Siep Società italiana di
economia pubblica

# DECENTRALIZATION, LOCAL GOVERNMENT REFORM AND LOCAL GOVERNMENT PERFORMANCE. THE IMPACT OF INTER-COMMUNALITY

BARBARA ERMINI

**società italiana di economia pubblica**

**dipartimento di economia pubblica e territoriale – Università di Pavia**

# Decentralization, local government reform and local government performance. The impact of inter-communality.

Barbara Ermini[*†]

## Abstract

The paper explores the potential of local council partnerships as instruments to improve horizontal decentralization reforms since these institutional arrangements exhibit several features of the FOCJ introduced by Frey and Eichenberger (1996). The issue is empirically addressed by evaluating the effect of local partnerships on two local council performance indicators, namely revenue autonomy and expenditure. Additionally, a distinction between impact of mandatory versus voluntary partnerships is introduced. Using data on 246 Italian municipalities in year 1999 and 2003 I found that the degree of autonomy assigned to local councils to choose partners for cooperation is a crucial element of an effective local government reform. While mandatory local council partnerships show to be not effective to improve local council performance, voluntary local council partnerships enhances revenue autonomy without affecting local council expenditure. This latter form of inter-communality shows to work much more in line with the way FOCJ should do hence voluntary local council partnerships can help to improve horizontal decentralization.

**Keywords:** local governnments; decentralization reform; expenditure and revenue autonomy; local government partnerships; local government performance

**JEL code:** C21; D78; H77; H11

## 1 Introduction

Over the last few decades both developed and developing countries have moved to intensive political and administrative reforms toward a system of higher degree of decentralization of policy decision-making and implementation (Dollery and Robotti, 2008; Shah, 2006; OECD, 2002a,b)

From a conceptual point of view, the issue of the optimal allocation of government power and responsibilities can be analyzed along the horizontal and vertical dimension of decentralization. The latter poses institutional rules and hierarchical relationships among different tiers of government in order to serve

---

[*]Universitá Politecnica delle Marche, Dipartimento di Economia, Piazzale Martelli, 8, 60121 Ancona (Italy), b.ermini@univpm.it

[†]OPERA,Universitá Politecnica delle Marche, Piazzale Martelli, 8, 60121 Ancona (Italy)

governmental functions and attribute decision making power (Keen, 1998; Keen and Kotsogiannis, 2002). The horizontal dimension deals with the partitioning of sub-national government layers into mutually exclusive jurisdictions which enjoy some degree of autonomy and provide similar range of services to citizens (Kessing et al., 2007).

The interplay of the two dimensions of decentralization, that is the overall decentralization design, brings out the local government system that we actually observe in any country. Some inefficiencies can emerge in the allocation of power to lower levels of government. Consequently, one concern of local government reform is to improve horizontal decentralization through the reorganization of government at the lower tier of the institutional system.

This paper aims at contributing to this topic by evaluating the effect on local government performance of one of such of these instruments for institutional reorganization, namely local councils partnership (hereafter, LCP). To my knowledge, this issue has not been econometrically analyzed yet. From a policy perspective, this exercise can help to outline a more efficient decentralization design and to restructure the local public sector to improve its performance.

The empirical analysis is carried out with reference to the Italian institutional context, namely 246 local councils in the Marche region. Today, inter-municipal cooperation is attracting a great deal of attention in local public economics as an instrument for local government reform at an international level (Australia, Canada, France, Spain, etc.). Therefore, the empirical approach adopted in this paper may be useful for the analysis of horizontal decentralization reform in countries other than Italy. As an additional feature of this study, local councils performance is examined distinguishing impact of mandatory versus voluntary partnerships. It is demonstrated that the degree of autonomy assigned to local councils to choose partners for cooperation could be a crucial element of an effective local government reform. This paper can offer some evidence to help governments make more awareness and informed decisions.

The paper is organized as follow. Section 2 describes the theoretical assumptions wherein some inefficiencies can emerge when pursing decentralization. Our focus is on pitfall at the lower level of government. Section 3 introduces the theme of local government partnerships. This institutional arrangement have been proposed by several local government reforms around the world. It is supposed they can help to improve horizontal decentralization outcome. Section 4 defines relationship between local government partnerships and local council performance while in section 5 it is argued that voluntary and mandatory local government partnerships may play different impact on local council performance. Section 6 is devoted to the empirical analysis. It introduces the econometric model, the data set and the description of dependent and independent variable. Estimation results follow in section 7. A final section carries out some concluding remarks.

## 2 From decentralization to local government partnerships

The pioneering work of Wallace Oates (1972) illustrates the economic fundamentals of decentralization formalized into the Decentralization Theorem. More

interesting in the aim of the paper, it also puts forward some indications in order to identify an optimal size of sub-national governments, including local authorities.

Decentralization is an optimal allocation strategy when the public good to be provided is beneficial to a limited number of citizen in a specific geographic area. Local governments are 'closer' to their constituency and have better quality knowledge about citizen's preferences and demand. Therefore, according to the so called preference-matching argument (Lockwood, 2006), local governments can provide local public services tailored to local citizen's need. It can be shown that, assuming a 'benevolent' government, total social welfare can be enhanced by decentralization (Oates, 1999). The welfare gains from decentralized solution is higher the more homogeneous are local jurisdictions in their demands for local public goods and the greater the variation in these demands across jurisdictions. This outcome is ensured by the mechanism of 'voting by feet' introduced by Tiebout (1956). Finally, since local governments are 'closer' to their constituency not only physically but also in terms of accountability, also benchmarking (Salmon, 1987; Besley and Case, 1995) between local governments becomes feasible whereas this is not feasible under a unified central government. It contributes to enhance efficiency and effectiveness of decentralized public policy.

As to the optimal size of the jurisdiction, assignment of functions and tax instruments to the different levels of government has to meet the principle of fiscal equivalence (Olson, 1969) and the principle of correspondence (Oates, 1972)[1]. The resulting allocation generates economic efficiency since it allows for a matching of local demand and supply, with voters enjoying an optimal mix of provision and associated taxes and fees given their individual needs. The optimal size of a jurisdiction is such that the costs of service provision are minimized and the benefits of differentiated services that attain to the population are maximized (Buchanan, 1965).

Looking at real world distribution of local jurisdictions, it has been recognized that "*there could hardly exist a level of government whose jurisdiction coincided perfectly with the pattern of geographical benefits for every local public good*"(Oates, 2005, pag. 351). In fact, there are a number of local public goods with varying geographical patterns of consumption while jurisdictions are usually multi-purpose bodies. Hence, the concept of optimal size jurisdiction is challenged by the risk of inter jurisdictions spill-overs effects and by the failure to exploit economies of scale and scope. More over, political jurisdictions are usually exogenously given. Indeed, jurisdiction boundaries often have been shaped by the historical processes, with these processes embracing a complex host of ethnic, political and sociological factors that typically stretch back over long periods of time (Dollery and Robotti, 2008, chapter 3). It is clear that they could be not the output of an optimal size design process.

Frey and Eichenberger (1996) approach the question of the mis-match between the political scope and the economic scope of a jurisdiction by suggesting the emergence of functional, overlapping and competing jurisdictions (FOCJ). These jurisdictions are organized along functions instead of territories and their

---

[1]The principle of fiscal equivalence (Olson, 1969) states that each level of government should finance its assigned functions with funds it raises itself. The principle of correspondence (Oates, 1972) states that the spatial pattern of benefits should be encompassed by the geographical scope of a jurisdiction.

evolution does not require either the replacement either the modification to the administrative size of the existing jurisdictions to meet the fiscal equivalence. The dimensions of any FOCUS[2] is defined by the specific public service they serve or the task to be fulfilled. According to this approach, there would be a certain degree of overlap among FOCJ. Hence, a citizen could participate simultaneously in several jurisdictions and the the provision of public goods would thereby be separated from spatial residency. Finally, even admitting that mandatory FOCJ could exist, Frey and Eichenberg stress the bottom-up nature of these entities stating that they emerge from below- citizen or jurisdictions themselves rather than central government- as response to citizen's preference.

From a public economics perspective, several beneficial effects may accrue from FOCJ. These competing single (or few) functional unities are more market oriented than usual multi-task local jurisdictions. Their emergence responds to economic factors such as internalization of spillover and the exploitation of economies of scale. They self fund their activity by levying taxes and maximizing cost efficiencies. In comparison to all purpose local jurisdictions, they shouldn't push up government expenditures. FOCJ can reduce the size of public sector while closing the gap with fiscal equivalence theorem.

It has been suggested that the theory of functional federalism can represent the theoretical framework along which to analyze local council partnerships (Dollery and Robotti, 2008)[3]. Different forms of local councils agreement are spreading throughout Europe and other countries (for examples, Australia, Japan, and New Zealand, etc) in order to provide specific local public services. Accordingly to the functional federalism suggestions, they give rise to few purpose bodies which respond basically to economic factor. Even if mandatory inter-communality agreements are not absent[4], local councils partnerships are usually formed on a voluntary basis; entry and exit is admitted. They emerge as an autonomous decision of associated councils. Therefore, a bottom-up process is at work[5].

Next section reviews main motivations behind the setting up of local councils partnerships.

# 3   The role of local government partnerships

One main problem with decentralization of functions and powers to lower level multi-tasking jurisdictions is the departure from the principle of fiscal equivalence and allocative efficiency. The burden of these pitfalls is heavier for smaller

---

[2]FOCUS is the term adopted by Frey and Eichenberger (1996) to indicate one unit of FOCJ.

[3]Other available empirical evidence of FOCJ is offered by US special districts and many Swiss canton (Frey and Eichenberger, 1996; Casella and Frey, 1992). With reference to partnerships, however, we must note that the match with FOCJ is still not perfect. Some steps toward FOCJ status improvements should be taken on the side of the attribution of taxing power to constituents and democratic participation of associated citizens.

[4]Frey and Eichenberger (1996)observe that one difference between Buchanan-type clubs and FOCJ lies in what the former always is voluntary whereas membership in a FOCUS can be obligatory.

[5]But it cannot be disregarded that upper level government strategy has influenced the diffusion and effectiveness of inter communality either by promoting either by making them not attractive. See countries studies collected in Dollery and Robotti (2008) and Hulst and Van Montfort (2007).

size local councils. They can encounter greater difficulties in developing and managing local services because they often suffer from limited finances and technical capacity. They have relatively more limited revenue-raising capacity than their larger counterparts. From the side of the production of public services, they may not be efficient given they are likely to produce local public goods and deliver services at a lower scale than the most economical one. These circumstances have forced local government to search for alternative models of governance to deal with the threat of local service under-provision or provision of lower quality service; that is, the threat of local welfare losses is worsening.

Recently, inter-municipal cooperation is attracting a great deal of attention in local public economics as an instrument for local government reform across some developed countries such as Australia, Canada, France, Italy, Spain, etc (Dollery and Robotti, 2008; Hulst and Van Montfort, 2007). The emergence of inter-municipalities forms of cooperation has been promoted in order to overcome decentralization pitfall[6]. Patterns of development can greatly differ not only among but also within a single country (Ermini and Fiorillo, 2008b).

The rationale behind inter-communality cooperation is that it alleviates pressure on local public budgets by exploiting scale and scope economies in service provision. It is argued that partnerships can reap economies of scale as the population served increases (Zuffada, 2002; Ermini and Fiorillo, 2008a). The efficiency and effectiveness of local government can be enhanced given that partnerships can increase the range of services delivered and improve service quality by leveraging the synergies and complementarities of disposable resources of many local authorities. While single council alone has to cope with a constant shortage of resource (human, financial and material), when pooling and integrating operational resource and professionalism it can be accrued some gains by the division of labour in order to deliver new and better services (Ermini and Salvucci, 2008, 2006). By aggregating their activities, small local councils can enhance their institutional-political representation both with respect to higher tiers of government and also with regard to larger jurisdictions at the same level of government (Quagliani, 2008; Caperchione and Zuffada, 2003). This can be useful when local governments are called to decide collectively on policies that overlap local council administrative boundaries. Finally, with respect to human resource management, council cooperation enables employees to specialize or to better exploit their current capabilities (Zuffada, 2002). These opportunities entail some efficiency gains and higher job satisfaction; they also enhance career opportunities, at least much more than would otherwise be the case, especially within small local councils. Greater financial resources, improved know-how, technological advantages and organizational attributes of different local councils all serve to produce positive synergies.

Shortly, local council partnerships are considered a strategic solution to avoid service under provision or service quality deterioration and to foster local economic development, especially when small councils are involved.

---

[6]A deeper insight into the topic of alternative model of local government reform other then partnerships arrangements (for an example, centralizing local authorities by merging them into larger municipalities) is offered by Dollery and Robotti (2008, chapter 3).

# 4 Local council partnership and local councils performance

While several papers devoted attention to the investigation of different aspects of inter-municipalities performance, especially with reference to the efficiency and quality of service provision (Bosch and Suarez, 2008; Reid, 2008; Ermini and Salvucci, 2009), less is said about the impact of such inter-institutional arrangements on the performance of each associated council. As an exception, Ermini and Santolini (2009) investigated the interaction into public spending decision of some Italian councils. They found weak evidence of a reduction of mimicking behavior among councils participating into partnerships. This result, it has been argued, reflects the enhanced ability to internalize spill-over when local councils join into a LCP.

This paper adopts a different perspective. The impact of LCPs on local governments is evaluated along two lines of reasoning. First, LCPs have been devised as instruments to improve decentralization design. To this aim, the paper examines the impact of inter-municipality on one of a crucial dimension of decentralization, namely revenue autonomy. It is the share of own revenue on total current local government revenue. In a decentralized setting, an improvement on the side of local government revenue autonomy means that the government attains an higher capacity to deliver its own desiderate fiscal policy and preferred local public services and signals more responsive governments. It has also been observed that sub-central governments with more revenue autonomy tend to run smaller deficits and that, the higher the degree of tax competition, the higher the likelihood of pressure to keep taxes down, reducing the need for rules to address possible losses in aggregate efficiency (Sutherland et al., 2005). LCPs can ameliorate local government own revenue for several reasons. By participating into a LCP, the associated councils can exploit economies of scale in service provision. Available resources - human, financial and materials- are partly freed and redistributed to more effective and productive uses. New services could be developed or higher quantity of existing ones could be delivered which, in turn, would generate additional flow of revenue to the local government. Similar results can be obtained when LCPs permit the exploitation of scope economies. In fact, new varieties and higher quality of services can increase local municipalities revenues by applying tariffs and fees. Without LCPs, these outcomes could not be reached.

Second, following suggestions from functional federalism, LCP should not generate an increase in government expenditure (Frey and Eichenberger, 1996). The market-orientation of such bodies would ensure they act economically and efficiently. It is supposed they should be able to self-fund their activity.

Before going through the empirical evaluation of such hypothesis, next section introduces different expectation on local council performance attached to the voluntary or mandatory nature of LCP.

# 5 Voluntary versus mandatory partnerships

World wide experience shows that cooperation among local governments could be imposed by higher levels of government. They entail LCP as a tool to purse local policies at the adequate scale economies for efficiency. However, the degree

of autonomy assigned to local councils to choose partners for cooperation could be a crucial element of an effective local government reform. It can be suggested that mandatory agreements could be less efficient in improving local government performance.

The existence of spill-over in the provision of different local public services has been documented in the empirical literature (Case et al., 1993; Solé Ollé, 2006). It has been argued that these externalities could be internalized, thus enhancing the efficiency of a jurisdiction fiscal policy, by reshaping territorial organization (Schaltegger and Zemp, 2003). This can be achieved by a LCP. Thus, cooperating jurisdictions can coordinate their economic policies in order to take the spill-over effects of fiscal policy into account and also to operate at the adequate scale economies.

However, if LCP are mandatory, it happens that higher level of governments could have a lower quality knowledge about the existence of potential spill-over of policies taken at the local level then the affected local governments. Local councils should let free to choose their relevant partner also in the aim of exploiting scale and scope economies. This autonomy may influence the relative capacity of council partnerships to achieve an adequate equivalence between administrative boundaries and the area where all costs and benefits apply. In fact, local councils assign to LCP the administration of those solely functions and services that generate spill-overs or require economies of scale, while they retain and directly manage those functions that do not affect others and are not affected by the policies of others.

Indeed, Ermini and Fiorillo (2008b), by reviewing some developed country studies, have demonstrated that local government reform pursed by voluntary co-operative arrangements can achieve a better outcome. Moreover, when it is left to local governments themselves whether and how to cooperate, LCP emerge as a bottom-up process. This process is more adherent to FOCJ prescriptions.

These argumentations brings empirical implications to be evaluated. Namely, voluntary LCP are expected to enhance local government performance while mandatory ones could be not effective.

## 6   The empirical analysis

### 6.1   The econometric model

The empirical specification aims to assess the impact of LCPs on local government performance. The overall impact will be evaluated with regard to revenue autonomy and local government expenditure.

LCP are assumed to be instruments to ameliorate horizontal decentralization design. To this aim, we evaluate the capacity of LCP to improve the value of a decentralization related index, namely revenue autonomy of a local government ($REV\_AUT$). Hence, the $REV\_AUT$ can be expressed as a function of a series of explanatory variables among which the participation to a LCP:

$$REV\_AUT_i = \alpha + \beta LCP_i + \gamma X_i + \epsilon_i \tag{1}$$

where $REV\_AUT_i$ is the index of revenue autonomy of a local government $i$ with $i = 1, ..., n$, $LCP_i$ is a dummy which denotes if the $i-th$ council joins a LCP. This dummy takes value 1 if a council joins a LCP and 0 otherwise.

Finally, $X_i$ denotes a set of local government characteristics which can influence the revenue autonomy of a council.

There are reasons to believe that some councils are more likely than others to join a LCP. Both unobservable elements related to the general institutional and operating setting and a series of characteristics of the councils themselves are likely to make it more attractive for a council to choose to deliver services by a cooperative agreement. More over, some council characteristics which affect the likelihood of being into a LCP also affect the revenue autonomy performance. The implementation of a LCP requires organizational and managerial capacity that not all councils possess and these abilities are not completely observable or observed. These same capacities are likely to affect the performance of a council. The self-selection bias attached to this 'picking the winner' effect might originate endogeneity problems since $LCP_i$ is very likely to be correlated with the error term. Admitting that LCP is possible endogenous equals to assume that the choice of LCP status can be modelled as a function of some observed variables that predict the likelihood of being into a LCP:

$$LCP_i = \phi Z_i + \nu_i \tag{2}$$

where LCP is the dummy which enters equation 1. $Z$ is the matrix of observable variables that influence the likelihood of being into a LCP and $\nu$ are independent and normally distributed error terms. In order to estimate the performance equation reported in equation 1 tackling the endogeneity of the LCP decision, we analyse the impact of LCP on council performance relying on a treatment effects model (Vella and Verbeek, 1999; Heckman, 1978, 1979; Maddala, 1983).

This procedure is essentially a two-step selection estimator approach [7]. First, the selection equation 2 is estimated to obtain the predicted value of $LCP_i$. Then, this predicted value is substituted into equation 1 and the linear model is estimated. The general approach is to use maximum likelihood methods to estimate the probit treatment equation and the linear equation simultaneously. This approach produces consistent and efficient estimates of the $\beta$ coefficient of $LCP$ under the assumption of join normality of $\epsilon$ and $\nu$. In this paper we adopt the two step consistent estimator which assumes only normality of the error term in the treatment function (Maddala, 1983; Green, 2003)

The total impact of LCP on local government performance should be evaluated also with respect to total government expenditure. Assuming LCPs work as FOCJ, they are expected to not increase local government expenditure. Indeed, LCPs should operate economically, as FOCJ are intended to. In order to carry out this test, we estimate the following empirical model which is very similar to equation 1 with the substitution of $REV\_AUT$ with local government expenditure variable denoted by $EXPEND$:

$$EXPEND_i = \alpha + \beta LCP_i + \gamma X_i + \epsilon_i \tag{3}$$

As before, $LCP$ is possibly endogenous. Therefore, the estimation strategy for equation 3 is the treatment effect approach described above with equation

---

[7]This estimation procedure is often referred to as the restricted control function (CF) method. Vella and Verbeek (1999) show that the CF approach is more robust and efficient to specification errors than the IV one; nonetheless this latter is independent of the normality assumption contrarily to the CF method.

2 used as the treatment function.

## 6.2 The data set

The empirical analysis is carried out using data on 246 Italian local councils located in the Marche region for the years 2000 and 2003. The Italian institutional setting provides an appropriate testing ground to assess LCP impact on any associated local council performance. In fact, local government reform in Italy has recently promoted the creation of LCP. More over, Italy presents both voluntary and mandatory form of local government agreement. Thus, it is possible to test if the performance of the associated councils is influenced by the degree of autonomy enjoyed by local councils to choose their own partners.

The Italian institutional structure consists of three tiers of overlapping governments: region, province and municipality. The 20 regions of Italy represent the upper tier of local government. Italy then has 103 provinces and more than 8100 municipalities, the latter representing the lowest tier of government. The main competence of municipalities is the administration of functions and the provision of services at a local level.

During the 1990s Italy underwent profound transformation in the institutional and financial relationships among levels of government, the aim being the decentralization and the fiscal autonomy of lower levels of government with respect to the central state (see Ermini and Salvucci, 2008). The final act of this reform was the approval in 2000 of the law d.lgs. 267/2000, also known as Testo Unico degli Enti Locali. Among other relevant provisions, this law has been crucial for inter jurisdiction partnership development because it introduced new forms of local government cooperation and re-organized existing ones. The law lists different types of inter-municipal cooperation with diverse official structures and different degrees of institutionalization and representativeness of local interests. For our purposes here, we focus on two of these agreements, namely *Unione di Comuni* (hereafter, UC) and *Comunitá Montana* (hereafter, CM).

The UC is a form of cooperation introduced in 1990 (law 142/1990), but it began to receive specific support in 2000. This entity can manage any service or function assigned to it by the associated councils. For example, UC delivers services in the areas of local policing, social assistance services, social welfare, sport and culture, transport, etc. In 2005, there were 269 UCs registered in Italy. The total managed current expenditure is about 149 million euros, which represents 0.4% of Italian total current expenditure (Ermini and Fiorillo, 2008a; ISTAT, 2005a).

The CM is an Italian institution specifically created by legislation in the 1970s (law 1102/1971) for the maintenance of territory in mountain areas. It is a mandatory partnership: local councils within a CMs are identified by laws. They do not have autonomy with regard to the choice of partners and they are obliged to stay together. In recent years, CMs have expanded their competencies to encompass the provision of various local services (for example, social, cultural and recreational, road and transport services). In fact, the portfolio of local services managed can be similar to the one operated by UCs. In 2005 Italy had 330 CMs. The budget features of CMs report total current expenditure of about 674 million euros, that is, about 2% of Italian total current expenditure (ISTAT, 2005a,b).

The main difference between a UC and a CM is that the former is built

on a voluntary agreement among councils, while the CM is a mandatory local council association. This difference may be crucial in regard to the aim of exploiting scale and scope economies, but also of internalizing spill-overs. It may influence the relative capacity of council partnerships to achieve an adequate equivalence between administrative boundaries and the area where all costs and benefits apply. Of course, the UC is supposed to be more efficient because any local council can choose the most appropriate partner. Instead, CM partners have been originally selected in order to manage land maintenance issues due to specific geo-morphological characteristics of councils, but with no regard to economic considerations concerning potential scale economies or correction for spill-over.

To the aim of the paper, the choice of Marche region can be appropriate. A key characteristic of this region is the small size of its municipalities. In fact, 57% of municipalities have fewer than 3000 inhabitants. In 2007, the population of the Marche region was about 1.6 million (corresponding to 2.6% of the Italian population), while the population density was 160 inhabitants per square kilometer, which was smaller than the corresponding figure for Italy as a whole, equals to 198. The small size of the Marche communes and their lower population density in comparison to Italy are characteristics that may induce local councils to seek to establish intermunicipal partnerships. Moreover, the local council per-capita fiscal data (tax and fee revenues, current expenditure, current grants, etc.) of this region are very similar to the corresponding data for the median Italian council, so that Marche can be considered a representative region for Italy (Lorenzini and Maltinti, 2008). Finally, the Marche region is a relevant case for the study of Italian local council partnerships. It has been demonstrated that UCs in the Marche perform quite well (Ermini and Salvucci, 2006). As an example, in the 2001 there were 6 UCs in the Marche region, representing 3.4% of the total number of UCs in Italy. They comprised 21 local councils, which was about 9% of total councils in the Marche region. Significantly, the number of services delivered by the average UC of Marche is higher (4.8 services per UC) than the Italian national average (4.0 services per UC). This performance improved in 2005 (Ermini and Fiorillo, 2008a): the average UC in the Marche delivered a higher number of services (10.5 services per UC) to the population compared to the average Italian UC (7.7 services per UC) while it exhibited similar characteristics in terms of inhabitants (1.2 thousand inhabitants) and numbers of associated councils (5.5 councils). With reference to CMs data, by law the Marche region consists of 13 CMs (that is, 4% of the total of 330 Italian CMs). Overall, 122 councils belong to CMs, which represent 50% of total councils in Marche (UNCEM, 2008)[8].

## 6.3   Dependent and independent variables

The dependent variables under examination are local government revenue autonomy and expenditure. Revenue autonomy ($REV\_AUT$) is computed as follow:

$$REV\_AUT_i = \frac{(taxes_i) + (non\_tax\_revenue_i)}{total\_current\_revenue_i} \qquad (4)$$

---

[8]UNCEM is the Unione Nazionale Comuni-Comunitá Enti Montani (that is, the official national association for CM. Data are available at http://www.uncem.it.

where taxes collect revenue from: a) local taxes on own houses and business property, savage and other locally served functions and b) shared taxes with higher level of governments. The non tax revenue component of $REV\_AUT$ refers mainly to fees and charges paid in exchange for non capital goods and delivered services[9]. Finally, $i = 1, ..., n$ is the index of any local government

Local government expenditure ($EXPEND_i$) is the total amount of current expenditure of local government $i$ where $i = 1, ..., n$.

As to the independent variables, some distinctions have to be made for performance indicators explanatory variables collected in equations 1 and 3 and for selection equation explanatory variables in equation 2.

With regard to independent variables, some preliminary considerations concern the definition of $LCP$ which is the main variable of interest. First, it is examined the impact of voluntary $LCP$ on local government performance. To this aim, it is elaborated the dummy $LCP\_UC$ which takes value 1 if the local government joins a $UC$ and 0 otherwise. Recall that UC is the voluntary type of $LCP$ which is analyzed in this paper. Second, it is examined the impact of mandatory $LCP$ on local government performance. The mandatory type of $LCP$ examined in the paper is CM. Therefore, the dummy $LCP\_CM$ takes value 1 if the local government joins the mandatory CM and 0 otherwise. Control variables included in the matrix $X$ are indicators of local government socio-economic characteristics which can influence the revenue autonomy capacity and the need and use of local public current spending. The matrix $X$ includes economic variables such as income tax ($IRPEF$) and grants ($GRANTS$) from the national level of government, both of them in euros per capita. These variables are expected to be positively correlated with local current expenditure since they measure the availability of resources that can be devoted to public spending. From the side of revenue autonomy, $IRPEF$ is a proxy for the entity of resource that will accrue to the jurisdiction as sharing tax and the potential flow of revenue accruing from richer citizen which demand, and pay for, higher quantity/quality of public services. This variable is expected to impact positively on revenue autonomy. On the contrary, the higher the grant received from above levels of government, the lesser is the propensity to increase revenue autonomy. $GRANTS$ is expected to impact negatively on revenue autonomy. The demographic characteristics of the jurisdictions are proxied by population ($POP$). With regard to revenue autonomy, this variable is a proxy for the capacity to raise revenue from population, both from taxes and service deliver. It is expected to impact positively on financial autonomy. From the point of view of spending, population indicator proxy for economies of scale and possible congestion effects in the provision of public goods. The effect of the level of urbanization on council performance is approximated by house density ($HOUSEDENS$). As to revenue autonomy, $HOUSEDENS$ signals the direct source of revenue accruing as property tax and urbanization services. With regard to expenditure, this variable denotes the higher need of spending to serve demand in a more urbanized area. An additional control over the intensity and the level of congestion effect in the use of territorial resource is represented by the amount land in square meters at disposal to each citizen ($LANDUSE$). Being council's land fixed, the higher is this index, the less congested and more sustainable is the exploitation of territory. With regard to $REV\_AUT$, a more

---

[9]For a more comprehensive classification see OECD (2002).

sustainable use of land could reflect more amenitable places and a council can ask higher rewards to citizens in term of higher taxes or higher costs of services for this less intensive use of land. Therefore, a positive link between $LANDUSE$ and revenue autonomy is expected. As $EXPEND$ is concerned, a positive correlation among it and $LANDUSE$ can signal that councils find it hard to operate at economic and efficient level of scale when providing services in scarcely urbanized area while a negative sign reveals that congestion effects prevail. Finally, we use a dummy variable $RURAL$ which equals 1 if the jurisdiction is a rural area and 0 otherwise. This variable reflects the extra spending needs due to technical difficulties to deliver services to rural area and the expected reduction of revenue autonomy given that generally these area are associated to stagnant economic conditions and lower standard of living. More over, rural area often benefits from a lower tax rate assignment and thus local authorities get less tax revenue.

All the dependent variables of the local government performance model are measured for year 2003, the most recent year for which data have been collected. As exceptions, $HOUSEDENS$ and $RURAL$ which are computed for year 2001.

For the first stage probit equation reported in equation 2, the dependent variable is either the dummy $LCP\_UC$ or the dummy $LCP\_CM$ according to the specific context of analysis, namely impact of voluntary or mandatory LCP.

Selection into LCP has been modelled as function of socio-demographic characteristics and budget variables of any associated local council and neighboring jurisdictions; all these regressors have been collected in matrix $W$. Since being a LCP in year 2003 is likely to be endogenous, all variables to be included in $W$ are assumed predetermined and they have been lagged. Potential determinants of LCP have been evaluated at an year as much as close to 1999. First, this is the year when Italian law began to promote LCP to allow local councils to internalize spill-over or to accrue scale economies, that is to overcome pitfall in decentralization. Once a LCP is formed, socio-economic characteristics and, more intensively, budget variables of associated councils can be strategically modified as an effect of higher efficiency attained by inter-municipality and for the distribution of duties among associated councils and LCP itself. Thus, the likely and the opportunity to delegate functions and public expenditure to partnerships should be evaluated before the associated management actually takes place. Second, the formation of a $LCP$ is a process which involves high transaction costs and could take time from the phase where areas of intervention is identified, namely the discovery of functions where economies can be accrued or the detection of expenditures which exert spill-over, and the formal constitution of the $LCP$ [10]. For these reasons, a lag of almost three year seems suffice to model selection into LCP. Considering the choice of independent variables, first socio-demographic, political ideology and budget characteristics of any associated councils are considered. Socio-demographic characteristics include resident population by size class ($POPCL$), the higher altitude of the council area measured as meters ($ALTMAX$) and a dummy ($CITYPROX$) which assumes value 1 if the local councils is near to a city and 0 otherwise.

---

[10] Actually, these difficulties apply not only to the formation ex-novo of a LCP. This difficulty is encountered any time any single council has to decide which functions (and how to) move to LCP. These problems are encountered both by new or existing LCPs With this respect, as an example, also councils belong to CM encounter these problems when and if they wish to expand their area of intervention beyond the mandatory one.

This latter variable signals potential inter-dependence among councils for the definition and the manifestation of the effects of policies. The political orientation is described by the dummy $LEFTWING$ which assumes value 1 if the local councils is governed by a left wing coalition 0 otherwise. It is assumed that left wing coalitions are more prone to join a LCP since both cooperation attitude and both a natural opening for more collaboration has a long lasting tradition among left wing parties. The variable $HERFEXP$ is the Herfindal index of local council expenditure as they are reported in the official budget sheet of the council. The higher this index, the more local councils expenditure are concentrated, the less a council can offer varied services. Thus, councils with high expenditure Herfindal index are more prone to join LCP as a way to improve and differentiate service delivery.

It then follows a different group of variables aimed to proxy for the presence of possible economies of scale, spending spill-over or strategic interdependence among contiguous jurisdictions that could drive the realization of a $LCP$. These proxies are obtained by a spatial weighting scheme in order to calculate the average value of population ($W\_POP$) and public expenditures of contiguous municipalities. The neighboring spending categories whose possible interaction effect has been analyzed are: education, police, cultural, social and road. These variables are denoted by the prefix $W$ attached to any specific spending category: $W\_EDUCAT$, $W\_POLICE$, $W\_CULTUR$, $W\_SOCIAL$ and $W\_ROAD$. Denoting by $S$ any variable to be spatially weighted, where S= population, education, police, culture, social, road, each $W\_S_i$ is calculated as follows:

$$W\_S_i = \sum_{j=1}^{N} \omega_{ij} * S_j \qquad (5)$$

where $\omega_{ij}$ is a representative element of the spatial weight matrix $W$ which is a $N \times N$ matrix. The generic element $\omega_{ij}$ with $i$ denoting a jurisdiction and $j$ its neighbors, assigns neighbors to every jurisdiction. Assuming a contiguity criterion, the matrix W has zero diagonal elements while the representative off-diagonal element $\omega_{ij}$ assumes value 1 when jurisdiction $i$ shares a common border with jurisdiction $j$ and 0 otherwise. Finally, the variable $UC\_KM30$ control for possible mimicking in the decision to activate inter-governments cooperation. This variable records for any councils the number of local councils within an area of 30 kilometers which participate in a voluntary form of inter-municipal agreement.

Summary statistic and definitions of dependent and independent variables are reported in table 1.

## 7  Results

This section first reports results on the impact of voluntary LCPs on local councils performance. Then, these results are compared with those obtained for compulsory LCPs.

Table 1: **Descriptive statistics of variables.**

| Variable | Mean | St.Dev. | Min | Max | N |
|---|---|---|---|---|---|
| $REV\_AUT$ | 64.16 | 15 | 27.1 | 93.5 | 246 |
| $EXPEND$ | 625.5 | 450.69 | 315.1 | 6394.76 | 246 |
| $LCP\_UC$ | 0.16 | 0.37 | 0 | 1 | 246 |
| $LCP\_CM$ | 0.5 | 0.5 | 0 | 1 | 246 |
| POP | 6117.18 | 12075.36 | 127 | 101545 | 246 |
| $IRPEF$ | 8247.24 | 1429.43 | 5137.97 | 13270.55 | 246 |
| $GRANTS$ | 214.84 | 152.96 | 6 | 927 | 246 |
| $DENSHOUSE$ | 81.19 | 120.59 | 5.7 | 929.9 | 246 |
| $LANDUSE$ | 19.55 | 0.03 | 0 | 0.24 | 246 |
| $RURAL$ | 0.82 | 0.39 | 0 | 1 | 246 |
| $HERFEXP$ | 0.23 | 0.05 | 0.15 | 0.53 | 246 |
| $POPCL\_1$ (0-2900 inh) | 0.62 | | 0 | 1 | 246 |
| $POPCL\_2$ (3000-4900 inh) | 0.13 | 0.34 | 0 | 1 | 246 |
| $POPCL\_3$ (5000-9900 inh) | 0.14 | 0.35 | 0 | 1 | 246 |
| $POPCL\_4$ (> 10000 inh) | 0.11 | 0.31 | 0 | 1 | 246 |
| $ALTMAX$ | 660.53 | 523.96 | 114 | 2476 | 246 |
| $CONTIG$ | 0.15 | 0.36 | 0 | 1 | 246 |
| $LEFTWING$ | 0.3 | 0.46 | 0 | 1 | 246 |
| $W\_POP$ | 34721.04 | 9347.51 | 16577.67 | 60753.02 | 246 |
| $W\_EDUCAT$ | 557.85 | 131.31 | 278.67 | 912.05 | 246 |
| $W\_POLICE$ | 216.06 | 53.8 | 106.98 | 363.33 | 246 |
| $W\_CULTUR$ | 111.59 | 27.64 | 54.92 | 182.69 | 246 |
| $W\_SOCIAL$ | 388.97 | 81.14 | 191.28 | 615.97 | 246 |
| $W\_ROAD$ | 529.87 | 137.17 | 268.33 | 890.39 | 246 |
| UC_KM30 | 9.24 | 7.86 | 0 | 27 | 246 |

Table 2: **The impact of voluntary LCP on local council performance. Revenue Autonomy.**

| DEP. VAR. | OLS | | TREATMENT EFFECT | | | |
| | | | (I stage) | | (II stage) | |
| | $REV\_AUT$ | | $LCP\_UC$ | | $REV\_AUT$ | |
| | Coeff. | t-ratio | Coeff. | t-ratio | Coeff. | t-ratio |
| | Column I | Column II | Column III | Column IV | Column V | Column VI |
| $LCP\_UC$ | 1.548 | (1.00) | | | 4.671** | (2.22) |
| $POP$ | -0.000 | (-1.03) | | | -0.000 | (-0.83) |
| $IRPEF$ | 0.003*** | (5.50) | | | 0.003*** | (5.35) |
| $GRANTS$ | -0.075*** | (-11.71) | | | -0.076*** | (-12.06) |
| $HOUSEDENS$ | 0.025*** | (4.26) | | | 0.024*** | (4.20) |
| $LANDUSE$ | 0.169*** | (5.78) | | | 0.177*** | (6.10) |
| $RURAL$ | -0.251 | (0.89) | | | -0.694 | (-0.37) |
| $HERF$ | | | 6.987** | (2.07) | | |
| $POPCL_2$ | | | 0.237 | (0.57) | | |
| $POPCL_3$ | | | -0.730 | (-1.34) | | |
| $POPCL_4$ | | | -1.306* | (-1.68) | | |
| $ALTMAX$ | | | -0.002* | (-1.83) | | |
| $CITYPROX$ | | | -0.302 | (-0.53) | | |
| $LEFTWING$ | | | 1.050 | (2.07) | | |
| $W\_POP$ | | | 0.000 | (0.33) | | |
| $W\_EDUCAT$ | | | 0.062*** | (4.25) | | |
| $W\_POLICE$ | | | 0.069** | (2.43) | | |
| $W\_CULTUR$ | | | -0.093** | (-2.52) | | |
| $W\_SOCIAL$ | | | -0.010 | (-1.05) | | |
| $W\_ROAD$ | | | -0.066*** | (-3.87) | | |
| UC_KM30 | | | 0.004 | (0.12) | | |
| $R^2$ | 0.67 | | | | | |
| $\lambda$ | | | -3.769** | (-2.24) | | |
| $Obs.$ | 246 | | 246 | | 246 | |

## 7.1 Voluntary Local Council Partnership and Local Council Performance.

Table 2 reports results of the estimation of revenue autonomy focusing on the role played by $LCP\_UC$, that is the voluntary LCP. Column I reports OLS estimates assuming that voluntary LCP is not endogenous. Focusing on the

Table 3: **The impact of voluntary LCP on local council performance. Public Expenditure.**

| DEP. VAR. | OLS EXPEND | | TREATMENT EFFECT (I stage) LCP_UC | | (II stage) EXPEND | |
|---|---|---|---|---|---|---|
| | Coeff. | t-ratio | Coeff. | t-ratio | Coeff. | t-ratio |
| | Column I | Column II | Column III | Column IV | Column V | Column VI |
| $LCP\_UC$ | -9.415 | (-0.26) | | | -5.939 | (-0.08) |
| $POP$ | -0.003* | (-1.78) | | | -0.003 | (-1.20) |
| $IRPEF$ | 0.109** | (2.52) | | | 0.109*** | (5.29) |
| $GRANTS$ | 1.699** | (2.07) | | | 1.698*** | (7.22) |
| $HOUSEDENS$ | 0.640*** | (2.74) | | | 0.024*** | (4.20) |
| $LANDUSE$ | 4.201*** | (2.84) | | | 4.211*** | (3.92) |
| $RURAL$ | 12.734 | (0.27) | | | 12.240 | (0.18) |
| $HERF$ | | | 6.987** | (2.07) | | |
| $POPCL_2$ | | | 0.237 | (0.57) | | |
| $POPCL_3$ | | | -0.730 | (-1.34) | | |
| $POPCL_4$ | | | -1.306* | (-1.68) | | |
| $ALTMAX$ | | | -0.002* | (-1.83) | | |
| $CITYPROX$ | | | -0.302 | (-0.53) | | |
| $LEFTWING$ | | | 1.050 | (2.07) | | |
| $W\_POP$ | | | 0.000 | (0.33) | | |
| $W\_EDUCAT$ | | | 0.062*** | (4.25) | | |
| $W\_POLICE$ | | | 0.069** | (2.43) | | |
| $W\_CULTUR$ | | | -0.093 | (-2.52) | | |
| $W\_SOCIAL$ | | | -0.010 | (-1.05) | | |
| $W\_ROAD$ | | | -0.066*** | (-3.87) | | |
| $UC\_KM30$ | | | 0.004 | (0.12) | | |
| $R^2$ | 0.50 | | | | | |
| $\lambda$ | | | -4.193 | (-0.07) | | |
| $Obs.$ | 246 | | 246 | | 246 | |

impact of our interest variable, $LCP\_UC$ does not significantly affect revenue autonomy. Column III-V, report, respectively, the coefficients of first and second stage of the treatment effect estimation strategy which allows to control for the endogeneity of $LCP\_UC$. Results in column III allow both to evaluate the validity of the endogeneity assumption and to assess the relationship between our set of regressors and the likely to be a voluntary LCP. The coefficient $\lambda$ reflects the correlation between errors of the two equations of the whole treatment effect estimation procedure. Since it is statistically significant at conventional level of confidence, it signals that the participation to a voluntary LCP can be correctly regarded as an endogenous variable. Failure to not control for this endogeneity returns biased OLS estimates of the effect of $LCP\_UC$ on local council performance. The fact that $\lambda$ is negative implies that OLS under-estimates the effect of LCP. As to the validity of the selection model specification, let's first focusing on local council characteristics indicators. The estimates show that the higher the concentration of public expenditure $HERFEXP$, the higher the likelihood to form a voluntary LCP. This result represents a piece of evidence for the argument that the formation of a voluntary UC is more attractive for municipalities which face difficulties to supply a varied range of services. The estimated coefficient of $LEFTWING$ confirms that left wing ruling local government are more prone to participate into a UC, that is ideology orientation matters. On the contrary, the propensity of a council joining a LCP is decreasing as the demographic dimension of the council $POPCL$, with lower population size class $POPCL_1$ taken as the reference category, grows and as the council is located at higher altitude, that is for higher value of $ALTIMAX$. The former result confirms our expectation that bigger councils are less likely to engage in inter municipality cooperation since economies of scale are more likely to be fully

15

exploited. The sign of the coefficient of $ALTIMAX$ can be explained considering that mountain councils could already belong to the mandatory LCP form of CM, which was formerly created to this aim, so that they do not search for alternative type of LCP. The variable $CITYPROX$ does not exert significant effect on revenue autonomy. Moving to examine the effect of neighboring jurisdictions, $C\_POP$ does not significantly impact on revenue autonomy. This result seems to not favor the argument the councils join into a voluntary LCP to accrue scale economies. On the contrary, there is more empirical evidence in favor of the presumption that local councils form voluntary LCP in order to internalize spill-over. In fact, all coefficients of spending categories of contiguous neighboring local councils turn out to be statistically significant, the solely exception is social spending. The sign of these coefficients can reflect the fact that different spending categories can be associated to positive or negative externalities. Of course, this latter type of externalities is more likely to favor the formation of a LCP. Finally, there is no evidence of institutional mimicking among local councils since the variable $UC\_KM30$ is not statistically significant. Column V presents results of the second stage estimation procedure of equation 3 where the LCP term is being substituted with its predicted value estimated *via* probit. Focusing on the impact of the $LCP\_UC$, after controlling for endogeneity, it emerges that joining a voluntary LCP enhances council performance since it increases the revenue autonomy ratio. As to the remaining control variables, higher population and house density, that is $POPDENS$ and $HOUSEDENS$, significantly increase local council revenue autonomy as it does citizen higher income ($IRPEF$). On the contrary, a larger amount of state contributions ($GRANTS$) reduces the value of the revenue autonomy ratio. Remaining indicators, $POP$ and $RURAL$, turn out to not impact significatively on local council performance.

Table 3 reports estimates of the impact of voluntary local council partnership on local public expenditure. Column I reports OLS estimates while column III-V report respectively first and second stage of the treatment effect model of $LCP\_UC$. Since the coefficient $\lambda$ of the estimate of the correlation between the expenditure and the selection models is not significant, we can rely on the OLS estimates which are not biased by possible endogeneity of voluntary LCP. As shown in column I, the coefficient of $LCP\_UC$, being negative but not significant at conventional level of confidence, reflects the fact that voluntary LCP does not impact on local public expenditure. With the exception of $RURALITY$, remaining control variables all play a significant role in the explanation of local council expenditure. They all return the expected sign but the coefficient $POP$ which is has a negative, almost null, value.

## 7.2 Mandatory Local Council Partnership and Local Council Performance.

The first step to evaluate the impact of compulsory LCP on local government performance is to assess the impact of $LCP\_CM$ on revenue autonomy. Column I of table 4 reports OLS estimates assuming that mandatory LCP is not endogenous while Column III-V report, respectively, first and second stage of the treatment effect estimation strategy which allow to control for the endogeneity of $LCP\_CM$. Since there is no evidence of significant correlation between errors of the two equations of the whole treatment effect estimation procedure

Table 4: **The impact of mandatory LCP on local council performance. Revenue Autonomy.**

| DEP. VAR. | OLS | | TREATMENT EFFECT | | | |
| | $REV\_AUT$ | | (I stage) $LCP\_CM$ | | (II stage) $REV\_AUT$ | |
| | Coeff. | t-ratio | Coeff. | t-ratio | Coeff. | t-ratio |
| | Column I | Column II | Column III | Column IV | Column V | Column VI |
| $LCP\_CM$ | -2.353* | (-1.68) | | | -2.021 | (-1.35) |
| $POP$ | -0.000 | (-1.82) | | | -0.000 | (-1.31) |
| $IRPEF$ | 0.003*** | (4.39) | | | 0.003*** | (5.65) |
| $GRANTS$ | -0.073*** | (-5.22) | | | -0.073*** | (-11.41) |
| $HOUSEDENS$ | 0.022*** | (4.58) | | | 0.022*** | (3.81) |
| $LANDUSE$ | 0.168*** | (3.79) | | | 0.167*** | (6.89) |
| $RURAL$ | -0.447 | (-0.33) | | | -0.388 | (-0.21) |
| $HERF$ | | | -2.635** | (-0.66) | | |
| $POPCL_2$ | | | -0.854* | (-1.74) | | |
| $POPCL_3$ | | | -1.080 | (-1.92) | | |
| $POPCL_4$ | | | -1.941*** | (-2.74) | | |
| $ALTMAX$ | | | 0.005*** | (4.39) | | |
| $CITYPROX$ | | | -0.795* | (-1.72) | | |
| $LEFTWING$ | | | 1.050 | (2.07) | | |
| $W\_POP$ | | | 0.000 | (1.16) | | |
| $W\_EDUCAT$ | | | -0.019* | (-1.65) | | |
| $W\_POLICE$ | | | -0.031 | (-1.27) | | |
| $W\_CULTUR$ | | | -0.083** | (-1.98) | | |
| $W\_SOCIAL$ | | | -0.003 | (-0.31) | | |
| $W\_ROAD$ | | | 0.043*** | (3.34) | | |
| $UC\_KM30$ | | | 0.056* | (0.91) | | |
| $R^2$ | 0.68 | | | | | |
| $\lambda$ | | | -0.653 | (-0.43) | | |
| $Obs.$ | 246 | | 246 | | 246 | |

Table 5: **The impact of voluntary and mandatory LCP on local council performance. Revenue Autonomy.**

| DEP. VAR. | TREATMENT EFFECT | | | |
| | (I stage) $LCP\_UC$ | | (II stage) $REV\_AUT$ | |
| | Coeff. | t-ratio | Coeff. | t-ratio |
| | Column I | Column II | Column III | Column IV |
| $LCP\_UC$ | | | 4.049* | (1.90) |
| $LCP\_CM$ | | | -2.169* | (-1.63) |
| $POP$ | | | -0.000 | (-0.96) |
| $IRPEF$ | | | 0.003*** | (5.38) |
| $GRANTS$ | | | -0.074*** | (-11.53) |
| $HOUSEDENS$ | | | 0.022*** | (3.70) |
| $LANDUSE$ | | | 0.180*** | (6.21) |
| $RURAL$ | | | -0.894 | (-0.48) |
| $HERF$ | 6.987** | (2.07) | | |
| $POPCL_2$ | 0.237 | (0.57) | | |
| $POPCL_3$ | -0.730 | (-1.34) | | |
| $POPCL_4$ | -1.306* | (-1.68) | | |
| $ALTMAX$ | -0.002* | (-1.83) | | |
| $CITYPROX$ | -0.302 | (-0.53) | | |
| $LEFTWING$ | 1.050 | (2.07) | | |
| $W\_POP$ | 0.000 | (0.33) | | |
| $W\_EDUCAT$ | 0.062*** | (4.25) | | |
| $W\_POLICE$ | 0.069** | (2.43) | | |
| $W\_CULTUR$ | -0.093** | (-2.52) | | |
| $W\_SOCIAL$ | -0.010 | (-1.05) | | |
| $W\_ROAD$ | -0.066*** | (-3.87) | | |
| $UC\_KM30$ | 0.004 | (0.12) | | |
| $R^2$ | | | | |
| $\lambda$ | -3.780** | (-2.26) | | |
| $Obs.$ | 246 | | 246 | |

(namely, the term $\lambda$ in column III is not significant), the impact of compulsory LCP can be analyzed according to OLS results in column I. $LCP\_CM$ has a

Table 6: **The impact of mandatory LCP on local council performance. Public Expenditure.**

| DEP. VAR. | OLS | | TREATMENT EFFECT | | | |
| | | | (I stage) | | (II stage) | |
| | $EXPEND$ | | $LCP\_CM$ | | $EXPEND$ | |
| | Coeff. | t-ratio | Coeff. | t-ratio | Coeff. | t-ratio |
| | Column I | Column II | Column III | Column IV | Column V | Column VI |
| $LCP\_CM$ | -2.353* | (-1.68) | | | -46.162 | (-0.83) |
| $POP$ | -0.003* | (-1.82) | | | -0.003 | (-1.28) |
| $IRPEF$ | 0.109** | (2.54) | | | 0.109*** | (5.32) |
| $GRANTS$ | 1.741** | (2.07) | | | 1.739*** | (7.33) |
| $HOUSEDENS$ | 0.581*** | (3.00) | | | 0.590*** | (2.68) |
| $LANDUSE$ | 4.349*** | (2.96) | | | 4.324*** | (4.10) |
| $RURAL$ | 7.289 | (0.16) | | | 8.550 | (0.12) |
| $HERF$ | | | -2.635** | (-0.66) | | |
| $POPCL_2$ | | | -0.854* | (-1.74) | | |
| $POPCL_3$ | | | -1.080 | (-1.92) | | |
| $POPCL_4$ | | | -1.941*** | (-2.74) | | |
| $ALTMAX$ | | | 0.005*** | (4.39) | | |
| $CITYPROX$ | | | -0.795* | (-1.72) | | |
| $LEFTWING$ | | | 1.050 | (2.07) | | |
| $W\_POP$ | | | 0.000 | (1.16) | | |
| $W\_EDUCAT$ | | | -0.019* | (-1.65) | | |
| $W\_POLICE$ | | | -0.031 | (-1.27) | | |
| $W\_CULTUR$ | | | -0.083** | (-1.98) | | |
| $W\_SOCIAL$ | | | -0.003 | (-0.31) | | |
| $W\_ROAD$ | | | 0.043*** | (3.34) | | |
| $UC\_KM30$ | | | 0.056* | (0.91) | | |
| $R^2$ | 0.51 | | | | | |
| $\lambda$ | | | -13.956 | (-0.25) | | |
| $Obs.$ | 246 | | 246 | | 246 | |

negative and significant effect on revenue autonomy. As to the remaining control variable, their estimated effect does not differ significantly from results already reported in table 2, column I.

Augmenting this model with the variable $LCP\_UC$, it is possible to compare the impact of voluntary and mandatory LCP on revenue autonomy. Results of this estimation procedure is reported in table 5. Column I-III present the estimation, respectively, of the voluntary LCP selection equation and the revenue autonomy model which allow to control for the endogeneity of $LCP\_UC$ while $LCP\_CM$ is taken as exogenous according to results presented in table 4 . Focusing on the second step of the estimation strategy (since the selection probit equation is the same as before) reported in column III and on our variables of interest, it clearly emerges that voluntary and mandatory LCP play an opposite effect on revenue autonomy. The coefficient of $LCP\_UC$ is positive while the coefficient of $LCP\_UC$ is negative and both are significant at conventional confidence level. Moreover, it is confirmed the need to correct for the endogeneity of voluntary LCP.

The analysis of the effect of mandatory LCP on local council performance can be completed by examining the correlation between CM and local council expenditure. Table 6 reports OLS and selection equation and expenditure model of the treatment model estimation procedure, respectively, in column I-III-V. Results show that there is no evidence of endogeneity of $LCP\_CM$ thus we focus on OLS estimates in column I. It emerges that the coefficient of $LCP\_CM$ is negative but not statistically significant. The relative effect of $LCP\_UC$ and $LCP\_CM$ on local public expenditure can be evaluated running the OLS regression of the column I model augmented by the $LCP\_UC$ term since both $LCP\_UC$ and $LCP\_CM$ can be assumed exogenous (see results in table 3 and

Table 7: **The impact of voluntary and mandatory LCP on local council performance. Public Expenditure.**

| DEP. VAR. | OLS $EXPEND$ | |
|---|---|---|
| | Coeff. | t-ratio |
| | Column I | Column II |
| $LCP\_UC$ | -26.571 | (-0.63) |
| $LCP\_CM$ | -58.906 | (-1.14) |
| $POP$ | -0.003* | (-1.81) |
| $IRPEF$ | 0.109** | (2.52) |
| $GRANTS$ | 1.757** | (2.04) |
| $HOUSEDENS$ | 0.576*** | (3.06) |
| $LANDUSE$ | 4.272*** | (2.83) |
| $RURAL$ | 7.329 | (0.16) |
| $R^2$ | 0.51 | |
| $Obs.$ | 246 | |

6)[11]. Results are reported in table 7. It can be observed that both type of LCP, namely voluntary and mandatory LCP, do not impact on total local public expenditure.

# 8   Conclusion

Decentralization reforms were a frequent phenomenon over the last few decades. The efficiency of such restructuring plans are challenged by the difficulty of operationalizing the concept of optimal size jurisdiction for minimizing the discrepancy between the economic and the political scope of a local government. Local council partnerships have been promoted as an effective instruments to reorganize government at the lower tier of the institutional system in order to improve horizontal decentralization design. These institutional arrangements exhibit several features of the FOCJ introduced by Frey and Eichenberger (1996). Accordingly, if they work as FOCJ are expected to do, it can be assumed that local council partnerships can help to overcome potential gaps with regard to the fiscal equivalence theorem. This paper tried to assess empirically the effectiveness of local council partnerships. By exploiting their market oriented nature, local council partnerships should be able to improve local government revenue autonomy. At the same time, being entities which should self fund their activity, they should not generate an increase in government expenditure. Additionally, we consider if local council partnerships formed on a voluntary basis are more effective than mandatory ones. Our estimates show that local council partnerships can improve local council performance since joining a local council partnership allows the jurisdiction to raise its own revenue autonomy without pressure on expenditure. However, some caveat must apply. Estimates demonstrate that solely voluntary local council partnerships enhances local council performance. On the contrary, mandatory local council partnerships show to be not effective to improve local council performance: they reduces revenue autonomy even if they do not impact on local council expenditure. Summing up, voluntary local council partnerships prove to be helpful to improve horizontal decentralization.

---

[11]As a further control, it has been estimated a treatment effect model of expenditure, which includes $LCP\_CM$ among exogenous regressors, controlling for potential endogeneity of $LCP\_UC$ and, again, the $\lambda$ coefficient has not detected miss-specification.

## Acknoledgements

## References

T. Besley and A. Case. Incumbent behavior: Vote-seeking, tax-setting, and yardstick competition. *American Economic Review*, 85(1):25–45, 1995.

N. Bosch and J. Suarez. Structural reform in Spain. In B. Dollery and L. Robotti, editors, *The theory and practise of local government reform*, pages 217–233. Cheltenham: Edward Elgar, 2008.

J. M. Buchanan. An economic theory of clubs. *Economica*, 32(125):1–14, 1965.

E. Caperchione and E. Zuffada. The inter-related roles of the regional and local government in developing local partnerships in Italy. SDA Bocconi Research Division WP 03-94, SDA Bocconi, 2003.

A. C. Case, J. Hines, and H. Rosen. Budget spill-over and fiscal policy interdependence. Evidence from the States. *Journal of Public Economics*, 52:1–14, 1993.

A. Casella and B. Frey. Federalism and clubs. Towards an economic theory of overlapping political jurisdiction. *European Economic Review*, 36:639–646, 1992.

B. Dollery and L. Robotti. *The theory and practise of local government reform*. Edward Elgar, Cheltenham, 2008.

B. Ermini and F. Fiorillo. Le unioni di comuni tra principio di adeguatezza e esigenze di finanziamento. In ISAE, IRES, IRPET, and IRER, editors, *La finanza locale in Italia. Rapporto 2007*, pages 97–123. Milano: Franco Angeli, 2008a.

B. Ermini and F. Fiorillo. Common themes on structural reform. In B. Dollery and L. Robotti, editors, *The theory and practise of local government reform*, pages 237–255. Cheltenham: Edward Elgar, 2008b.

B. Ermini and S. Salvucci. L'associazionismo intercomunale. L' esperienza delle unioni di comuni nelle Marche. *Economia Pubblica*, 9(3-4):111–138, 2006.

B. Ermini and S. Salvucci. Structural reform in Italy. In B. Dollery and L. Robotti, editors, *The theory and practise of local government reform*, pages 173–198. Cheltenham: Edward Elgar, 2008.

B. Ermini and S. Salvucci. The efficiency of intermunicipal cooperation: Police and local council partnerships. An application of DEA. *Italian Journal of Regional Science*, forthcoming, 2009.

B. Ermini and R. Santolini. Local expenditure interaction in Italian municipalities. Do local council partnerships make a difference? *Local Government Studies*, forthcoming, 2009.

B. Frey and R. Eichenberger. FOCJ: Competitive governments for europe. *International Review of Law and Economics*, 16:91–114, 1996.

W. Green. *Econometric Analysis*. 5th ed. Prentice-Hall, Upper Saddle River, NJ, 2003.

J. Heckman. Dummy endogenous variables in a simultaneous equations system. *Econometrica*, 46(4):931–959, 1978.

J. Heckman. Sample selection bias as a specification error. *Econometrica*, 47 (1):153–162, 1979.

R. Hulst and A. Van Montfort. *Inter-Municipal Cooperation in Europe*. Springer, Dordrecht, 2007.

ISTAT. Bilanci consuntivi delle amministrazioni comunali, 2005a. Istituto Nazionale di Statistica.

ISTAT. Bilanci consuntivi delle comunitá montane, 2005b. Istituto Nazionale di Statistica.

M. J. Keen. Vertical tax externalities in the theory of fiscal federalism. *IMF Staff Papers*, 45(3):454–485, 1998.

M. J. Keen and C. Kotsogiannis. Does federalism lead to excessively high taxes? *American Economic Review*, 92(1):363–370, 2002.

S. Kessing, K. A. Konrad, and C. Kotsogiannis. Foreign direct investment and the dark side of decentralization. *Economic Policy*, 22(1):5–70, 2007.

B. Lockwood. Fiscal decentralization: A political economy perspective. In E. Ahmad and G. Brosio, editors, *Handbook of Fiscal Federalism*, pages 33–60. New York: Edward Elgar, 2006.

S. Lorenzini and G. Maltinti. Un' analisi territoriale della finanza locale. In ISAE, IRES, IRPET, and IRER, editors, *La finanza locale in Italia. Rapporto 2007*, pages 41–74. Milano: Franco Angeli, 2008.

G. S. Maddala. *Limited-Dependent and Qualitative Variables in Econometrics*. Cambridge University Press, New York, 1983.

W. Oates. An essay on fiscal federalism. *Journal of Economic Literature*, 37: 1120–1149, 1999.

W. E. Oates. Toward a second-generation theory of fiscal federalism. *International Tax and Public Finance*, 12:349–373, 2005.

W. S. Oates. *Fiscal Federalism*. Harcourt Brace Jovanovich Inc., New York, 1972.

OECD. Fiscal decentralization in EU applicant states and selected EU member states, 2002a. OECD Centre for tax policies and amministration, Paris.

OECD. Fiscal design surveys across levels of government, 2002b. OECD Tax Policy Studies n.7, Paris.

M. Olson. Fiscal equivalence: The division of responsibilities among different levels of government. *American Economic Review*, 59:479–487, 1969.

A. Quagliani. Perché l'unione? La norma, la prassi, le questioni aperte. In L. Robotti and F. Fiorillo, editors, *L' Unione di Comuni. Teoria economica ed esperienze concrete*, pages 27–38. Milano: Franco Angeli, 2008.

M. Reid. Structural reform in Spain. In B. Dollery and L. Robotti, editors, *The theory and practise of local government reform*. Cheltenham: Edward Elgar, 2008.

P. Salmon. Decentralization as an incentive scheme. *Oxford Review of Economic Policy*, 3(2):24–43, 1987.

C. A. Schaltegger and S. Zemp. Spatial spillovers in metropolitan areas: Evidence from Swiss communes. Crema working paper series, Center for Research in Economics, Management and the Arts (CREMA), 2003.

A. Shah. *Local governance in developing countries*. The World Bank, Washington D.C., 2006.

A. Solé Ollé. Expenditure spill-overs and fiscal interactions:Empirical evidence from local governments in Spain. *Journal of Urban Economics*, 59(1):32–53, 2006.

D. Sutherland, R. Price, and I. Joumard. Fiscal rules for sub-central governments: Design and impact. OECD Economics Department Working Papers 465, OECD, Paris, 2005.

C. Tiebout. A pure theory of local public expenditures. *Journal of Political Economy*, 64(2):416–424, 1956.

F. Vella and M. Verbeek. Estimating and interpreting models with endogenous treatment effects. *Journal of Business and Economic Statistics*, 17:473–478, 1999.

E. Zuffada. La collaborazione interistituzionale per il miglioramento dell' economicitá dei comuni di minori dimensioni. *Azienda Pubblica*, 3:1–14, 2002.