters have to decide whether to provide a public good jointly at a centralized level or independently at a decentralized level.⁴ Before analyzing this trade-off, we need to study what happens when jurisdictions do not pool their sovereignty to the supra-jurisdictional legislature. In this case, jurisdictional governments provide policy locally and finance public expenditure by levying a uniform head tax on jurisdictional residents. Thus, if jurisdiction i chooses a public good level g_i , each citizen in jurisdiction i pays a head tax of pg_i , where p is the public good price. Therefore, the budget constraint for jurisdiction i is⁵

$$t_i y = pg_i; \quad \text{with } i = 1, 2. \quad (2)$$

Accordingly, the utility of median voter in jurisdiction i is

$$u_i = y - pg_i + \lambda_i [(1 - k) \ln g_i + k \ln g_{-i}]. \quad (3)$$

Note that $\partial u_i / \partial k = \lambda_i \ln (g_{-i} / g_i)$, which means that the marginal utility of spillovers is zero when $g_1 = g_2$. In order to calculate g_1 and g_2 , we assume that under decentralization policy is chosen simultaneously and independently by jurisdictional governments whose object is to maximize median voter's surplus in the jurisdiction. Accordingly, the tax rates (t_1, t_2) will form a Nash equilibrium. This requires that:

$$t_i = \arg \max_{t_i} \left\{ \lambda_i \left[(1 - k) \ln \frac{t_i y}{p} + k \ln \frac{t_{-i} y}{p} \right] + y(1 - t_i) \right\}, \text{ for } i \in \{1, 2\}.$$

Taking first order conditions and solving yields:

$$(t_1, t_2) = \left(\frac{\lambda_1 (1 - k)}{y}, \frac{\lambda_2 (1 - k)}{y} \right). \quad (4)$$

Considering the equivalences $t_i y = pg_i = \lambda_i (1 - k)$, the public good levels are

$$(g_1, g_2) = \left(\frac{\lambda_1 (1 - k)}{p}, \frac{\lambda_2 (1 - k)}{p} \right). \quad (5)$$

Basically, local governments only take into account the benefits received by citizens in their own jurisdiction.

When tastes are homogeneous, i.e. $\lambda_1 = \lambda_2$, decentralized governments choose the same level of public goods provision, which is lower the higher the spillovers.

⁴To clarify the notation, we refer to the decentralized government as either the jurisdictional or the national level of government interchangeably. Similarly, we refer to the centralized legislature as either the supra-national or inter-jurisdictional level of government interchangeably.

⁵Note that population is normalized to one and that all citizens benefit from the same level of public good g_i .

Median voter 2, whose taste is higher than median voter 1, pays a higher tax rate and enjoys a higher level of g . Under decentralization median voter i 's welfare is

$$u_i^D = y(1 - t_i^D) + \lambda_i \left(\ln g_i + k \ln \frac{\lambda_{-i}}{\lambda_i} \right). \quad (6)$$

After plugging in the correspondent values from (4) and (5), we get

$$u_i^D = y - \lambda_i(1 - k) + \lambda_i \left(\ln \frac{\lambda_i(1 - k)}{p} + k \ln \frac{\lambda_{-i}}{\lambda_i} \right). \quad (7)$$

Interesting, the marginal effect of spillovers is not always negative for everyone. In particular,

$$\frac{\partial u_i^D}{\partial k} = \lambda_i \left(-\frac{k}{1 - k} + \ln \frac{\lambda_{-i}}{\lambda_i} \right), \quad \text{with } i = 1, 2. \quad (8)$$

Thus, we can state the following Lemma.

Lemma 1 *Under decentralization, median voter 2's utility always declines in k , while median voter 1's utility declines in k if $\ln \frac{\lambda_2}{\lambda_1} < \frac{k}{1 - k}$ and increases otherwise. In formulas,*

$$\frac{\partial u_2^D}{\partial k} < 0 \quad (9)$$

and

$$\frac{\partial u_1^D}{\partial k} \begin{cases} < 0 & \text{if } \ln \frac{\lambda_2}{\lambda_1} < \frac{k}{1 - k} \\ > 0 & \text{if } \ln \frac{\lambda_2}{\lambda_1} > \frac{k}{1 - k} \end{cases}. \quad (10)$$

Lemma 1 states that median voter 2, who cares more than median voter 1 about public goods provision, has a negative marginal benefit from spillovers; that is, higher spillovers certainly make him worse off. On the contrary, median voter 1 can benefit from increased spillovers when the condition $\ln \frac{\lambda_2}{\lambda_1} - \frac{k}{1 - k} < 0$ is satisfied. In the latter, the positive term $\ln \frac{\lambda_2}{\lambda_1}$ means that there is a positive marginal benefit transfer in favour of median voter 1 when k increases because public goods provision in jurisdiction 2 is higher. The ratio $\frac{k}{1 - k}$ is the sum of two effects: one on the decentralized tax rate, t_i , and the second on public goods provision, g_i . Accordingly, an increase in k causes a benefit loss because g_i is lower and consequently a tax-rate reduction. Here, linearity in the cost leads to a *negative* marginal effect because the marginal benefit declines more than the marginal cost, i.e. $-\frac{k}{1 - k} < 0$. Thus, median voter 1's utility increases in k when the utility transfer in his favour, $\ln \frac{\lambda_2}{\lambda_1}$, is large enough and greater than the utility loss, $(-\frac{k}{1 - k})$.

Furthermore, with spillovers, public goods are under-provided in both states and this under-provision is increasing alongside an increase in spillovers.⁶ There is, therefore, room for pooling sovereignty upwards to the centralized government.

⁶For a simple proof see Besley and Coate (2003).

2.2 Policy determination under centralization

We assume that the centralized government finances the public good uniformly across countries by levying a proportional income-tax, t .⁷ Once the legislature determines the tax rate t , the public good quantity is automatically determined by the following relation or budget constraint⁸

$$pg = 2ty. \quad (11)$$

Consequently, the tax rate is obtained by dividing the total public goods cost by the total taxable income, $t = \frac{pg}{2y}$, where the cost each individual h pays is $ty = \frac{pg}{2}$. Thus, individual utility when policy is determined at the centralized level is

$$u^h = y(1 - t) + \lambda^h \ln \frac{2ty}{p}. \quad (12)$$

As expected, spillovers are fully internalized when policy is uniformly provided at the centralized level.⁹

Thus, when policy is chosen by a benevolent central planner, the tax rate which maximizes social welfare is $t^e = \frac{\bar{\lambda}_1 + \bar{\lambda}_2}{2y}$ and the centralized public goods provision is $g^e = \frac{\bar{\lambda}_1 + \bar{\lambda}_2}{p}$, where $\bar{\lambda}_1$ and $\bar{\lambda}_2$ are average preference parameters in the two jurisdictions.¹⁰

Now, we turn to the bargaining outcome to study how the centralized provision of policy changes when jurisdictions pool their sovereignty by the subsidiarity principle.

3 Bargaining over centralization

The subsidiarity principle is a flexible way to establish what level of government should be responsible for taxing and spending. In this section, we study policy formation when jurisdictions agree to delegate their decision-making power to the centralized government. Basically, we assume that when the gains from pooling sovereignty are positive for both jurisdictions, their representatives form a centralized legislature and choose policy by bargaining. Here, in order to model the subsidiarity

⁷This is a fair representation the EU financing, which is characterized by transfers from the member states proportional to the states' GNP. The EU also receives a proportion of the VAT levied by the Member States.

⁸Note that the following relation hold: $pg = t(2Ny)$, where $2Ny$ is total taxable income obtained as the sum of individual incomes in the two jurisdictions and N is the population size, which is assumed to have a mass of unity and to be the same in the two regions.

⁹Note that when policy is not uniformly provided by the central government, spillovers are only partially internalized.

¹⁰Here, we assumed an additive social welfare function $t^e = \arg \max \left(\sum_{h=1}^N u_1^h + \sum_{h=1}^N u_2^h \right)$, which

generate the following first order condition: $\frac{\sum_{h=1}^N \lambda_1^h}{N} + \frac{\sum_{h=1}^N \lambda_2^h}{N} = 2ty$.

principle, we proceed as follows. First, we assume that before bargaining takes place in the centralized legislature, the status quo consists in the decentralized provision of policy. Thus, if the centralized legislature does not reach an agreement, the status quo will hold; that is, policy will be provided by the jurisdictional governments independently and simultaneously. This, in turn, implies that the disagreement utility of median voter i , denoted with u_i^d , is the utility median voter i receives from the decentralized provision of policy. Accordingly, the disagreement utility for median voter i is $u_i^d = u_i^D$, where u_i^D is represented in equations (6) and (7) and depends on the decentralized tax rates and policy levels defined in equations (4) and (5). Note that the disagreement utility defines the median voters' point of threat in the bargaining situation. Recalling Lemma 1, the disagreement utility may increase in k for median voter 1. In this circumstance, the threat point of median voter 1, which defines his or her bargaining power, is stronger the higher the degree of spillovers.

If an agreement is reached, policy is uniformly provided across jurisdictions and spending is financed by a uniform head tax on all citizens. Therefore, following equation (12), the agreement utility for median voter i is given by

$$u_i = y - \frac{pg}{2} + \lambda_i \ln g, \quad \text{with } i = 1, 2. \quad (13)$$

Consequently, the net gain from pooling sovereignty to the centralized legislature, denoted by $\psi_i = u_i - u_i^D$, is

$$\psi_i = \lambda_i(1-k) - ty + \lambda_i \ln \frac{2ty}{\lambda_i(1-k)} - \lambda_i k \ln \frac{\lambda_{-i}}{\lambda_i} > 0, \quad \text{with } i = 1, 2. \quad (14)$$

A graphical representation is in figure 1. The study of the sign of the marginal net gain,

$$\frac{\partial \psi_i}{\partial k} = \lambda_i \left(\frac{k}{1-k} - \ln \frac{\lambda_{-i}}{\lambda_i} \right), \quad (15)$$

leads to the following properties of the gain from pooling sovereignty, which are stated in the following Lemma.

Lemma 2 *The marginal net gain of spillovers from pooling sovereignty to the centralized legislature is always increasing in k for median voter 2, while for median voter 1 it increases in k if $\ln \frac{\lambda_2}{\lambda_1} < \frac{k}{1-k}$ and declines otherwise. In formulas,*

$$\frac{\partial \psi_2}{\partial k} > 0 \quad (16)$$

and

$$\frac{\partial \psi_1}{\partial k} \begin{cases} > 0 \text{ if } \ln \frac{\lambda_2}{\lambda_1} < \frac{k}{1-k} \\ < 0 \text{ if } \ln \frac{\lambda_2}{\lambda_1} > \frac{k}{1-k} \end{cases}. \quad (17)$$

The lemma points out that *the gain from pooling sovereignty to the centralized level is not always increasing in spillovers* for everyone. In particular, when a median voter has a negative marginal utility of spillovers the gain from cooperating is increasing in the degree of spillovers. This is always the case for median voter 2. Instead, for median voter 1 the gain from cooperating may decline when spillovers increase. As shown in Lemma 1 this occurs when his or her marginal utility of spillovers is positive, which means that median voter 1 can benefit from positive net transfers from jurisdiction 2. Therefore, when median voter 1 has a positive marginal utility, an increase in spillovers decreases his or her gain from cooperating at the centralized level. For this reason, median voter 1 gains more bargaining power the higher the degree of spillovers.

Figure 1 gives a graphical representation of the bargaining game. The blue curves represent the net gain for median voter 1 while the black curves show the net gain for median voter 2. The broken-lines curves represent the changes in the net gains when parameter k increases in the case in which $\ln \frac{\lambda_2}{\lambda_1} < \frac{k}{1-k}$. As we can see, median voter 1 has the smallest gain from cooperating. Higher k reduces the interest in the negotiation for median voter 1 and increases the distance between the two median voters. The bargaining equilibrium must lie in the subset of feasible tax-rates in which net gains from cooperating are positive for both median voters. In the case in which $\ln \frac{\lambda_2}{\lambda_1} < \frac{k}{1-k}$, higher k reduces the subset of possible agreements.

We now show the bargaining outcome by maximizing the following Nash bargaining product:

$$\begin{aligned} & \max_t \ln \left[\lambda_1 (1 - k) - ty + \lambda_1 \ln \frac{2ty}{\lambda_1 (1 - k)} - \lambda_1 k \ln \frac{\lambda_2}{\lambda_1} \right] + \\ & + \ln \left[\lambda_2 (1 - k) - ty + \lambda_2 \ln \frac{2ty}{\lambda_2 (1 - k)} - \lambda_2 k \ln \frac{\lambda_1}{\lambda_2} \right]. \end{aligned} \quad (18)$$

The first order condition is

$$\frac{-y + \frac{\lambda_1}{t}}{\lambda_1 (1 - k) - ty + \lambda_1 \ln \frac{2ty}{\lambda_1 (1 - k)} - \lambda_1 k \ln \frac{\lambda_2}{\lambda_1}} + \frac{-y + \frac{\lambda_2}{t}}{\lambda_2 (1 - k) - ty + \lambda_2 \ln \frac{2ty}{\lambda_2 (1 - k)} - \lambda_2 k \ln \frac{\lambda_1}{\lambda_2}} = 0. \quad (19)$$

Now, the first order condition can be written in an alternative form, which will be very useful in the comparative statics. First, we need the following definition:

Definition 1 Define with $\epsilon_i = \frac{\partial \psi_i / \partial g}{\psi_i / g}$ the elasticity of the gain from pooling sovereignty to the centralized legislature for median voter i , with $i = 1, 2$.

The elasticity measures the percent change of the gain from reaching an agreement over policy relative to the percent change in the quantity, g , provided by the centralized legislature. The first order condition can now be formulated as follows:

$$\epsilon_1 + \epsilon_2 = 0. \quad (20)$$

The compromise characterizing the Nash bargaining equilibrium is one in which the elasticities of the gains from pooling sovereignty of the two median voters are equal in absolute value and take opposite signs: $\epsilon_1 = -\epsilon_2$.

In the next section, we use the Nash bargaining first order condition to study how changes in the degree of spillovers affect the equilibrium policy.

4 Influence of spillovers on the centralized equilibrium policy

Median voters' utility from the centralized provision of policy is represented by equation (13), which is not affected by spillovers. Basically, if sovereignty is assigned to the centralized legislature by law or Constitution, spillovers can be fully internalized by a uniform provision of policy. On the contrary, when the decision-making power over a certain policy is assigned by subsidiarity, even if spillovers are centrally internalized, they are not entirely wiped out under the centralized system. This is shown in the following Lemma.

Lemma 3 *In the centralized legislature, the tax rate t^* increases when spillovers increase if and only if the following inequality holds:*

$$\frac{dt^*}{dk} > 0 \text{ when } \frac{\epsilon_1}{t} \left[\frac{-\lambda_1 \left(\frac{k}{1-k} - \ln \frac{\lambda_2}{\lambda_1} \right)}{\psi_1} + \frac{\lambda_2 \left(\frac{k}{1-k} + \ln \frac{\lambda_2}{\lambda_1} \right)}{\psi_2} \right] > 0. \quad (21)$$

Proof. See Appendix. ■

Basically, spillovers influence policy when the subsidiarity principle is applied because they shape median voters' disagreement utility. Therefore, the decentralized provision of public goods is still relevant under centralization because it determines median voters' bargaining strength in the centralized legislature. This can be seen as a distortion produced by the subsidiarity principle if we compare this result with the case in which local jurisdictions cannot influence the centralized decision-making process.

Lemma 3 states that the centralized tax rate shifts to the same direction of spillovers when a certain condition is satisfied. The following Proposition clarifies the result stated in Lemma 3 and provides insights as to who loses and who benefits from the presence of spillovers.

Proposition 1 *Under centralization, the tax rate t^* changes in the degree of spillovers as follows:*

$$\frac{dt^*}{dk} \begin{cases} < 0 \text{ if } \ln \frac{\lambda_2}{\lambda_1} > \frac{k}{1-k} \\ \leq 0 \text{ if } \ln \frac{\lambda_2}{\lambda_1} < \frac{k}{1-k} \end{cases}. \quad (22)$$

Proof. See Appendix. ■

The Proposition states that the centralized tax rate and consequent public goods provision decrease when spillovers increase if condition $\ln \frac{\lambda_2}{\lambda_1} > \frac{k}{1-k}$ is met. Now, we know from Lemma (2) that this condition is satisfied when median voter 1 has a negative marginal gain from cooperating in the centralized legislature. Similarly, Lemma (1) states that the same condition is satisfied when median voter 1 has a positive marginal utility from spillovers at the decentralized level. Therefore, when median voter 1, who is the one who cares less about public goods provision, has a positive marginal utility of spillovers, his or her gain from cooperating at the supra-jurisdictional level declines when spillovers increase. This, in turn, implies that median voter 1 gains more bargaining power the higher the degree of spillovers. Hence, median voter 1 will be able to renegotiate a lower level of taxation when spillovers are more relevant.

However, when condition $\ln \frac{\lambda_2}{\lambda_1} > \frac{k}{1-k}$ is not satisfied, the prediction of policy becomes ambiguous. In this case, marginal utility of spillovers is negative for both median voters. Therefore, median voter 1 has no incentive to free-ride over median voter 2 and cannot use this free-riding power as a threat in the negotiation. As a result, both median voters have a positive marginal gain from centralizing when spillovers increase. In this case, an increase in k declines public goods provision at the decentralized level in both jurisdictions. This, in turn, will affect median voters' bargaining strength or threat point. Whether these changes are more favorable to one median voter or the other depends on the particular values of the given parameters. Therefore, if the bargaining threat point changes more in favour of median voter 1, who wants less public goods provision in equilibrium, then tax rate t^* will decrease. Similarly, if the threat point changes in favour of median voter 2, who would like more public spending in equilibrium, then t^* will increase as k increases.

5 Conclusion

The trade-off between centralized versus decentralized provision of public goods has long been of interest to public economists. The standard approach suggests that a main asset of centralizing public spending is in the internalization of spillovers. This analysis has offered a different perspective in which spillovers are not fully internalized when the subsidiarity principle is adopted in the centralization process. Subsidiarity is a flexible way to decide what level of government should be responsible for providing a specific policy. It works in either direction: upwards, from decentralized towards the centralized legislature, or downwards. In particular here we focus on the case in which decentralized jurisdictions pool their decision-making power upwards as, for example, in the case of the European Union.

This paper shows that there is a relevant drawback of centralization when the subsidiarity principle applies. In particular, we have seen that higher spillovers lower public goods provision when a jurisdiction is in the position to gain "free-

riding power". In order to show this, we have replaced the central planner in the traditional utilitarian approach with a bargaining approach between jurisdictional representatives coupled with the principle of subsidiarity. We have found that changes in spillovers have significant effects on the centralized policy outcome, which cannot be captured by the traditional central planner. On the contrary, centralization without the subsidiarity principle, for example by Constitution, is able to eliminate the free-riding problem and the consequent policy distortion.

Under the subsidiary principle regime, centralized government holds the power to set policy only as long as jurisdictions obtain mutual gains from the joint provision of public goods. As a consequence, when jurisdictions cannot reach an agreement over policy in the centralized legislature, they will provide it at the decentralized level. In this way, the choice of centralization versus decentralization implies a trade-off between centralized cooperation versus decentralized competition. As is widely accepted in the fiscal federalism literature, inter-jurisdictional competition leads to under-provision because jurisdictions can benefit from the provision of their neighbours. Furthermore, under decentralization, differences in tastes for public spending may lead to a distorted situation in which public consumption in the jurisdiction with positive marginal utility from spillovers is partially subsidised by the jurisdiction with negative marginal utility. Accordingly, the jurisdiction with positive marginal utility gains more bargaining power in the centralized negotiation the larger the spillovers. In particular, this bargaining power takes the form of a "free-riding threat". Basically, the gain from centralizing public good provision may be either increasing or decreasing in the degree of spillovers. Therefore, if for a jurisdiction, decentralized marginal utility increases in spillovers, then higher spillovers decrease its net gain from cooperating. As a result, this jurisdiction is in the position to affect policy more successfully under the threat of abandoning the negotiation and free-ride at the decentralized level if an agreement is not achieved. In our model, decentralized marginal utility of spillovers is positive for the jurisdiction that wants less public goods provision. As a result, an increase in the degree of spillovers leads to a decrease of public goods provision at the centralized level. This is in contrast with the case in which sovereignty is pooled to the centralized legislature by Constitution. In this case, decentralized provision cannot affect the centralized negotiation because central government has the exclusive ruling power over policy. Consequently, spillovers cannot generate conflicting interests in the centralized policy formation because the free-riding threat is eliminated.

Likewise, the outcome of this paper cannot be replicated by using the classical utilitarian approach because the central planner does not take into account jurisdictions' conflicting interests. Under uniform provision, the central planner would rather fully internalize spillovers and would not change policy because the magnitude of spillovers changes. A main difference between bargaining and the central planner approach is that in the bargaining model jurisdictional representatives use their bargaining power to gain a larger share of joint surplus.

Pooling sovereignty upwards by subsidiarity may increase social welfare, but may

not be able to avoid free-riding since it fails to fully internalize spillovers under uniform provision. Therefore, when there is room for free-riding, cooperation declines in spillovers instead of increasing. In this circumstance, the subsidiarity principle may not be the best way to pool sovereignty to the centralized legislature.

This paper provides a political economic framework which can be used for several future developments. Most classical literature on intergovernmental relations, which is based on the traditional central planner approach, can be reinterpreted in a bargaining framework. For instance, a simple development would be to study the centralized provision of policy when public goods are not uniformly provided. Similarly, the model can be extended to study how the usual intergovernmental conflicts can be solved when policy is implemented by both levels of government, centralized and decentralized, either simultaneously or in a stackelberger type model. Furthermore, a possible application of this framework could be the analysis of international negotiations in the structure and regulation of financial and other types of markets.

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6 Appendix

Proof of Lemma 3. Denote the first order condition in (19) with

$$G = \frac{-y + \frac{\lambda_1}{t}}{\lambda_1(1-k) - ty + \lambda_1 \ln \frac{2ty}{\lambda_1(1-k)} - \lambda_1 k \ln \frac{\lambda_2}{\lambda_1}} + \frac{-y + \frac{\lambda_2}{t}}{\lambda_2(1-k) - ty + \lambda_2 \ln \frac{2ty}{\lambda_2(1-k)} - \lambda_2 k \ln \frac{\lambda_1}{\lambda_2}} = 0. \quad (23)$$

In order to prove Proposition 3 we need to study the sign of $\frac{dt^*}{dk} \equiv -\frac{G_k}{G_t}$; where

$$G_t = \frac{-\frac{\lambda_1}{t^2}\psi_1 - \psi_1'^2}{\psi_1^2} + \frac{-\frac{\lambda_2}{t^2}\psi_2 - \psi_2'^2}{\psi_2^2} < 0 \quad (24)$$

and

$$G_k = \frac{\epsilon_1}{t} \left[\frac{-\lambda_1 \left(\frac{k}{1-k} - \ln \frac{\lambda_2}{\lambda_1} \right)}{\psi_1} + \frac{\lambda_2 \left(\frac{k}{1-k} + \ln \frac{\lambda_2}{\lambda_1} \right)}{\psi_2} \right] \begin{matrix} \leq \\ > \end{matrix} 0. \quad (25)$$

Since the sign of G_t is negative, the comparative statics takes the sign of G_k . This proves the Proposition.

Proof of Proposition 1. We know from the analysis of equilibrium equation (20) that the elasticity of the net gain is negative for median voter 1 and positive for median voter 2. This, in turn, implies that in condition (21) $\frac{\epsilon_1}{t}$ is negative. It is also straightforward to verify that if $\left(\frac{k}{1-k} - \ln \frac{\lambda_2}{\lambda_1} \right) < 0$, then $\left[\frac{-\lambda_1 \left(\frac{k}{1-k} - \ln \frac{\lambda_2}{\lambda_1} \right)}{\psi_1} + \frac{\lambda_2 \left(\frac{k}{1-k} + \ln \frac{\lambda_2}{\lambda_1} \right)}{\psi_2} \right] > 0$ and $\frac{dt^*}{dk} < 0$. Instead, the sign of the comparative static is ambiguous when $\left(\frac{k}{1-k} - \ln \frac{\lambda_2}{\lambda_1} \right) < 0$. This proves the Proposition.

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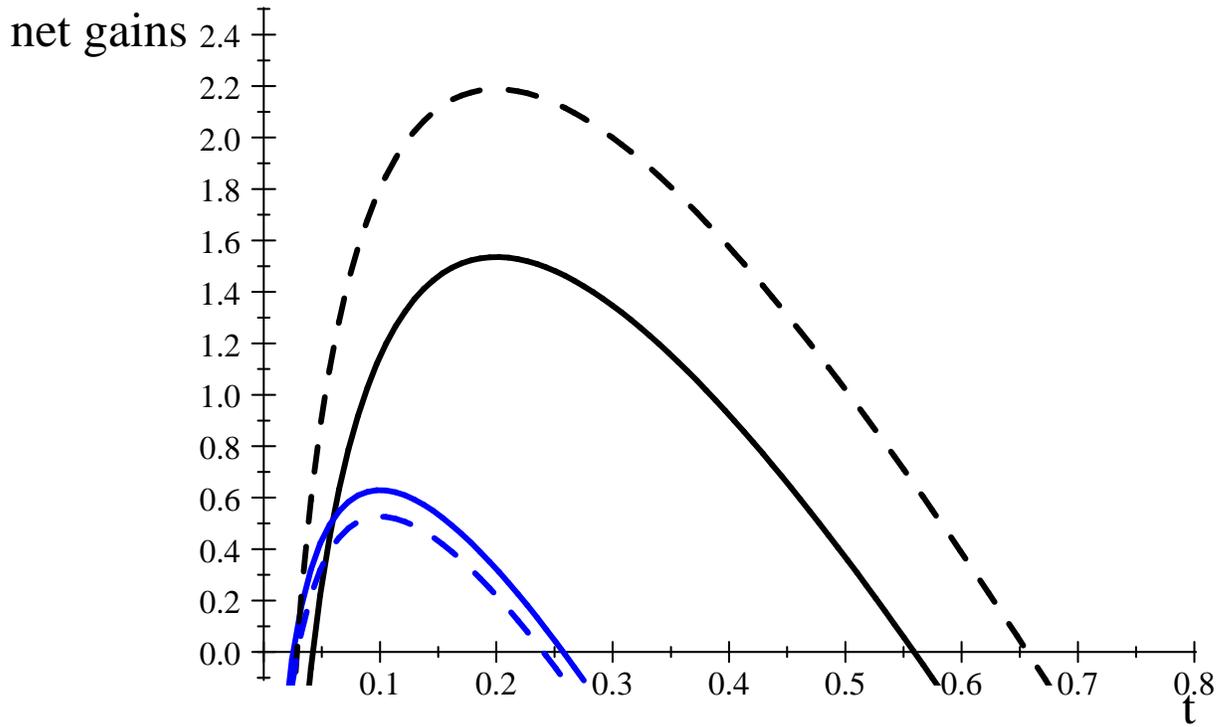


Figure 1: Solid lines: $k = 0.1$ and $\ln \frac{\lambda_2}{\lambda_1} > \frac{k}{1-k}$. Dash lines: $k = 0.4$ and $\ln \frac{\lambda_2}{\lambda_1} = \frac{k}{1-k}$. $\lambda_1 = 1$, $\lambda_2 = 2$ and $y = 10$.