

THE POLITICAL ECONOMY OF THE STANDARD LEVEL OF
SERVICES: THE ROLE OF INCOME DISTRIBUTION

FABIO FIORILLO - AGNESE SACCHI

*XXIII Riunione scientifica SIEP
Pavia, 19-20 Settembre 2011*

The political economy of the standard level of services: the role of income distribution

Fabio Fiorillo^(*) - Agnese Sacchi⁽⁺⁺⁾

September 2011

Do not quote without authors' permission

The traditional theory on fiscal federalism suggests that decentralisation should be pursued in order to fit differences in individual preferences. When preferences differ, decentralisation gives better results in terms of reducing the deadweight loss. However, the presence of externalities and the need of providing merit goods to citizens suggest that efficient results could be better obtained through centralisation.

In general, in a political economy framework, each decision - including the possibility to fix a standard level of services - mainly depends on the objective function of the policy-makers and on the voting mechanism designed to select them.

Adopting this approach, the aim of this paper is to compare the convenience of a common standard level defined under a centralised institutional system *versus* different provision of public goods and services when decisions are decentralised. In both cases, income heterogeneity across individuals is assumed.

A different source of disparity among regions - such as their income distributions - allows challenging the traditional findings according to which greater heterogeneity should basically enhance more decentralisation. From a positive viewpoint, we show that the choice of the institutional setting and the level of services linked thereto mainly depend on: local income distribution; the level of personal income (rich *versus* poor); the level of regional income (rich *versus* poor regions).

JEL classification: H73, D31

Keywords: Standard level of services; Decentralisation; Income concentration.

^(*) *Università Politecnica delle Marche. Dipartimento di Economia.* E-mail: f.fiorillo@univpm.it

⁽⁺⁺⁾ *Università degli Studi di Roma Tre. Dipartimento di Economia.* E-mail: asacchi@uniroma3.it

1. Introduction

In general, the reason for providing a common standard level of services in all regions within the same country lies basically in equity motivations or in the fact that supplying such levels allows fulfilling some basic individual rights and common needs. Merit goods (Musgrave 1957, 1987)¹ are an example where the State imposes compulsory consumption of certain services (such as in health care or primary education) generating interference problems with individuals' preferences due to a paternalistic attitude of the State. As it is known, one of the possible interpretations of this concept focuses on two main characteristics: the presence of external effects and a distorted set of individual preferences that might lead to either under or overconsumption (Liberati 2003). The introduction of the latter principle may undermine the fundamentals of the welfare theory, considering the State as a separate entity from the citizens, with its own purposes and needs which do not necessarily coincide with the will and tastes of individuals.

However, interferences with individual preferences appear to be a common trend in social life. Moreover, it should be said that some kind of interference occurs not only when we discuss public action and assistance, but it is also quite widespread in market relations (i.e., the role of advertising in "forcing" consumers' preferences). Hence, to justify the provision of goods satisfying needs not "included" in the traditional distinction between private and public goods and characterised by some "intrusion" of the State in individuals' preferences, philosophers, scholars and economists have tried to give some normative interpretations and theoretical responses.

According to Rawls (1971), for example, a standard level of primary goods should be provided to all citizens in relation to a justice-equity principle which basically implies a certain degree of equality of resources. Likewise, Sen (1980, 1987a, 1987b, 1992) also affirms that some commodities should be assigned according to a more general concept of equality of opportunity.²

From this viewpoint, public services such as social or health services should be provided to citizens at a certain common level. In this framework, the usual assumptions concerning heterogeneity in individuals' preferences seem to be not appropriate because of philosophical and equity reasons, and simply because the cultural context, which contributes to define the concept of equity and the rights of people, can be considered quite homogeneous within a nation, also implying homogenous preferences for goods and services which can fulfil these rights. Following this approach, the idea of the standard level of services differentiated across regions seems to be a sort of contradiction; however, the fact that regions can have (and collect) different (revenue) resources may imply a different provision of this kind of goods and services.

Generally speaking, the key issue remains how fiscal federalism can interact with the concept of merit goods as they mostly reflect a central interest. Local governments seem therefore an unnecessary structure, from a normative point of view, as it may well be conceived a central government directly providing uniform level of services. In this vein, intersection with federalism appears to occur at the lowest level: regions may act only as agents of the central government.

Yet, within a context of homogenous cultural values it is likely that central and local governments share the merit good argument - so no preference-revelation mechanism should be involved - and the idea on the appropriate levels of such services. In this case, regions can be also responsible for this kind of spending and set the efficient level, given different local resources. Indeed, it would be perfectly conceivable that regions will finance such services with their own resources. Thus, even though combining merit good content with the theory of

¹ On this concept, see also Head (1966, 1969), McLure (1968) and Pulsipher (1971).

² For further details on the analysis of the equality principle according to Sen, see Granaglia (2007).

fiscal federalism is likely to be a hard task - and not yet much explored in the literature³ - it seems more feasible when opinions and preferences for these goods are shared. Actually, this does not necessarily imply a uniform provision across regions as the amount of local resources may be different, especially when income heterogeneity among individuals occurs. Indeed, the degree of income inequality *between* and *within* jurisdictions can affect local government decision-making process, including the opportunity to fix (or not) a standard level of services.

The aim of this paper is to suggest some possible explanations, on theoretical grounds, about the tendency of differentiating the level of such services within a political economy framework and investigate under which conditions it is convenient for individuals having or not such differentiated standards. In this framework, each decision is assumed to mainly depend on the objective function of policy-makers and on the voting mechanism designed to select them. Hence, the politicians' election is also an important step for the story of the model.

Previous works have emphasised that the case for decentralisation has to be driven by political economy considerations. Seabright (1996), Lockwood (2002), Besley and Coate (2003) present models in which potential benefits of decentralisation are derived through endogenous choices under alternative political aggregation mechanisms. Bardhan and Mookherjee (1998) analyse alternative methods of delegating authority; in their model a central government has limited ability to monitor the performance of the bureaucrats while in a decentralized system the local governments may be subject to capture by local elites. Besharov (2002) studies different regimes for the provision of local public goods in a "menu auction" common agency setting. In his model, the advantage of the decentralised regime is that it reduces influence costs.

In our case, policy is not negotiated by regional representatives as under decentralisation they decide independently, whereas under centralisation they are always assumed to cooperate (i.e., cooperative legislature). In this vein, our approach is similar to the most common utilitarianism approach which involves no conflict between different political groups or classes as argued by Sen (1973): "maximizing the sum of individual utilities is supremely unconcerned with the interpersonal distribution of that sum". The important feature of the model is that decisions regarding taxation and public goods are made simultaneously to solve the same maximisation problem of the elected policy-makers. These are the cases of "simultaneous centralisation" and "simultaneous decentralisation", as argued by Lundholm (2008).

Given this setting, we compare decentralised *versus* centralised solution from an individual utility viewpoint. Indeed, each individual votes on centralisation or decentralisation of public goods provision and taxation, which implies a different policy mix in both cases. In detail, a common standard level will be defined under a centralised institutional system, while different provisions of public goods and services are allowed when decisions are decentralised.

The voting result mainly depends on how income varies across individuals *within* the same jurisdiction and *between* different regions. Indeed, income heterogeneity across individuals is assumed and this represents the only dimension of heterogeneity among citizens, as preferences for public services - with merit content - are assumed to be homogenous (see also Hatfield and Miquel 2008). Preferences heterogeneity is, to some extent, a sufficient (Oates 1972) but not a necessary condition (Seabright 1996; Besley and Coate 2003; Tommasi and Weinschelbaum 2007) to make a case for decentralisation, as other kinds of heterogeneity can be considered. Bolton and Roland (1997), for example, focus on redistribution conflicts and on differences in income distribution across regions as the source of breakup of nations, finding that when income distribution varies across regions, separation occurs in equilibrium. More recently, Giuranno (2009), by analysing the relation between regional income disparity and the size of the public sector in a two-jurisdiction polity, shows that greater income disparities among regions (arising in some cases from the growing divergence between richer and poorer regions) intensify interregional redistributive conflicts, potentially leading to an under-provision of public goods.

³ Some exceptions are included in the Liberati's contribution (2003), where some theoretical aspects of the relationship between fiscal federalism and national health standards in Italy (LEAs) are extensively discussed.

To some extent, we also highlight the impact of interregional redistributive conflicts on public spending, stressing the importance of income disparities on public policy decision making. However, a main difference between this paper and Giuranno's model is that we do not always assume uniform public goods provision across regions, allowing for no policy uniformity at least under decentralisation. Moreover, we take into account both intraregional and interregional inequality, while only the latter effect is studied in his paper.

From a positive viewpoint, the main findings of this paper are that it is more likely to vote for decentralisation without a common standard of public services if: regional per capita income is higher than the average; income inequality *between* regions is high. On the contrary, the impact of *within* income inequality is more ambiguous as it has an opposite effect on taxation and public spending, affecting the choice of the institutional system in a different way. Finally, rich and poor people find a different convenience of voting for a common standard level of public services provided under a centralised system.

The remainder of the paper is organised as follows. Section 2 outlines the general framework of the theoretical model. Section 3 and 4 describe decentralised and centralised case, respectively. Results and their discussion are presented in Section 5. Finally, Section 6 offers some concluding remarks.

2. The general model

In this section, we describe the general features of the model, which hold under both institutional settings (centralisation and decentralisation) in order to compare a common standard level of services which emerges under a centralised system with different provision of public goods and services when decisions are decentralised. In the first case, public policy is defined by a cooperative legislature (as in Besley and Coate 2003) where all local policy-makers cooperate in order to maximise their joint utility functions; in the second case, public policies are chosen independently by the elected representatives in each region. In a political economy framework, each decision - including the possibility to fix a standard level of services - mainly depends on the objective function of the policy-makers and the voting mechanism designed to select them. Hence, the choice of providing, for example, different or equal amount of public goods across regions reflects the convenience of the decision-makers and it can be different under either regimes.

In detail, we present a model of public finance similar to Persson and Tabellini (2000) and Giuranno (2009), where the policy to be determined concerns the level of government spending, which benefits all voters alike. A polity with N individuals divided into J different districts, each with its own local government and different population size (n_j), is considered. Income is the only dimension of heterogeneity among citizens, while preferences for public goods are assumed to be homogenous ($0 \leq \beta \leq 1$) within the national territory. Instead of considering citizens' preferences as a source of heterogeneity, we focus on a different element in order to explain the voting result on the institutional choice.⁴

As in some previous studies (Seabright 1996; Besley and Coate 2003; Tommasi and Weinschelbaum 2007), we do not require heterogeneity *a la* Oates (1972) to make a case for decentralisation. Indeed, many public goods, such as merit goods, lack substantial taste heterogeneity (see also Hatfield and Miquel 2008). This can basically due to the fact that differences in preferences for merit goods provision are usually weak as this kind of services are aimed at fulfilling individual rights which are considered valuable to protection by everybody, especially within a homogenous cultural context (Rawls 1971; Sen 1980⁵).

⁴ As we have demonstrated in a previous paper (see Fiorillo and Sacchi 2011), a different source of disparity among regions - such as their population size in that case - allows challenging the traditional findings according to which greater heterogeneity should basically enhance more decentralisation.

⁵ Our hypothesis is more consistent with the functioning issue rather than the capabilities one.

Following this approach, we assume that each citizen i has the same quasi-linear preferences over private consumption (c_j^i) and public goods (G_j) provided by his/her region j , which is given by:

$$U_j^i = c_j^i + \beta \ln G_j \quad (1)$$

We consider a quasi-linear utility function to ensure that there are no income effects in the enjoyment of such public goods. Hence, government spending is provided equally to everyone within the same jurisdiction, so that $G_j > 0$. Actually, different public good provisions can be implemented across regions according to heterogeneous income distributions and available local resources. Indeed, richer regions could obviously provide a higher level of public goods using a lower tax rate (Boadway and Hobson 1993).

Any tension in deciding the provision level will thus come from the use of taxes that differently affect citizens. Indeed, local government finances public goods by levying a proportional income tax ($0 \leq t_j \leq 1$), which will be differently defined under the two institutional systems. Hence, individual's private consumption is equal to private income (y_j^i), which represents the initial endowment of each individual, minus the cost of the public policy:

$$c_j^i = (1 - t_j)y_j^i \quad (2)$$

As a matter of fact, allowing each community to design and implement its own distinctive blend of policies also implies a system of differentiated taxes that would depend on regional income. Such differentiated tax rates are determined and imposed separately by each local authority under decentralisation and jointly by all regions under centralisation. The latter represents a case of regional cooperation where politicians of all districts are assumed to cooperate and choose not to differentiate inhabitants in terms of taxation, setting a unique tax rate ($t_j = t$) to finance the sum of public good provision in all jurisdictions. In general, local administrations use their revenues to provide local public goods to the citizens within their jurisdiction. The government budget constraint is then simply the sum of income revenues collected within region assumed to be equal to the total cost of providing public good and services.

In both cases, however, public policy is an "active" government intervention which has a cost. We assume, for simplicity, that the unit cost of the public good is the same across regions and it takes into account the government spending in all regions, as the average cost relating to the total public provision into the economy:

$$\alpha_j = \alpha = \left(\prod_{j=1}^J G_j \right)^{\frac{\gamma}{J}} \quad (3)$$

where γ - satisfying the condition $0 \leq \gamma \leq 1$ - captures the presence of positive externalities related to the production cost of public policies across local jurisdictions (externality production). For instance, the cost of providing social services (i.e., hospitals) decreases when other regions provide a good level of these services as congestion problems, for example,

should not arise in this case. In other words, regions can pay less to finance this kind of goods if others - especially neighbouring - supply similar services. The parameter γ is a measure of the average spillovers effect deriving from the mix of public goods provided by local governments. It allows the reduction in production costs of government spending as each local policy maker can exploit these beneficial effects by paying less for providing public goods to his community (see also Fiorillo and Sacchi 2011). Higher is the average scale of services

provided, $\left(\prod_{j=1}^J G_j\right)^{\frac{1}{J}}$, lower is the production cost. In other words, γ can be interpreted like

both an externality and a scale index.

The timing of the model is as follows. Each individual votes on centralisation or decentralisation, according to the simply majority rule. In the second stage, a politician is chosen within each region. This is modelled as a citizen-candidate game (Besley and Coate 1997), where citizens stand for election by committing to platforms that they prefer themselves *ex post*. Candidates are evaluated comparing their proposals on taxes and spending; then, the policy-maker is elected on the income basis as income is the only difference across individuals and can determine a different policy mix to implement. Finally, the elected candidates set both the level of public spending and the corresponding tax rate to finance it.

The important feature of the model is that decisions regarding taxation and public production are made simultaneously to solve the maximisation problem of the elected policy-makers. This case could be similar to the concepts of “simultaneous centralisation” and “simultaneous decentralisation”. The former reflects the standard assumption in the literature according to which public decision making is centralised and coordinated in the sense that decisions about the structure of taxation and that of expenditure are made simultaneously by the central government. However, centralisation can be also when both the decisions, about which projects to fund and which tax setting to finance them, are made by a legislature that comprised of delegates from all regions, as defined by Lockwood (2002) and Besley and Coate (2003).⁶ We follow this approach in analysing the centralised case. In turn, “simultaneous decentralisation” is opposite to that of “sequential decentralisation” of public goods production decisions, where public goods production is delegated to a subordinate bureau, whereas decisions about taxation are taken by the central government (Lundholm 2008).

In next sections, we describe the choices of public spending and taxation level under a decentralised system and a centralised one in a separate way. As in Lockwood (2002), the difference between decentralisation and centralisation concerns the financing mechanism: in the former, public goods provision is funded by a proportional regional tax with different tax rates (t_j); in the latter, decisions about uniform tax rate setting (t) on all citizens are made by a single legislature representing the cooperation among politicians of all regions. Indeed, under centralisation we assume a cooperative solution among local decision-makers as in Besley and Coate (2003), without considering the non-cooperative case.⁷

Hence, they agree to the public goods allocation that maximises their joint welfare (see also Weingast 1979; Fitts and Inman 1990). According to the central tenet of the *Public Choice* approach, decision-makers are assumed to be utility-maximisers with their own objective functions in both cases. Thus, the general approach we adopt is to find the taxation level and

⁶ Actually, within this framework, there can be also two alternative types of “partial centralization”: the first is “centralized expenditure”, where projects are decided upon by central government, but are funded by regions; the second “centralized funding”, where projects and policies are decided upon regionally, but funded through a national tax (Lockwood 1998).

⁷ Coasian logic (i.e., Wittman 1989) suggests that legislators should find their way around the inefficiency created by majoritarian decision criteria under the minimum winning coalition, usually associated with non-cooperative legislative behaviour. This theoretical observation, coupled with the empirical evidence that - at least in the United States - minimum winning coalitions for this type of spending seem the exception rather than rule, has led many to abandon this view of legislative behaviour in favour of more cooperative approaches.

public spending which maximise the elected representative's welfare subject to the government budget constrain.

This political decision-making process can be solved for *backward induction*. Thus, we first derive the level of public goods and services and taxation set by the elected politician; then, we turn to the voting stage, solving the citizens' selection problem of representatives and finally, we compare decentralised *versus* centralised solution from the individual utility viewpoint. The analysis of each scenario is separately performed.

3. Decentralised case

3.1. The choice of public spending and taxation

Under decentralisation, policies are chosen simultaneously by the elected representative in each district.⁸ Representatives are characterized by their utility function (U_j^d) and their income (d_j). As described above, the only issue of heterogeneity across individuals is income.

When each local government controls its own taxes as well as the expenditure levels for its residents, the government budget constraint is then simply:

$$t_j \sum_{i=1}^{n_j} y_j^i = \alpha G_j \quad (4)$$

where the left-hand side of equation (4) represents the sum of all income taxes collected within the local jurisdiction which is assumed to be equal to the total cost of public goods supply.

We can now write the maximisation problem of the policy-maker as follows and it solves:

$$\max_{G_j, t_j} U_j^d = (1 - t_j) d_j + \beta \ln G_j \quad \text{s.t. (3) and (4)} \quad (5)$$

Solving expression (5) yields:

$$G_j(d_j) = \frac{Y_j}{d_j} \left(\frac{J\beta}{J - \gamma} \right)^{\frac{1}{1-\gamma}} \left(\prod_{k=1}^J \frac{Y_k}{d_k} \right)^{\frac{\gamma}{J(1-\gamma)}} \quad (6)$$

$$t_j(d_j) = \frac{\beta}{d_j} \frac{J}{J - \gamma} \quad (7)$$

⁸ The assumption according to which a single representative makes decisions also in a decentralised system is a simplification trying to capture the reality that there will be a greater commonality of interest across sub-districts than across district, even if in the real decentralised institutional setting decisions are typically made by legislatures consisting of elected representatives of each of the sub-districts of the district.

where $Y_j = \sum_{i=1}^{n_j} y_j^i$ is total regional income. Both the levels of public goods and taxation negatively depend on the representative's income because the marginal utility of public services with respect to the marginal utility of income. Besides, they both increase with the scale effect as it allows the reduction costs of public services, enhancing a sort of substitution effect.

3.2. The choice of the policy maker

According to the citizen-candidate approach, voters elect candidates whose policy satisfies their utility functions. As individuals differ only for personal income, the policy-maker selection is based on this variable. The maximisation problem of the generic individual is:

$$\max_{d_j} U_j^i = [1 - t_j(d_j)]y_j^i + \beta \ln G_j(d_j) \quad \text{s.t. (6) and (7)} \quad (8)$$

Solving expression (8) and considering the median-voter theorem, it follows:

$$d_j = \frac{\frac{(1-\gamma)}{1-\frac{\gamma}{J}}}{\left[(1-\gamma) + \frac{\gamma}{J} \right]} m_j \quad (9)$$

where m_j is the median-voter's income. Since $\frac{\frac{(1-\gamma)}{1-\frac{\gamma}{J}}}{\left[(1-\gamma) + \frac{\gamma}{J} \right]} \leq 1$, then $d_j \leq m_j$. This means

that the income of the elected policy maker is not greater than that of the median-voter. Only with no externalities ($\gamma = 0$) or considering a polity with only one region ($J = 1$), the representative is the median-voter. Otherwise, citizens choose a politician who is poorer than the median-voter because by this way a higher level of public good is provided and this allows exploiting economies of scale related to externalities. Thus, a "delegation effect" - producing "excess" public spending, also occurs under decentralisation not only in a centralised framework as in Besley and Coate (2003).

4. Centralised case

4.1. The choice of public spending and taxation

Policy determination under centralisation also has an election and a policy selection stage. We here analyse the second step, whereas the election process will be described in the next section. Under centralisation, the legislature determines public spending and the tax rate in each district. As in Besley and Coate (2003), a key issue is how to approach decision making in the legislature. In detail, we assume J collaborative local policy-makers - holding homogenous preferences for public goods and services - who cooperate in order to share the maximum level of their joint utilities. Even though there are gains from cooperation, this does not imply an obvious alternative for predicting legislative choices; there are indeed many pairs of public spending levels that are efficient from the viewpoint of the representatives.

By applying a uniform tax rate across regions (t), the total cost of providing public expenditure within the country is covered as follows:

$$t \sum_{j=1}^J Y_j = \alpha \sum_{j=1}^J G_j \quad (10)$$

Likewise decentralisation case, the maximisation problem of politicians who cooperate is given by the following:

$$\max_{\substack{G_j, t \\ j=1, \dots, J}} \sum_{j=1}^J U_j^d = W = \sum_{j=1}^J [(1-t)d_j + \beta \ln G_j] \quad \text{s.t. (3) and (10)} \quad (11)$$

Public spending and tax solutions by solving equation (11) are:

$$G_j = G_k = G = \left(\frac{Y/J}{\sum_{j=1}^J d_j / J} \frac{\beta}{1-\gamma} \right)^{\frac{1}{1-\gamma}} \quad (12)$$

$$t = \frac{J}{\sum_{j=1}^J d_j} \frac{\beta}{1-\gamma} \quad (13)$$

where $Y = \sum_{j=1}^J Y_j$ represents total national income. First, it is easy to note that the level of public goods and services provided under a centralised institutional setting is equal across regions ($G_j = G_k = G$). This is due to the fact that within a homogenous cultural context,

differences in preferences for merit goods aimed at fulfilling personal rights are usually weak enough - null in our case - to justify a different provision of such goods in each region under a cooperative legislature. In this case, regional representatives find more convenience in assigning the same level of public services across regions instead of differentiating it.⁹

Moreover, the level of G negatively depends on average delegates' personal income ($\bar{d} = \sum_{j=1}^J d_j / J$) and positively on average regional income $\bar{Y} = \sum_{j=1}^J Y_j / J$, because the marginal utility of public services is decreasing with respect to the marginal utility of income. Likewise, the unique tax rate is also inversely related to average policy-makers' income. Finally, also in this case, both taxation and spending levels are positively correlated with the externality-scale index.

4.2. The strategic choice of the policy makers

Under centralisation, citizens elect their own regional candidates by solving this maximisation problem:

$$\max_{d_j} U_j^i = [1 - t(\bar{d})] y_j^i + \beta \ln G_j(\bar{d}) \quad \text{s.t. (12) and (13)} \quad (14)$$

Note that the main result of cooperation is to fix a standard level of services depending on the type of the legislators in all districts. Then, each individual would choose the policy-maker in all regions selecting an "average leader" (whose income is \bar{d}) which maximises his/her utility function. Yet, each individual can vote only for a local candidate without affecting the voting result of other jurisdictions. This may generate incentives for citizens in each region to delegate policy-making strategically.

The FOC for solving equation (14) can be written as:¹⁰

$$\frac{\partial U_j^i}{\partial d_j} = \frac{\partial U_j^i}{\partial \bar{d}} \frac{\partial \bar{d}}{\partial d_j} = 0 \quad (15)$$

where $\frac{\partial \bar{d}}{\partial d_j}$ represents the strategic delegation according to which the election in one region actually depends on the expectations on elected candidates in other regions. In detail, equation (15) yields:

$$\frac{y_j^i}{\bar{d}} \sum_{k=1}^J \frac{\partial d_k}{\partial d_j} - \sum_{k=1}^J \frac{\partial d_k}{\partial d_j} = 0 \quad (16)$$

⁹ Note that this result might not hold considering non-cooperative legislature and minimum winning coalitions linked thereto.

¹⁰ The SOC implies $\frac{\partial^2 U_j^i}{(\partial d_j)^2} < 0$.

where $\sum_{k=1}^J \frac{\partial d_k}{\partial d_j} \left(= J \frac{\partial \bar{d}}{\partial d_j} \right)$ is the sum of the expected decision maker in region k when residents in region j change their voting. Solving (16) implies:

$$d_j = Jy_j^i - \sum_{k \neq j}^J (d_k)^e \quad (17)$$

where $(d_k)^e$ is the decision-maker expected by citizens of region j to be elected in region k . Thus, each individual would choose himself as the “average policy-maker”. As the median-voter theorem holds,¹¹ the election result is:

$$d_j = Jm_j - \sum_{k \neq j}^J (d_k)^e \quad (18)$$

The majority rule in each district could lead to different solutions depending on the expected income level of the decision-makers in other regions. Equation (18) means that \bar{d} should be equal to m_j ; this condition is not feasible in all jurisdictions at the same time given median-voters’ income heterogeneity. Thus, different equilibria are feasible.

We can start from a situation where individuals vote for their local median-voter ($d_j = m_j$). We wonder whether this starting point is equilibrium or not. It represents the equilibrium only if no strategic vote and myopic expectation are assumed. That is to say that region j expects that all other regions k always vote like region j itself: $(d_k)^e = m_j$. Thus, $\bar{d} = \sum_{j=1}^J m_j / J = \bar{m}$. Yet, in this case systematic errors occur and expectations are not fulfilled.

On the other hand, if we assume rational expectations and that each region adjusts its decision in order to increase the utility of its own median-voter, the equilibrium is then different from the starting point. In detail, regions with median-voter’s income lower than their mean ($m_j < \bar{m}$) have an incentive to delegate policy-making to a representative poorer than its median-voter in order to reduce politicians’ average income. On the contrary, regions with median-voter’s income higher than their mean ($m_j > \bar{m}$) have an incentive to delegate policy-making to a representative richer than its median-voter in order to increase politicians’ average income. Hence, let us order, to simplify the exposition and keep the model tractable, that the median-voter of region 1 is richer than one of region 2 and so on: $m_1 > m_2 > \dots > m_j$,¹² so it can be demonstrated that $\bar{d} = m_1$.

¹¹ Actually, the median-voter holds if $\sum_{k=1}^J \frac{\partial d_k}{\partial d_j} > 0$ that is likely to be true.

¹² We assume that the average regional endowments and the benefit function are such that this inequality is always fulfilled.

As in Besley and Coate (2003), heterogeneity creates an additional conflict over the level of public spending. If each region elects a representative of the median type, the common level of public goods is higher for rich regions and lower for those which are poor. Hence, the former have an incentive to vote for a candidate richer than the median-voter; for the latter, the opposite incentive prevails.

We may generalise these results assuming that average income of politicians corresponds to income of the median-voter of a generic region (R), thus $\bar{d} = m_R$. Under this condition, we can have myopic wrong expectations if $m_R = \sum_{j=1}^J m_j / J$, so $\bar{d} = m_R = \bar{m}$; correct expectations when $R=1$, so $\bar{d} = m_R = m_1$.

5. Comparative statics

In order to choose the institutional system, we assume that income within each region is Pareto-distributed.¹³ In this case, there is a stable relationship between average per capita income (y_j) and median income: $m_j = y_j Z_j$, where Z_j is approximately equal to the complement of the Gini index ($Z_j \approx 1 - Gini_j$). Thus, Z_j represents a measure of income “equality” *within* region j : lower values of Z_j indicates high degree of inequality within; higher values of Z_j mean low inequality within. Moreover, let us assume that n_j , Z_j and y_j are mutually independent, thus:

$$\begin{aligned} - \bar{Y} &= \sum_{j=1}^J Y_j / J = \bar{y}\bar{n}, \text{ where } \bar{y} = \sum_{j=1}^J y_j / J \text{ and } \bar{n} = \sum_{j=1}^J n_j / J; \\ - \bar{m} &= \sum_{j=1}^J m_j / J = \bar{y}\bar{Z}, \text{ where } \bar{Z} = \sum_{j=1}^J Z_j / J. \end{aligned}$$

Note that we can summarise that each region compared decentralised solution with a centralised one, which is calculated with respect to a “benchmark” region (R). For simplicity, we can rewrite $m_R = \bar{y}Z_R^*$, where $Z_R^* = \left(\frac{y_R}{\bar{y}} Z_R \right) \geq \bar{Z}$. Thus, if we have myopic expectations, the benchmark corresponds to this condition: $\bar{d} = m_R = \bar{m} = \bar{y}\bar{Z}$; if we have

¹³ The Pareto distribution was originally developed to describe the distribution of income, where the share p of a population has the $(1-p)$ share of the income (Pareto 1896-97). After Pareto, several efforts to confirm or reject this law were done by scholars. In particular, for low-income individuals Pareto distribution does not seem to fit correctly the data, and other distributions, such as log-normal (Aitchison and Brown 1957), are used. On the contrary, some authors have tried to generalise the Pareto distribution (Singh and Maddala 1976; Clementi and Gallegati 2005) in order to describe the low part of income distribution. Moreover, it can be demonstrated that income is asymptotically distributed as a generalised Pareto (Champernowne 1953). More recently, power laws or Levy’s distributions (generalised Pareto distributions) seem to fit quite correctly data on wealth distribution because of the stochastic multiplicative nature of the accumulation process (Levy 2001; Reed 2001). In our model, we assume Pareto distribution as it allows to represent an asymmetric distribution like that of income and to interpret the shape parameter of the distribution as a function of the Gini index. In addition, our results do not change using another asymmetric distribution such as, for example, the lognormal one.

rational expectations, the benchmark is represented by the richest region ($R=1$): $\bar{d} = m_1 = y_1 Z_1 = \bar{y} Z_1^*$. After some algebra, we can sum up previous results as follows:

Table 1 - *Solutions*

	Decentralised case	Centralised case
Public goods	$G_j^* = \frac{n_j}{Z_j} \left(\frac{\beta}{1-\gamma} \right)^{\frac{1}{1-\gamma}} \left(1-\gamma + \frac{\gamma}{J} \right)^{\frac{1}{1-\gamma}} \left(\prod_{k=1}^J \frac{n_k}{Z_k} \right)^{\frac{\gamma}{(1-\gamma)}} \quad (19)$	$G^* = \left(\frac{\bar{n}}{Z_R^*} \frac{\beta}{1-\gamma} \right)^{\frac{1}{1-\gamma}} \quad (21)$
Taxation	$t_j^* = \left(1-\gamma + \frac{\gamma}{J} \right) \left(\frac{1}{Z_j y_j} \right) \frac{\beta}{1-\gamma} \quad (20)$	$t^* = \left(\frac{1}{Z_R^* y} \right) \frac{\beta}{1-\gamma} \quad (22)$
Utility	$U_j^{DEC} = (1-t_j^*) y_j^i + \beta \ln G_j^*$	$U_j^{CEN} = (1-t^*) y_j^i + \beta \ln G^*$

The generic individual with income y_j^i living in region j will prefer decentralisation if:

$$U_j^{DEC} - U_j^{CEN} = (t^* - t_j^*) y_j^i + \beta (\ln G_j^* - \ln G^*) > 0 \quad (23)$$

It is easy to note that the voting result depends on the cost of services which characterises each system (taxation) and the supply of public goods and services. Moreover, the richer is the individual, the higher is the weight assigned to the tax rate and the lower is that of public spending. In this vein, we consider the two components separately.

5.1. *The role of taxation*

Comparing tax rates under decentralisation and centralisation means to solve $t_j^* < t^*$, referring, respectively, to equations (20) and (22) of table 1, which yields:

$$\left(1-\gamma + \frac{\gamma}{J} \right) < \frac{Z_j y_j}{Z_R^* y} = \frac{m_j}{m_R} \quad (24)$$

Equation (24) implies that individuals are likely to prefer a decentralised institutional setting - as they will pay less - whether: income distribution *within* region j is less unequal than one in the benchmark region R ($Z_j > Z_R^*$); the level of per capita income of region j is higher than average per capita income ($y_j > \bar{y}$). In other words, citizens belonging to more homogenous jurisdictions and richer than the average would stay better under decentralisation as they will be subject to a lower taxation.

Hence, higher local income inequality - *within* income inequality - makes decentralised solution less suitable considering taxation side. The intuition is the following. Individuals of regions characterised by a more equal income distribution find more convenient remain autonomous and delegate policy-making to their own representatives, who decide taxes independently, instead of selecting a more cooperative institutional setting, where different regional income distributions - probably more unequal - may also occur and differently affect the taxation level.

On the contrary, in more unequal local communities, citizens may get a greater advantage by joining with other districts in order to smooth their income distribution, share taxation and, thus, meet lower tax obligations.

In addition, this finding is more likely when γ increases, that is the extent of spillovers grows up. On the other hand, when externalities are absent ($\gamma = 0$), equation (24) becomes false if $R=1$. In general, decentralisation is more likely to occur when γ grows up since t increases with γ more quickly than t_j .¹⁴

5.2. The role of public spending

Concerning the supply of public goods, we compare the following $G_j^* > G^*$, respectively from equations (19) and (21). By taking the logarithmic form and solving it, we have:

$$\frac{1-\gamma}{\gamma} \left(\ln \frac{n_j}{\bar{n}} - \ln \frac{Z_j}{Z_R^*} \right) + \frac{1}{\gamma} \ln \left(1 - \gamma + \frac{\gamma}{J} \right) > Hn - Hz \quad (25)$$

where $Hn = \ln \left[\frac{\bar{n}}{\left(\prod_{k=1}^J n_k \right)^{\frac{1}{J}}} \right]$ and $Hz = \ln \left[\frac{Z_R^*}{\left(\prod_{k=1}^J Z_k \right)^{\frac{1}{J}}} \right]$ are two indexes of

heterogeneity, respectively of population size (Hn) and of income distribution (Hz).¹⁵ Generally speaking, Hn and Hz represent two structural factors of the economy, which are independent of the relative position of region j .

Hence, expression (25) suggests under which conditions the generic individual would vote for decentralisation founding his/her decision on the level on public spending provided. In detail, this happens whether he/she belongs to region j which is: larger than the average ($n_j > \bar{n}$); more unequal than the benchmark one ($Z_j < Z_R^*$).

In general, the size effect ($n_j > \bar{n}$) seems to better support a decentralised system in line with the intuition that “larger groups will provide smaller amounts of a public good” is not a universal result neither theoretically (for instance, Chamberlin 1974), nor empirically (Isaac and Walker 1988). More recently, Fiorillo and Sacchi (2011) also find that larger jurisdictions would prefer decentralisation, as these regions should pay implicit transfers (i.e., cross subsidisation) to smaller ones when taxation is centralised. Thus, large municipalities can self-finance under decentralisation, especially without any external spillovers to exploit.

Nevertheless, equation (25) starts to be false when variability in size (Hn) increases. In other words, centralisation is preferred when regions are very different in size. Intuitively, high variability in size is correlated with high variability in revenues, thus public goods provision would be very uneven under decentralisation. As the marginal utility of public goods is decreasing, a centralised (uniform) provision allows, on average, a higher level of services than a decentralised and uneven one can do.

In reference to income distribution, we find an opposite result than the previous one, when the tax side has been considered. Indeed, citizens living in less homogenous jurisdictions

¹⁴ This is due to the fact that the impact of externalities on the production cost of the public good is higher under centralisation.

¹⁵ Since the following holds: $Z_R^* \geq \bar{Z} \geq \left(\prod_{k=1}^J Z_k \right)^{\frac{1}{J}}$.

($Z_j < Z_R^*$) would prefer decentralisation as they can obtain more goods and services than those provided under a centralised setting,¹⁶ *ceteris paribus*. Generally speaking, higher income inequality at the local level is likely to foster “expenditure decentralisation” which means that a higher amount of public spending can be available under a decentralised policy-making process. Thus, we may affirm that, focusing on the spending side, inequality *within* region is likely to favour decentralisation.

Condition (25) is more likely to be true when variability in overall income distribution increases across regions (H_z). This means that inequality *between* regions can also enhance decentralisation; on the contrary, in a centralised system, *between* inequality increases cross subsidisation effect, thus gains are less, on average, than losses, because of the decreasing marginal utility of public goods.

To some extent, this result is consistent with the Oates’s decentralisation theorem (1972) according to which some kind of heterogeneity - in preferences in that case; in income in our model - can enhance decentralisation as the more efficient solution. Furthermore, by interpreting public spending as a measure of government size, we may draw similar conclusions to those of Meltzer and Richard’s (1981) contribution, where more inequality leads to a larger public sector.¹⁷

Finally, in order to consider the effect of externalities let us take the expected value of equation (25) and we obtain:

$$\ln\left(1 - \gamma + \frac{\gamma}{J}\right) > Hn - Hz \quad (25.a)$$

According to the “new” condition, decentralisation is likely to prevail when γ is low. Hence, the centralised provision of public goods is, in aggregate, higher than the decentralised one when externalities are high. This result is quite standard as centralisation is better to guarantee gains from the internalisation process. However, by comparing equation (25) with (25.a), we note that this finding does not hold for all regions. In particular, small regions ($n_j < \bar{n}$) and those where *within* income inequality is low ($Z_j > Z_R^*$) could supply a bigger amount of public goods under a decentralised system with high (and not low) externalities.

5.3. Individual voting for the institutional system

In order to draw some conclusion on which system is more convenient from the individual utility viewpoint, we have to solve equation (23) after making some substitutions. It yields:

¹⁶ The median-voter of less homogenous regions has a lower income than the median-voter of the benchmark region. As he/she is poorer, he/she needs a higher level of public goods which can be obtained only under decentralisation. On the contrary, the median-voter of more homogenous regions is richer than the median-voter of the benchmark region and would need a lower amount of public goods, so preferring centralisation.

¹⁷ In detail, Meltzer and Richard (1981) studied how income disparity *within* a one-jurisdiction polity affects government size. Yet, this result is not confirmed by Giuranno (2009), who extends Meltzer and Richard’s analysis to a two-jurisdiction polity with a common public good and tax policy stipulated on the basis of bargaining among the jurisdictional decision-makers. Indeed, by introducing regional representatives’ negotiations in the legislature, he shows that greater *interregional* income disparity leads to a smaller public sector, reducing redistributive public spending.

$$\begin{aligned}
U_j^{DEC} - U_j^{CEN} &= \frac{\beta}{1-\gamma} \left[\left(\frac{1}{Z_R^* y} \right) - \left(1-\gamma + \frac{\gamma}{J} \right) \left(\frac{1}{Z_j y_j} \right) \right] y_j^i + \\
&+ \frac{\beta}{1-\gamma} \ln \left[\left(\frac{n_j Z_R^*}{n Z_j} \right)^{1-\gamma} \left(1-\gamma + \frac{\gamma}{J} \right) \left(\frac{\prod_{k=1}^J n_k^{\frac{1}{J}}}{n} \right) \left(\frac{Z_R^*}{\prod_{k=1}^J Z_k^{\frac{1}{J}}} \right)^\gamma \right]
\end{aligned} \tag{26}$$

when $U_j^{DEC} - U_j^{CEN} > 0$, the individual with income y_j^i votes for decentralisation. The result will depend on the impact of relevant variables on taxation and public goods. This means that it is more likely to vote for decentralisation if: a) per capita income of region j is higher than the average; b) the size of region j is higher than the average; c) *between* variability of income distribution across regions is high; d) variability in size is low. These effects are unambiguous since they specifically affect either tax or public spending side or both in the same direction.

On the other hand, the impact of *within* income inequality is not clear.¹⁸ Indeed, from previous comparative statics, it emerges that the level of income concentration in region j compared to the benchmark one has an opposite effect on taxation and public spending, differently affecting the individual voting on the institutional system. A lower concentration reduces the cost (taxation) of decentralising, yet it also implies a lower provision of public goods and services under decentralisation. In addition, as already stated, rich people in all regions are likely to mainly take into account the cost issue during the voting process; while poor people basically consider the different impact of public goods provision on their utility functions.

Let us study equation (26) when Z_j changes. It is easy to show that

$$\lim_{Z_j \rightarrow 0} U_j^{DEC} - U_j^{CEN} = +\infty; \text{ moreover, equation (26) has a maximum for } Z_j = \frac{y_j^i}{y_j}.^{19}$$

In detail, when $y_j^i > y_j$ which means the individual i is richer than the average in region j , $U_j^{DEC} - U_j^{CEN}$ always increases with the level of income equality (Z_j). Thus, it may exist a threshold Z_{\min} such that for high degree of local income concentration ($Z_j < Z_{\min}$), the rich individual votes for centralisation; otherwise ($Z_j > Z_{\min}$) for decentralisation (figure 1, case A). Note that if this value does not exist,²⁰ he/she votes for centralisation (figure 1, case B). Then, rich people could prefer a standard level of public goods and services only in the case of higher *within* income inequality. This is mainly due to the fact that they pay less under a centralised system than under a decentralised one. Intuitively, the rich belonging to a more unequal region know that through centralisation they can reduce their cost of redistribution because they have to consider an overall income distribution which is flatter than their own.

When considering an individual poorer than the average ($y_j^i < y_j$), they may exist up to two thresholds: Z_{\min} and Z_{\max} .²¹ If no thresholds exist (figure 2, case C), the centralised

¹⁸ The impact of externalities is also not clear *a priori* considering the difference between the utility functions under both regimes. Moreover, we have already noted that different findings also emerge for small and large regions focusing only on the public spending side.

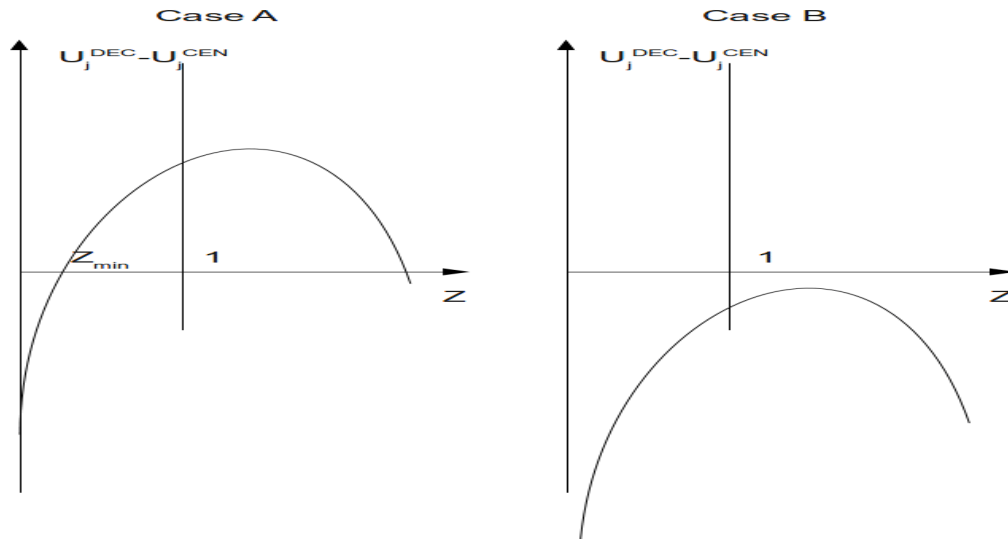
¹⁹ This maximum is feasible only if $Z_j < 1$.

²⁰ The existence of the threshold depends on the interactions among other variables.

²¹ In detail, $Z_{\min} < \frac{y_j^i}{y_j} < Z_{\max}$. Since $\frac{y_j^i}{y_j} < 1$.

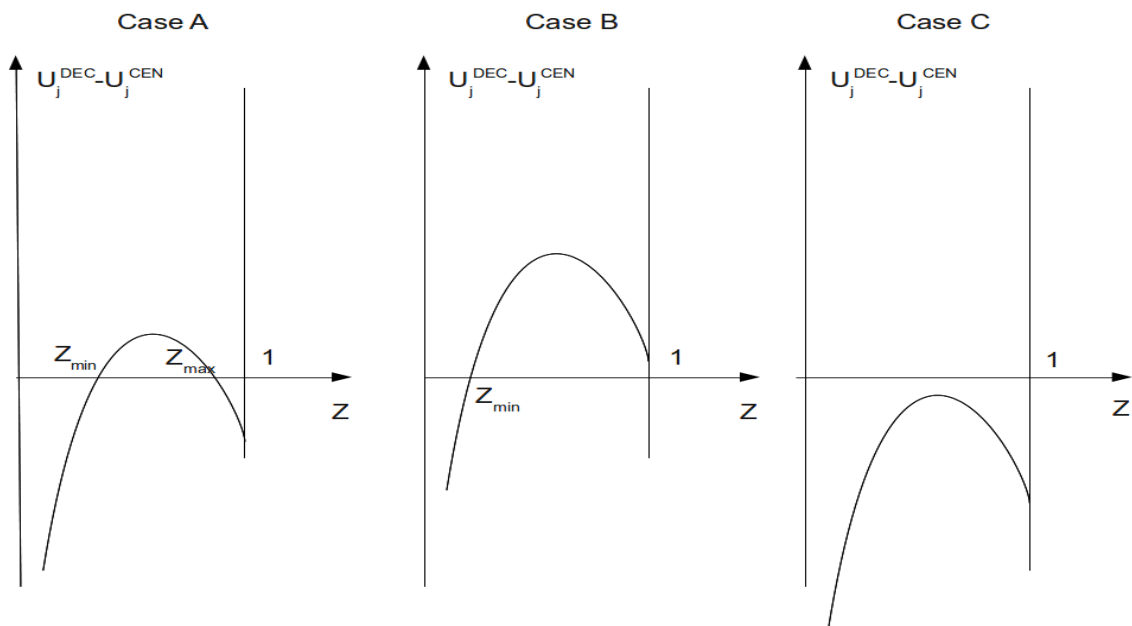
solution is chosen. If only one threshold exists (figure 2, case B), that is Z_{\min} such that for high degree of *within* income concentration $Z_j < Z_{\min}$, poor individuals vote for centralisation; otherwise ($Z_j > Z_{\min}$), for decentralisation. These results are determined by the role of taxation, as for the rich.

Figure 1 - *The institutional choice of the rich individual*



However, considering the poor, another threshold can emerge (Z_{\max}). When $Z_j > Z_{\max}$, poor people living in jurisdiction j do not choose decentralisation; this is due to the higher centralised provision of public goods when regional income concentration is low. On the other hand, for intermediate values of local income inequality ($Z_{\min} < Z_j < Z_{\max}$), poor individuals would prefer decentralisation (figure 2, case A). Finally, when $Z_j < Z_{\min}$, they select a centralised system because of the tax argument.

Figure 2 - *The institutional choice of the poor individual*



Hence, comparing to the rich, poor people also vote for a standard level of public services - say centralisation - when the degree of income disparity *within* their region is low.

To sum up, no a unique solution emerges for both the rich and the poor, but it basically depends on the degree of income concentration *within* their region.

6. Concluding remarks

We compare the convenience of a common standard level of services set under a centralised institutional system *versus* different provision of public goods - which means the absence of the standard level - when decisions are decentralised. In both cases, a political economy approach is adopted (Persson and Tabellini 2000; Besley and Coate 2003; Giuranno 2009) and income heterogeneity across individuals is assumed. A different source of disparity among regions such as their income - instead of their preferences (Oates 1972) or their population size (Fiorillo and Sacchi 2011) - allows challenging the traditional findings according to which greater heterogeneity should basically enhance more decentralisation. Indeed, our results, also those according to which decentralisation is preferable, hold even in the case of homogeneity of preferences across regions.

In order to choose the institutional system, individuals take into account income inequality *between* and *within* regions as both can (differently) affect government decision-making process, including the opportunity to fix a standard level of services. In turn, preferences' heterogeneity is not actually required to make a case for decentralisation (see also Seabright 1996; Tommasi and Weinschelbaum 2007), especially in the case of public goods with merit content as also argued by Hatfield and Miquel (2008).

By combining merit issue with the theory of fiscal federalism, we try to capture both effects of intraregional and interregional income inequality into the analysis extending, to some extent, Giuranno's work (2009) where only the latter effect is treated,²² and Meltzer and Richard's model (1981) where only the former issue is considered.

The main findings of this paper suggest that higher local income inequality - *within* income inequality - makes decentralised solution less suitable considering the tax side. Indeed, in more unequal local communities, citizens may get a greater utility by joining with those of other regions in order to smooth their income distribution, share taxation and, thus, meet lower tax obligations. On the other hand, an opposite result emerges regarding the expenditure side. Indeed, higher income inequality *within* jurisdiction is likely to favour a bigger amount of public services provided under a decentralised policy-making process, enhancing a sort of *expenditure decentralisation*.

Hence, in order to draw some conclusion on which system is more convenient from the individual utility viewpoint, we analysed these effects together as they may be different for rich and poor people living in the same region. Solutions suggest that the rich would prefer a standard level of public goods (i.e. centralisation) only in the case of high *within* income disparity. In this case, they can probably reduce their cost of redistribution by joining with those belonging to more equal regions, and so flattening their income distribution. On the contrary, poor people also vote for a standard level of public services but when the degree of income disparity *within* their region is low, stimulated by a higher spending provision under centralisation.

The effect of interregional income inequality is, instead, much clearer as both individuals would prefer decentralisation when inequality *between* regions is high. This result sounds familiar with the traditional argument of the fiscal federalism theory. In addition, this finding may contribute to explain the existence of institutional conflicts observed at the empirical level

²² As argued by Giuranno (2009): "There are, however, a number of ways in which intra- and interregional income differences may vary and affect public spending. We leave this analysis for further research."

in presence of different local resources, according to which rich regions would prefer redistribute less, while poor ones would get more (see also Sacchi 2008).

Finally, the model can be extended to allow representatives form a minimum winning coalition to choose policy in the legislature - non-cooperative legislature as in Besley and Coate (2003) - instead of assuming only cooperative one. Moreover, an empirical investigation on the main findings of the model could be the issue for further research.

References

- Aitchison J., Brown J.A.C. (1957). *The Lognormal Distribution with Special Reference to Its Uses in Economics*. Cambridge, Cambridge University Press.
- Bardhan, P. and Mookherjee, D. (1998). Expenditure Decentralization and the Delivery of Public Services in Developing Countries, mimeo.
- Besharov G. (2002). Influence Costs in the Provision of Local Public Goods, Economics Working Paper n. 1-2, Duke University.
- Besley T., Coate S. (1997). An economic model of representative democracy, *Quarterly Journal of Economics* 112 (1), 85–114.
- Besley T., Coate S. (2003). Centralized versus Decentralized Provision of Local Public Goods: a Political Economy Approach, *Journal of Public Economics* 87, 2611-2637.
- Boadway R., Hobson P. (1993). *Intergovernmental Fiscal Relations in Canada*. Canadian Tax Foundation.
- Bolton P., Roland G. (1997). The Breakup of Nations: a Political Economy Analysis, *Quarterly Journal of Economics* 112, 1057-1090.
- Chamberlin J. (1974). Provision of Public Goods as a function of Group size, *American Political Science Review* LXVIII, 707-716.
- Champernowne D.G. (1953). A Model of Income Distribution, *The Economic Journal* 63(250), 318-351.
- Clementi F., Gallegati M. (2005). Pareto's Law of Income Distribution: Evidence for Germany, the United Kingdom, and the United States, *Econophysics of Wealth Distributions* I, 3-14.
- Fiorillo F., Sacchi A. (2011). Free-riding or internalizing? An Opportunistic View on Decentralization versus Centralization, CESifo Working Paper n. 3328.
- Fitts M., Inman R. (1990). Political institutions and fiscal policy: evidence from the U.S. historical record, *Journal of Law, Economics and Organization* 6, 79-132.
- Giuranno M.G. (2009), Regional income disparity and the size of the public sector, *Journal of Public Economic Theory* 11 (5), 697–719.
- Granaglia E. (2007). L'uguaglianza di capacità: un'innovazione terminologica o una nuova concezione di uguaglianza di opportunità?, *QA Rivista dell'Associazione Rossi-Doria* 4.
- Hatfield J.W., Miquel G.P. (2008). A Political Economy Theory of Partial Decentralization, NBER Working paper n. 14628.
- Head J. (1966). On merit goods, *Finanzarchiv* 25, 1-29.
- Head J. (1969). Merit goods revisited, *Finanzarchiv* 28, 214-225.
- Isaac R.M., Walker, J.M. (1988). Group size effects in public goods provision: The voluntary contributions Mechanism, *The Quarterly Journal of Economics* 103(1), 179-199.
- Liberati P. (2003). Fiscal federalism and national health standards in Italy: implications for redistribution, in Franco D., Zanardi A. (eds.) *I sistemi di welfare tra decentramento regionale e integrazione europea*. Franco Angeli, 241-273.
- Lockwood, B. (1998). Distributive Politics and the Benefits of Decentralization, Warwick Economic Research Paper n. 513.
- Lockwood, B. (2002). Distributive Politics and the Cost of Centralization, *Review of Economic Studies* 69(2), 313-337.
- Lundholm M. (2008). Decentralizing Public Goods Production, *Journal of Public Economic Theory* 10 (2), 259–279.
- McLure (1968). Merit wants: a normatively empty box, *Finanzarchiv* 27, 474-483.
- Meltzer A.H., Richard S.F. (1981). A rational theory of the size of government, *Journal of Political Economy* 89, 914–927.
- Musgrave R.A. (1957). A Multiple Theory of Budget Determination, *FinanzArchiv* 25(1), 33-43.

- Musgrave R.A. (1987). Merit goods, *A Dictionary of Economics*, vol. 3, The New Palgrave, 452-453.
- Oates, W.E. (1972). *Fiscal Federalism*, New York, Harcourt Brace Jovanovich.
- Oates, W.E. (2005). Towards a Second-Generation Theory of Fiscal Federalism, *International Tax and Public Finance* 12, 349-373.
- Pareto V. (1896-97). *Cours d'économie politique*.
- Persson T., Tabellini G. (2000). *Political Economics – Explaining Economic Policy*. Cambridge, MA: MIT Press.
- Pulsipher A.G. (1971). The properties and relevancy of merit goods, *Finanzarchiv* 30, 266-286.
- Rawls J. (1971). *A Theory of Justice*, Cambridge, Harvard University Press.
- Reed W.J. (2001). The Pareto, Zipf and other power laws, *Economic Letters* 74(1), 15-19.
- Sacchi A. (2008). Il decentramento della funzione redistributiva: effetti sul benessere degli individui, *Rivista di Diritto Finanziario e Scienza delle Finanze* LXVII 4, 520-551.
- Seabright, P. (1996). Accountability and Decentralization: an Incomplete Contracts Model, *European Economic Review* 40(1), 61- 90.
- Sen A.K. (1973). *On Economic Inequality*. Oxford, Clarendon Press.
- Sen A.K. (1980). Equality of What?, *The Tanner Lectures on Human Values* 1.
- Sen A.K. (1987a). Capability and Well-Being, in Nussbaum N., Sen A.K. (eds.) *The quality of life*. Oxford, Oxford University Press, 30-53.
- Sen A. (1987b). *On Ethics and Economics*. Oxford, Blackwell.
- Sen A. (1992). *Inequality Re-examined*. Cambridge, Harvard University Press.
- Singh S.K., Maddala G.S. (1976). A Function for the Size Distribution of Incomes, *Econometrica* 44, 963-970.
- Tommasi M., Weinschelbaum F. (2007). Centralization vs. Decentralization: A Principal - Agent Analysis, *Journal of Public Economic Theory* 9(2), 369-389.
- Weingast B. (1979). A rational choice perspective on congressional norms. *American Journal of Political Science* 23, 245-262.
- Weingast B. (2009). Second Generation Fiscal Federalism: the Implications of Fiscal Incentives, *Journal of Urban Economics* 65, 279-293.
- Wittman D. (1989). Why democracies produce efficient results, *Journal of Political Economy* 97(6), 1395- 1424.