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THE DRIVERS OF INTERREGIONAL POLICY CHOICES:
EVIDENCE FROM ITALY

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ABSTRACT

Theoretical developments in public choice analyses of intergovernmental transfers identify several factors previously ignored in the empirical literature and emphasize the importance of institutional details. Combined, these two developments create a degrees of freedom problem and make cross country samples less meaningful. This paper circumvents these problems by examining an Italian regional panel that minimizes the set of institutional conditioning factors and is large enough to examine a comprehensive set of explanatory variables. The estimates confirm the relevance of most political determinants and of standard economic and socio-demographic determinants of interregional redistribution. Differences in type of expenditures and intergovernmental relations are also considered.

JEL classification:

Keywords: Intergovernmental transfers; political determinants.

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1. Introduction

There seems to be a difficult interplay between theory and empirics in the positive analysis of transfers from the central government to local jurisdictions. Recent theoretical developments have identified a great variety of new factors that help to explain why, when, how much and to whom central governments transfer resources to lower tiered ones: bailout expectations (Rodden, 2005; Bordignon and Turati, 2009), alignment effects (Dasgupta et al. 2001), flypaper effects (Hines and Thaler, 1995), "too big to fail" effects (Wildasin 1997), asymmetries in representation of local interests in national legislatures (Porto and Sanguinetti, 2001; Pitlik *et al.*, 2001), common pool situations (Ostrom, 1990; Persson and Tabellini, 2000), soft budget constraints of various kinds (Quian and Roland, 1998; Muskin, 1999; Goodspeed, 2002). These "new" determinants must be added to the already long list of "traditional" political variables, chiefly electoral incentives and interest group activities (Grossman, 1994; Worthington and Dollery, 1998), as well as to the standard indicators of local development, of demand and costs of public services, suggested by the welfare economics literature (Gramlich, 1977; Oates, 1972, 1999).

These theoretical innovations create two problems for the empirical analyst. First, the mounting number of covariates that econometric models must include to avoid the risks of omitted variables and misspecifications[2] require large data sets to secure enough degrees of freedom. Second, many of these new theoretical formulations suggest that "the devil lies in the institutional detail", such as the actual legal rules (and changes thereof) that in each country regulate the distribution of grants to the various subnational jurisdictions (Arachi et al., 2008; Gerdtham and Jönsson, 2000; Bordignon and Turati, 2009). Hence empirical

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[2] Compare the specifications of the empirical models of Grossman (1994) with those of Bordignon and Turati (2009) or Gonçalves Veiga and Pinho (2007).

models should consider more institutional controls to properly represent intergovernmental policy choices (Beck and Katz, 1995).

The usual solution to the first problem is the employment of panel data. Yet this approach, especially when the cross section dimension includes a variety of countries in the sample, makes it even more difficult to control for all the institutional features that characterize the various ways in which different countries organize their intergovernmental transfer schemes. In other words, solving the first problem makes it harder to address the second; and vice versa.

There are two possible way out of this trade off. One is the development of comprehensive theories that consider all the various determinants of intergovernmental transfer policies and their interaction. Just like in the literature on the political economy of budget deficits, where a series of institutionally comprehensive models have shown the predominance of electoral systems over other institutional differences in determining fiscal outcomes (Persson and Tabellini, 2000), such theoretical constructs in the field of intergovernmental transfers might narrow down the set of relevant institutional controls to a number manageable in empirical analyses. Given the current lack of such theoretical developments, an alternative strategy is finding a testing ground that requires a minimum of institutional controls and is, at the same time, so rich in observations to enable the inclusion of the various explanatory variables indicated by the theoretical literature.

This paper adopts the second strategy, choosing data about transfers from the Italian central government to the 20 regions as the testing ground. The focus on one country avoids problems related with cross country differences in institutional details; nor have Italian transfer programs gone through significant changes in the period 1996-2006 for which coherent data are available. The Italian sample thus provides 210 observations to be exploited for the examination of a large variety of political, economic and socio-demographic

determinants of intergovernmental grants. Finally, the serious and persistent differences in levels of development across Italian regions make interregional grants an important policy program, both in terms of the magnitude of the spending outlays and of political relevance (Arachi et al. 2008; Ambrosiano et al., 2009).

The rest of the paper is organized as follows. Section 2 reviews the literature. Section 3 illustrates the main features of the Italian institutional framework, with particular reference to the system of intergovernmental fiscal relations. The fourth section describes the empirical model and the variables included. The empirical estimates are discussed in the fifth section. Finally, the sixth section presents the main conclusions of the analysis.

2. *Literature review*

Traditional normative theories of fiscal federalism postulate that efficiency and equity reasons (should) drive intergovernmental transfers (Oates, 1972, 1999; Gramlich, 1977). In particular, the distribution of grants should be aimed at supporting local governments in the provision of differentiated public goods to heterogeneous populations, while ensuring an even distribution of basic services across all jurisdictions. Fiscal equalization across jurisdictions via grants-in-aid should also be targeted to improve the fiscal capacity of the less developed jurisdictions. Another rationale is provided by the literature on the "race to the bottom", which focuses on the inefficiencies created by local taxation due to interjurisdictional tax competition and mobility that creates a role for central taxation and regional distribution via grants-in-aid (Inman and Rubinfeld, 1996; Oates, 1999). Finally, grants should be used to reduce benefit or costs spillovers between jurisdictions. Empirical evidence, however, shows that actual interregional transfer policies significantly depart from these normative guidelines and that the explanatory power of these models is quite limited: That because central decisions about the regional distribution of resources actually take place within a political

economy context where national legislators are elected from regional constituencies, and where political bargaining within the legislature and between the central government and the local jurisdictions determine the outcomes (Rodden and Eskelund, 2003; Quian and Roland, 1998; Padovano, 2007).

Wright (1974) was probably the first to provide evidence that political factors played a significant role in determining the allocation of federal funds across states in the United States; he found a strong positive correlation between New Deal spending per capita and electoral votes across states. Using more recent data and exploiting the evidence more systematically, Inman (1988) and Inman and Fitts (1992) argued that the pattern of distribution of central grants to the U.S. states does not seem consistent with policies designed to correct inefficiencies of a decentralized tax system, but rather reflects decisions taken by a universalistic central legislature. Yet, this new evidence still lacked a theory to guide empirical research. Grossman (1994) formalized the first public choice model of the allocation of grants by the central government to lower tiered ones, based on the idea that national politicians distribute grants to secure the "political capital" of local politicians and interest groups. In the empirical test related to the distribution of U.S. federal grants, Grossman (1994) found that empirical measures of party similarity between the national congress and each state legislature, chiefly the size of the majority of the affiliated party in the state legislature, as well as the size of the state bureaucracy and union membership, are all positively correlated with per capita grants. Worthington and Dollery (1998), Feld and Schaltegger (2005) and Gonçalves Veiga and Pinho (2007) find evidence consistent with Grossman-style stories on Australian, Swiss and Portuguese data, respectively. Interestingly, Gonçalves Veiga and Pinho (2007) remark that this pattern of distribution becomes more evident as Portugal moves away from the years of the dictatorship and becomes a "mature democracy". Dasgupta et al. (2001) refined a component of the local political capital concept,

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by formulating the so-called "alignment effect", i.e., the prediction that local governments ruled by a majority similar to that of the central one should receive more grants. They find strong support for the alignment effect on U.S. and Indian data; so do Bordignon and Turati (2009) on data about health care transfers from the central to the regional governments in Italy. Aside from party relationship, also institutional asymmetries in the representation of local interests before the central legislature seem to be an important determinant of the allocation of grants: using data from Argentine provinces, Porto and Sanguinetti (2001) find that provinces with greater political representation per capita in the national legislature receive larger shares of central transfers compared to more populous and less represented states. Pitlik *et al.* (2001) and Schneider *et al.* (2001) provide similar evidence in the context of German interstate redistribution policy. A similar idea is the application to intergovernmental grants of the "too big to fail" argument (Wildasin, 1997), originally developed in the context of industrial organization to explain government support of private corporations in distress. Two predictions stem from this model; first, larger jurisdictions should be more likely to increase expenditure than smaller ones, since central government cannot afford to let a large jurisdiction "fail", because of the large negative externality that this would create on the whole country. Second, central governments are more likely to bail out, i.e., direct more grants, towards jurisdictions with larger population and/or per capita income. To reinforce the inefficiency implications of this argument, Persson and Tabellini (2000) argue that, when these resources are drawn from common pool resources, local voters do not have an incentive to punish a local politician who overspend (or reward one that balances the budget); bailing out is actually advantageous for residents in a given region, because the benefits of higher expenditure are concentrated in their area, while the costs are spread across the whole country[3]. Actual bailing out operations presuppose that local

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[3] In a Swiss context, however, characterized by the use of referendum on

governments operate under soft budget constraints and that the central government is rather weak. Both the softness of the budget constraint and the weakness of the central government are matters of degree; this creates a "grey area" of discretion where the central and the local governments are engaged in a strategic interaction about what type of move each should expect from the other. Bordignon and Turati (2009) provide a model of this expectation game and test it on Italian health care financing and show that bailing out expectations are a significant component of the distribution of health care transfers across regions. Padovano (2009) extends these findings to all types of interregional transfers in Italy, while Rodden (2005) reaches similar conclusions using German data.

An indirect, but by any means not less important, prove of the relevance of political factors in the allocation of grants is that several federations around the world have in fact attempted to create politically independent constitutional bodies that are responsible for determining federal transfers to subnational jurisdictions. Khemani (2003) verifies whether constitutional rules make a difference in curbing this political influence by contrasting the impact of political variables on two types of intergovernmental transfers in the Indian federation. The pattern of evidence shows that the transfer programs determined by political agents usually provide greater resources to state governments that are politically affiliated with the national ruling party and are important in maximizing the ruling party's representation in the national legislature. On the other hand, the political effect of the transfers decided by an independent agency with constitutional authority is strikingly contrarian, as greater resources are allotted to unaffiliated state governments. Khemani thus concludes that constitutional rules indeed restrict the extent to which partisan politics can affect the resources available to subnational governments.

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intergovernmental fiscal transfers, Feld and Schaltegger (2005) find that voters act as hard budget constraint, reducing the externalization of the costs of local spending projects.

These constitutional rules must be voted, however; the application of probabilistic voting models to describe the design of interregional transfer schemes, possibly also at the constitutional level, demonstrates that productive inefficient transfer schemes may indeed represent political equilibria, as they can be supported by a coalition of low income, welfare dependent individuals in poorer jurisdictions, who want to avoid the costs of migration, and of high income individuals in richer jurisdictions, who are willing to finance grants in order to keep the rate of return on their productive factors (chiefly capital) higher. In other words, grants are a political equilibrium because, by distorting productive efficiency, they generate politically expedient fluxes of redistribution. These distortions are greater when grants are distributed by the central government, which has access to the national tax base (Padovano 2007; Perotti, 2001). As for the distribution of grants, these models predict that they should be directed towards jurisdictions with lower level than average economic activity, not to reduce differences in the level of development (the standard welfare economics argument), rather to maintain them. Padovano (2007) uses this positive public choice-political economy theoretical construction to explain the slower convergence of per capita regional incomes in a highly centralized country such as Italy compared to a highly decentralized one, the U.S. These analyses cast doubts on the efficiency properties (and economic usefulness) of transfer schemes aimed at reducing income gaps between regions.

3. The Italian institutional framework

Before plunging into the empirical analysis of the Italian interregional transfer policy, it is useful to present a few stylized facts about the socio-economic conditions of the Italian regions and the organization of the country's public sector. Since its unification in 1861, Italy has been characterized by stark and persistent structural and economic disparities between the

regions, that stand at the origin of the interregional transfer policy[4] and which have shaped the vertical organization of the Italian government. The traditional strong centralization of the Italian public finances is in fact grounded on the idea that the central government is better positioned to orchestrate the fluxes of redistribution needed to reduce the levels of economic development among the regions (Brosio et. al. 2003). Notwithstanding the decentralization reforms of the 1990s, Italy is still a highly centralized country by international standards (OECD, 2005).

Table 1 present some of the main features of these regional disparities as they are today. The Italian regions differ widely in surface area (a relevant feature for economies of scale in public production), in population density and age structure: the population is substantially younger in the South than in the North, with obvious impacts on healthcare and pension expenditures. Moving from the northern to the southern regions, the probability for an individual of being poor increases four times and per-capita GDP is cut in half, with the inevitable impact on fiscal capacity. Recent analyses by the Bank of Italy confirm this result for average family income and wealth for the 1995-2000 time interval (Cannari and D'Alessio, 2003; Figure 1). This geographical dualism explains the particular emphasis on inter-regional redistribution in the Italian political debate. Sinn and Westermann (2001) have clearly shown that such disparities find no match in other European countries.

The vertical organization of the Italian public sector features three main tiers of government: central, regional (which includes the regions and the local health units[5]), and local (including provinces and municipalities), plus the nationwide social security system (pensions and unemployment insurance). There are 15 ordinary statute regions (*Regioni a Statuto Ordinario*, RSO), five special statute regions (*Regioni a Statuto Speciale*, RSS), 109

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[4] Witness the policy suggestions of the first essay on the topic, by the Italian public finance scholar Pantaleoni in 1891.

[5] The so-called ASL, *Aziende Sanitarie Locali*.

provinces, and more than 8100 municipalities ranging in size from some 30 inhabitants (Morterone in Lombardy) to more than 2,5 million (Rome). The most important "horizontal" institutional difference is between the RSO and the RSS. Geographical, cultural, and economic lead to the establishment, recognized at the Constitutional level, of five autonomous regions (Valle d'Aosta, Trentino Alto Adige and Friuli Venezia Giulia in the North; Sicily and Sardinia in the South) with special statutes. They have broader spending powers than the ordinary statute regions and correspondingly larger financial transfers from the central government (Brosio et al., 2003). The RSO, though foreseen by the Constitution, were implemented only in 1970. All sub-national governments enjoy significant autonomy in both expenditure and revenue, yet it is not easy to describe the specific assignment of expenditure responsibilities and taxing powers, because of the strong financial relations between the various tiers of government. Table 2 gives an overview of revenues, expenditures, and deficits of the general government and of its main components (central government, sub-national authorities and social security institutions) for 2002, a middle year in the sample period of the present analysis.

The Italian public sector is quite large by international standards: government total outlays were 50.1% of GDP in 2005. Gross of intergovernmental transfers, nearly half of both expenditures and revenues can be imputed to the central government, the rest being divided roughly equally between sub-national governments and social security institutions. Budgets are near balance for all government levels. This picture, however, changes dramatically when intergovernmental transfers are netted out (incidentally, this is where the tradition of centralism shows up). The expenditures of both sub-national governments and social security institutions greatly exceed their own revenues (by 6.5 and 3.5 percentage points of GDP, respectively), while the opposite holds for the central government. This means that the deficits of sub-national governments and social security institutions are essentially covered by

central government transfers; as a consequence, the fiscal deficit arises almost entirely at central level, resulting in vertical fiscal imbalances. Moreover, Italy has no explicit scheme of direct transfers between different jurisdictions at the same sub-national government level (regions, provinces or municipalities). Transfers from the centre thus serve to reduce also horizontal fiscal imbalances. Table 3 reports the composition of the financing of public expenditure (gross of transfers) by the various fiscal instruments (taxes, social security contributions, transfers, other revenues, deficit) for each level of government. Even after the massive decentralization process of the 1990s (Arachi and Zanardi, 2004), grants from other levels of government still provide a very substantial share of total revenues of sub-national governments and social security institutions. Table 3 shows also how limited is the dependence of local governments on the regions: the bulk of their transfer revenues come directly from the central government. While it would be an interesting and ample testing ground, the financial data about the 8100 Italian municipalities are still of poor quality. The analysis of intergovernmental transfer schemes will then focus on the relationships between the central government and the 20 regions.

The regions have the main responsibility of health care provision, plus some spending programs related with education, transport, social assistance and culture. In quantitative terms, health care expenditures represent more than 50% of all regional outlays in RSOs and almost 40% in RSSs, making for a national average around 50% (Turati, 2003). While health care provisions are decided at the regional level, funding is mandated by the central government. The Italian National Health Service (*Servizio Sanitario Nazionale*, SSN) was instituted in 1979 and, until 1998, expenditures were decided by the regional government and deficits were covered through grants by the central government, with the predictable endemic problems of soft budget constraints. Following the political and economic turmoil of the beginning of the 90's, a number of reforms were implemented with the aim to harden the

local budget constraints and to improve accountability and responsibility of local governments. Regions in particular moved from being financed by tax revenue for only about 15% in 1990 to over 50% of their budget, as Figure 2 shows. Of course, these numbers have to be taken with care, as they mix up own taxes (where local governments can at least vary the rates) with local shares of central taxes (where autonomy is none). But the main jump in Figure 2 does coincide with the introduction of a major tax on value added (net of depreciations) raised at the firm's level, the IRAP (*Imposta Regionale sulle Attività Produttive*) entrusted to the regions and, until 2001, earmarked to finance health expenditures (since then regions can freely dispose of the revenues). The central government has also tried to progressively substitute transfers to the RSOs with a participation to the revenues from the value added tax (IVA, *Imposta sul Valore Aggiunto*), a process that should be completed in 2013. Both measures may be interpreted as an increase of the tax autonomy of the regional governments; yet it is always the central government that regulates the tax bases, the tax rates and the special provisions of the fiscal instruments attributed to the regions, whose powers to decide autonomously in fiscal matters are quite limited: in the case of the IRAP, for instance, all that a region can do is varying the rate by ±1%. Finally, since the year 2000 the distribution of grants to RSOs was explicitly restricted to purposes of income equalization, according to a specific formula that takes into consideration each region's per capita fiscal capacity and health care spending needs relative to the national average (Brosio, Maggi and Piperno, 2003). Although the implementation of this stricter regime is phased out in 13 years, already in 2002 and 2005 the central government was forced to accept derogations to the transfers foreseen by the formula. This strong resilience of discretionary power *vis à vis* rule based decisions, as well as the regional governments' revealed preference for bilateral bargaining over transfers with the central government with respect to being entrusted with

greater fiscal autonomy confirms the importance of examining the issue of interregional transfer choices from a positive outlook.

4. *Specification of the empirical model*

The literature review confirms that any positive analysis of the distribution of intergovernmental grants must entail the consideration of (several) institutional control factors, political variables, interest groups activities, as well as the standard welfare economics indicators of the demand for redistribution and of the costs of local public services. Examining a national data set thus seems the natural course of action, since the degree of institutional heterogeneity within a country is generally lower than that between countries. It is crucial, however, that, also within the country, the government structure and the transfer programs are stable over the sample period, to rule out changes of expectations in the strategic interactions among different government levels. This greatly simplifies the specification of the empirical model, because all variables can be considered as equilibrium values and can be entered directly.

The Italian sample meets these requirements from 1996 onwards. This rather recent starting date has two motivations. First, ISTAT and the Ministry of Economic Development started to collect data on regional transfers in a consistent method only since 1996 and the connection with the previous series on fiscal equalization is problematic. Furthermore, in 1995 i.e., a major institutional reform transformed the Italian regional governments from parliamentary to presidential ones in 1995[6]. This reform most likely changed the politics of

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[6] Some turbulence may be expected in the first two years of the sample, since 1997 marked the entrance of Italy in the Euro zone, with an ensuing relaxation of the external constraint and 1998 saw the enactment of the new main regional tax, the IRAP, which substituted a series of regional fiscal instruments, holding revenues more or less constant. Short of these two years, whose empirical relevance can be verified by excluding them from the sample, the dataset is "institutionally stable" and therefore free from expectation games (Bordignon and Turati, 2009). Moreover, as Ambrosiano et al. (2008) argue, the

interregional transfers. From 1996 onwards, instead, the only (constant) institutional difference to be taken into consideration is the demarcation between the 15 RSOs and the 5 RSSs. The overall sample thus goes from 1996 to 2005, totalling 210 observations per variable in the whole sample, 165 in that of the RSOs and 55 in that of the RSSs.

Following the literature, the dependent variable is specified as real transfers per capita from the central to the regional government, labelled *TR/POP*. The covariates are grouped in political, economic, health care and demographic variables. The model can be thus specified as follows:

$$TR_{it} / POP_{it} = f(\mathbf{POL}_{it}, \mathbf{ECO}_{it}, \mathbf{HEALTH}_{it}, \mathbf{DEM}_{it}) \tag{1}$$

where *i* denote the region and *t* the year.

Starting form the vector of political variables **POL**, the first determinant to consider is whether *t* is an electoral year, at the national and at the regional level. Both the Grossman (1994) model and the standard political budget cycle literature (Rogoff, 1990; Alesina, Roubini and Cohen, 1997) posit that transfers should be higher in national electoral years, as national politician distributes them to buy regional political capital, to maximize the probability of being re-elected. A dummy variable *ELN*, which takes the value of 1 in year *t* if national elections are held in the second half of that year, or 1 in year *t* and *t-1* elections fall in the first half of the year *t*, captures this political budget cycle effect. On the other hand, national politicians may invest in the creation of regional political capital, by pushing up grants in the years of regional elections. A dummy variable *ELR* denotes regional electoral years and is constructed in the same way as *ELN*. Another dummy variable, *SAME*, captures alignment effects *à la* Dasgupta et al. (2001); it takes the value of 1 in regions and years

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Constitutional reform of 2001, which should have established new fiscal relations among the different levels of government, is by and large still not applied. Its relevance for empirical analyses is therefore minor if not altogether null, as already found in the analysis of the evolution of fiscal residua in Italian regions (Arachi et al., 2008).

where the coalitions supporting the regional and national governments are the same and 0 otherwise. The pressure to buy votes in regional constituencies by means of transfers should be higher the more uncertain are the elections: thus, when the difference (*NDIF*) in votes in the previous national elections between the first and second party is smaller, the need for the incumbent central government to distribute grants is comparatively higher. The correlation between grants and electoral margins in regional elections is more complicated. On the one hand, probabilistic voting models *à la* Dixit and Londregan (1996) predict that central government directs grants in marginal or "swing" regions, which should make for a U-shaped relationship between regional vote differences (*RDIF*) and transfers. Alternatively, as Cox and McCubbins (1987) first showed, risk adverse politicians in the central government might use grants as a reward for electoral success of the local politicians and to consolidate their local constituencies. In this case grants should be directed towards regional governments able to secure larger majorities, which implies a positive linear coefficient on *RDIF*. According to the literature on partisan business cycle (Hibbs, 1992; Alesina, Roubini and Cohen, 1997) ideology may also play a role, inasmuch as right-wing regional government tend to spend less (or to balance the budget more), which reduces the need for transfers from the central government. A negative sign on the dummy signalling regions governed by a right wing coalition (*RIGHT*) is expected. Finally, as Grossman (1994) argues and finds in the American context, interest groups may also play a role in the distribution of grants across jurisdictions. Such an idea must, however, be adapted to the framework of Italian intergovernmental relations[7], where regional governments lobby the central government bureaucracy (chiefly the

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[7] Grossman (1994) measures the influence of state interest groups as the size of the state bureaucracy and union membership at the state level. There is not systematic information about the first indicator in Italy; as for the second, Italian trade unions operate nation wide and regional disparities in union membership are therefore meaningless.

Ministry of Economics and Finances) to obtain more funds or favourable regulations[8]. The specification of the proxy for lobbying is based on Olson's (1982) argument that the penetration of interest groups in government decisions is a function of time, because effective lobbying requires that regional politicians (often the governors themselves) establish connections with the central government politicians and top bureaucrats, build personal prestige and political power, all endeavours that require time. Hence, regional governments that are in charge since longer time (variable *YEARS*) are likely to be more effective at lobbying and to obtain more transfers.

The economic regressors **ECO** identify the correlation between the economic conditions of the region and the intergovernmental transfer policy of the central government. As the normative theory postulates, regions with a lower than average level of development should receive more grants to close the income gap. Padovano (2007) instead argues that income gaps lead to the approval of redistribution policies that benefit a (majority) coalition of welfare dependent individuals in low income regions and high income individuals in richer regions; the distorsive nature of these transfers tend to preserve the income gap. Although opposite in logic, both theories predict a positive correlation between regional state economic variables and transfers size. This empirical analysis does try, however, to verify which of the two arguments captures best the rationales behind the central government distribution of grants by using three state economic variables: two of them, the difference between region *i*'s per capita output growth and the national average (*DGGDP/POP*) and the regional unemployment level *U* (lagged one period), are closer to the theoretical variables of the Padovano (2007) political economy model, as they proxy the expected rate of return on capital and the size of the welfare dependent individuals in the region, i.e., the factors that

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[8] This lobbying process has also been institutionalized, with the establishment of the so-called "*Conferenza Stato-Regioni*" (Conference State-Regions), where issues of intergovernmental relations are often discussed and decision taken in a neo-corporatist governance process.

lead individuals to vote for distortive transfers. The third variable, income per capita (*GDP/POP*), is usually adopted to test the implication of the traditional welfare economics theories. *DGGDP/POP* and *GDP/POP* should be negatively correlated with transfers, while the expected sign on U_{t-1} is positive; if only *DGGDP/POP* and U_{t-1} turn out significant, the data lend more support to the political economy logic of the Padovano (2007). Finally, a positive sign on income per capita (*GDP/POP*) is also consistent with the "too big to fail" argument of Wildasin (1997), where the "bigness" of the region in measured in income terms.

In addition to these variables, the model includes several indicators specific health care (vector **HEALTH**), given its prominence among regional spending programs and its heavy reliance on transfers from the central government. The variables considered in this study are real per capita spending in health matters by region *i* in year *t*, (*HEXP*/*POP*), the average number of beds per 1000 inhabitants (*BEDS*) the number of private physicians in the region divided by the population (*PRPHY/POP*) and the number of physicians who work for public hospitals and for the local health units. Both *HEXP/POP* and *BEDS* capture scale economies in the provision of health care services, with an expected negative coefficient, and can be used interchangeably (Cellini et al., 2000). The expected sign on the other two variables is instead positive, but for different reasons. While *PRPHY/POP* describes the *demand* of individuals for medical services (individuals have to pay to have access to a private physician, often to cut down waiting times) the number of public physicians *PUPHY* represents the relationship between the *supply* of health services and grants. Public physicians act as Niskanen bureaucrats, or as an interest group, motivated to expand spending in health care as much as possible. To conclude the set of health care related variables, a linear trend has been included to detect the so-called "historical expenditure rule", i.e., the provision of many transfer programs to set the current outlays in favour of a region as a percentage increase of the previous outlays. The expected sign should be positive.

The demographic variables **DEM** considered are basically four. The first is the size of the regional population (*POP*) in thousands. A positive sign on it is consistent with Wildasin (1997), where the "bigness" of the region is measured in terms of size of the electorate; yet *POP* may also imply, more simply, that more individuals demand more services and thus more funding is required. A negative on *POP*, instead, is a sign of economies of scale. Finally, we include two measures of dependency ratio, *POP15*, the share of the regional population under 15 years of age, and *POP65*, the share of the elderly. As the regions are involved in both health care and education spending, it makes sense to consider both indicators separately. Furthermore, as shown in Table 1, Italian regions present considerable differences in terms of the age composition of the population.

Table 4 reports the descriptive statistics for the variables mentioned above.

5. *Econometric analysis*

The empirical analysis consists in the estimation of 8 variants of equation 1. Model 1 considers only the state economic variables, to verify whether and to what extent standard welfare economics theories explain the distribution of transfers. Model 2 adds the political, demographic and health care variables, to assess their incremental explanatory power. Model 3 and 4 restrict the sample to 15 RSOs and the 5 RSSs, respectively, to account for the main institutional differences between the Italian regions. In model 5 and 6 the dependent variable is disaggregated in transfers earmarked to current expenditures (*TRC*/*POP*) and transfers earmarked to capital expenditures (*TRK*/*POP*), always in real per capita terms. Model 7 tests the robustness of the estimates by eliminating the first three years from the sample, when possible change in expectations might have created turbulence in the estimates. Finally, model 8 compares the explanatory power of the variables germane to the Padovano (2007) political economy model with that of the welfare economics model. The specifications of the right

hand side of all models are basically the same, except for model 4, where the lower number of observations available for the RSSs imposes a more parsimonious use of covariates to preserve degrees of freedom. Model 4 thus excludes variables consistently not significant. Generalized Least Squares is the estimation technique adopted in all models, with White heteroskedasticity consistent covariance matrix, and correction of first-order serial correlation when detected.

Model 1 features two regional economic indicators only, lagged unemployment and the growth differentials, both highly significant and with the expected signs. In this baseline specification, regional GDP per capita did not turn out significant and was therefore excluded from the model. The intercept is positive and highly significant, as it captures other phenomena correlated with grants that are not made explicit in the model. The adjusted R^2 equals 0.49 and drops to 0.39 when the intercept is excluded (not reported). Clearly, there are some important variables missing in this first model.

Model 2 adds the political, demographic and health care variables to the economic ones. The sample includes all the 20 regions for the 1996-2006 time interval. The value of adjusted R^2 climbs to 0.72, a 33 points increase of explanatory power netting out the intercept, while the estimated coefficients on the state economic variables remain basically unchanged. Starting from the political variables, the estimated coefficients on both *ELN* and *ELR* are positive and significant, indicating, in line with Grossman (1994) and the literature on political budget cycles, that grants are distributed to secure local political capital in years of national and regional elections. Plausibly, the relative size of the coefficients (0.128 *vs.* 0.093) suggests that regional elections are more important than national ones for the distribution of grants. The positive and significant coefficients on *SAME* and *RDIF* show that transfers are directed more, *coeteris paribus*, to regions with friendly governments, and reward governors able to secure large majorities in the past elections. While the first result confirms the

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presence of alignment effects in Italian interregional transfer policy, already found in Bordignon and Turati (2009), the second is a new finding for Italian samples. The nonlinear specification of the relationship (the square of *RDIF* is negative and significant, suggesting an interior maximum) is consistent with the swing voter hypothesis as modelled in Dixit and Londregan (1996). "Marginal" regions, where the previous electoral results were decided by smaller margins receive more transfers from the central government, other things being equal. The linear positive correlation consistent with Cox and McCubbins (1986) finds no support in this sample; s we shall see, however, more is to be said on this particular issue. The negative sign on *NDIF* confirms the political nature of transfer decisions; when national governments are backed by stronger majorities they are more secure of their future political stance and are less pressed to buy votes by means of transfers. The positive and strongly significant sign on *YEARS* suggests that more durable regional governments, with greater political weight and better connections with the national government bureaucracy, obtain more grants. This in turn implies that the Italian transfer policy is not motivated only by electoral results, but features a significant lobbying component. Another new and strong result, which emerges in all models except for that on the RSSs sample, is the lower need of transfers by right wing regions (essentially, those where the governor belongs to the *Polo della Libertà*). This seems indeed a partisan effect, since the *Polo della Libertà* is strong both in rich regions of the North and in poor regions of the South (so the negative sign is not a spurious correlation due to the higher fiscal capacity of Northern regions), and has expressed the national government in 5 of the 11 years of the sample period (which excludes the negative effects of being not aligned with the central government).

Coming to the demographic controls, the estimated coefficients on *POP15* and *POP65* show that transfers are more sensitive to the relative size of the older than of the younger cohorts in the population. This is a plausible result, as regions spend half of their budgets on

health care. The overall size of the population is negative and significant, a usual sign of economies of scale in the supply of public services (when *POP* is omitted, the estimated coefficient on the variable *BED* often becomes negative) that overcome other contrasting phenomena, such as the "too big to fail" effect. Following Grossman (1994) the square of the population (*POPSQ*) has also been considered. The rationale for a cost of political capital quadratic in *POP* is that, for smaller regions, national politicians might be able to offer a higher price for political capital. Other things equal, political benefits from a marginal euro of increased grants to a small region are greater than a marginal euro of increased grants to a large one, since the benefits are concentrated on a smaller number of beneficiaries, which makes the per capita impact greater. Sizable increases in grants per capita to a small region do not represent a sizable increase in total outlays, because the number of beneficiaries is small. The resulting increased taxes imposed on residents of other regions are small since the cost is spread across all taxpayers. This advantage is, however, offset by the fact that the smaller is a region, the fewer representatives in Parliament to press its case and the less political capital it has to trade (Porto and Sanguinetti, 2001). Be that as it may, *POPSQ* was never found significant and thus not reported, in any sample. These results suggest the absence of diminishing political returns from subsidizing larger regions, possibly due to the fact that in Italy senators and deputies are elected from constituencies of roughly the same size. The positive estimated coefficient on the number of hospital beds per 1000 inhabitants *BED* and on the number of "public" doctors *PUPHY* are both consistent with an induced demand process, frequently found in health care quasi-markets (Gerdtham and Jönson, 2000), and/or with a budget maximizing bureaucratic behaviour *à la* Niskanen: larger medical bureaucracies are able to obtain more transfers. The other health care indicators did not turn out significant and were not reported. Finally, among the state economic variables, the size of the coefficients indicates that the lagged unemployment rate influences transfer decisions more

than regional growth differentials. This result is easy to rationalize from a public choice-political economy perspective, since, as a political issue, unemployment is likely to move more votes than growth figures. A fixed effect estimate of model 2 (not reported) generally confirms the results obtained in the model estimate with a common intercept. The only difference is a slight loss of statistical significance of the most serially correlated variables, such as years in office of the governor, the unemployment rate, and the electoral margin in the previous regional election.

Predictably, the stark institutional differences between RSOs and RSSs described in section 3 emerge in the econometric estimates as well. While the results for the RSOs sample (model 3) are by and large in line with the whole sample, model 4 clearly shows that transfer decisions in the RSSs follow a different logic. Beginning from the RSOs, the first noteworthy difference from the estimates of model 2 is that the electoral process is more relevant for grant distribution, while the lobbying process matters less. The political budget cycle is quite evident[9] and the alignment effect is twice as large in the RSOs as in the whole sample. On the contrary, there is a drop in the significance level of the lobbying variable *YEARS* to a *p*-value of 0.09. Interestingly, the estimates of model 4, relative to the RSSs, present the opposite outcome: the coefficient on *YEARS* is positive, significant and twice as large as in the whole sample, while there is no evidence of a political budget cycle for transfers, neither in national, nor in regional elections. These results have a common political explanation: RSOs feature the same party system as national politics, whereas in many RSSs local and often autonomous parties are predominant[10]. It is then no surprise that, when national elections take place,

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[9] The coefficient on *ELR* is not significant, possibly because national and regional elections in RSOs often coincide.

[10] In the 5 RSSs, the following parties held the majority, and expressed the governor, during the sample period of this analysis. In Val d'Aosta, *Union Valdôtaine*, an autonomous party. In Trentino Alto Adige it was first the "Democratic Alliance Coalition" (*Coalizione d'Intesa Democratica*), roughly a left wing coalition, yet different from the left wing national coalition *Ulivo*; then the *Sudtiroler Volkspartei*, another autonomous party, held the majority.

national politicians find it more rewarding to distribute grants to local constituencies of RSOs than of RSSs. To reinforce this argument, the alignment effect appears in the RSOs only. In the face of this, governors of RSSs must resort to lobbying, hence the gain in explanatory power of the variable *YEARS*. The differences in the party systems might explain the different forms of correlation between transfers and regional vote margins. The estimated coefficient on RDIF is linear and positive in the RSOs sample (the squared term never turned out significant) while it is non linear and much stronger in the RSSs sample, showing that the nonlinear relationship in the whole sample is driven by the 5 RSSs. These results suggest that risk adverse politicians in the central government might use grants as a reward for electoral success of the local politicians and to consolidate their local constituencies where the party system is the same, as in the RSOs; in the RSSs, instead, where the national parties have little or no control on the local ones, national politicians direct grant where the marginal expected return in terms of votes is higher. The sign and size of the intercepts in the fixed effect models are a third noteworthy outcome of the estimates of models 3 and 4. In the RSOs sample the intercepts are all positive, while in the RSSs sample they are all negative. The larger sums historically transferred to RSSs imply that there are higher fixed costs to obtain more resources (the negative sign on the *TREND* variable confirms this pattern), while there is less resistance to further subsidize RSOs. The sizes of the estimated fixed effects (reported in Table 6) are quite plausible; among the RSOs, the poorest regions in the South are on the top part of the rankings, with Lombardy and Veneto instead appear in the bottom part. The intercepts for the five RSSs regions differ wildly, since that for Sicily is almost 7 times larger in absolute value than that of the Val d'Aosta and some thrice those of Sardinia, Trentino and

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In Friuli Venezia Giulia the *Ulivo*, in line with the national left wing coalition. In Sardinia first the "Sardinian Progressists" (*Progressisti Sardi*), an autonomous party; then the Polo for Sardinia (*Polo per la Sardegna*) roughly in line with the right wing national coalition *Polo per la Libertà*, then "Sardinia Together" (*Sardegna Insieme*) an autonomous left wing coalition. Sicily, instead, has always been ruled by right wing coalitions.

Friuli. Sicily is in fact the region that receive more resources from the central government, and the largest negative intercept might imply that it is also the one for which there are more restraints to further increase transfers, especially because of the opposition of the Northern League. Interestingly, there is no evidence of economies of scale in the provision of public services in RSSs, as both the *POP* and the *BED* variables are positive and significant. Finally, in model 4 none of the economic state variables appear correlated with transfers, possibly because three regions out of 5 are among the richest and two among the poorest. The estimated coefficients on the other variables do not differ significantly from those found in model 2.

Model 5 and 6 verify whether there are systematic differences in the distribution of transfers earmarked for current expenditures and for capital outlays. It must be stated beforehand that, while such distinction exists *de jure* in the Italian legislation, *de facto* the two categories are somewhat blurred: teachers' salaries have been sometimes considered as capital expenditures; also in the field of public infrastructures it is often difficult to distinguish current outlays from proper investments in public capital, and different regions have adopted different criteria in this respect. Furthermore, limitations to earmarking in the national budget too make it difficult to distinguish these two types of grants. Hence the results of these two models and of model 2 are often similar. The estimates identify three systematic differences between current and capital transfers. In a few cases, however, capital transfers seem to follow a different logic from current and total transfers. First, the lack of statistical significance on *YEARS* suggests that lobbying is less relevant for investment expenditures than for ready-to-make redistribution. Large vote margins at the national level are instead positively correlated with the distribution of capital grants, again a plausible result since greater political strength enables the national government to concentrate also on long term projects. Interestingly, also the coefficient on the partisan variable *RIGHT* changes sign,

suggesting that right-wing parties are more interested in investing in infrastructure, indeed a stark political difference between the left and right wing coalitions in Italy. Finally, one would have expected that capital transfers and expenditures) would go where the share of the younger population is higher, and not the opposite; yet, as Table 1 indicates, youngsters are more highly concentrated in the Southern regions, which receive a higher share of grants for current and redistributive expenditures.

Model 7 excludes from the sample period the first three years, to verify whether the structural changes occurred then have modified the regional governments' expectations about future transfers. No evidence of expectations turbulence is found, as the estimates of model 7 are quite similar to those of model 2, where all 11 years are included. The only noticeable change is the loss of significance of the alignment effect *SAME* (which orderliness the 10% level, however), possibly due to the lower number of elections included in the sample.

Finally, model 8 tries to sort out which of the two interpretations of the relationship between transfers and state economic variable seems more plausible, the politico-economy one *à la* Padovano (2007) or the standard welfare economics normative explanation. As already said, this is a difficult issue to settle within the context of the present analysis; yet, controlling for all other conditioning phenomena, especially the political ones that are crucial in this case, both variables germane to the politico-economy explanation (lagged unemployment as a proxy of transfer dependent share of the population, and regional growth differential that approximate differences in the rate of return on capital) have the expected sign and are statistically significant. In turn, per capita GDP, which is commonly used to test the welfare economics view of transfers as equalizing devices, is statistically insignificant. This because some of the RSSs, such as Trentino, Friuli and Val d'Aosta are among the richest regions in Italy, and still receive large transfers from the national common pool. The

results on all other variables remain basically unchanged. All in all, the data seem to lend support to the Padovano (2007) model and not to the welfare economics ones.

6. Conclusions

This paper confirms the importance of political factors for the distribution of grants from the central to subnational governments also in the Italian context. Previous analyses that exploited Italian data were limited only to health care expenditures; this is the first study that examines total transfers, irrespective to the spending program they finance. Furthermore, the large number of observations allows considering a greater amount of political and institutional factors that have lead to new findings. Among them, quite interesting is the fact that the distribution of grants seem to respond to lobbying processes for the case of the RSSs, while it follows more political and electoral logics (such as alignment effects and the results of regional elections) in the case of RSOs. Uncertainty in national elections significantly increase the amount of grants distributed to the regions. Health care expenditures are affected not only by soft budget constraints, as already pointed out in the literature, but also by budget maximizing behaviour by those who operate within the system, mainly public physicians. Finally, transfers to equalize regional economic conditions seem to be better explained by political economic models than by those based on equity considerations.

Further research should try to distinguish between the spending and the funding of regional programs, in order to obtain more precise estimates of the relevance of political, economic and demographic factors for each of the two sides of the budget, without too much reliance on the correlation between grants and spending levels.

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Table 1. Socio-economic indicators for the Italian Regions, year 2002.

Regions	Statute type	Area Km^2	Population N	Population density (n/km^2)	Population by age		GDP (million €)	GDP per capita (thousands €)	Incidence of poverty) (%)	Employment rate (14-65, %)
					0-15 (%)	>65 (%)				
Piedmont	RSO	25.399	4330172	168	12,4	22,4	106200	24,9	7,1	64
Valle d'Aosta	RSS	3.263	122868	37	13,2	20,2	3374	27,6	6,8	66,3
Lombardy	RSO	23.861	9393092	388	13,6	19,4	255086	27,6	3,7	65,5
Trentino Alto Adige	RSS	13.607	974613	71	16,1	17,7	27284	28,3	5,1	67,1
Veneto	RSO	18.391	4699950	253	13,9	19,2	112520	24,2	4,5	64,6
Friuli Venezia Giulia	RSO	7.855	1204718	153	12	22,6	29683	24,8	7,2	63,1
Liguria	RSO	5.421	1592309	291	11,1	26,5	37855	24,0	5,2	61,1
Emilia Romagna	RSO	22.124	4151369	184	12,5	22,7	110659	27,1	2,5	68,4
Tuscany	RSO	22.997	3598269	155	12,1	23,2	84952	23,8	4,6	63,8
Umbria	RSO	8.456	858938	100	12,5	23,3	17458	20,6	7,3	61,6
Marche	RSO	9.694	1518780	155	13,1	22,6	32364	21,5	5,4	63,5
Lazio	RSO	17.207	5269972	303	13,9	19,1	130012	25,0	6,8	58,4
Abruzzo	RSO	10.798	1299272	119	13,4	21,3	23753	18,5	11,8	57,2
Molise	RSO	4.438	321953	72	13,4	22	5512	17,1	21,5	51,1
Campania	RSO	13.595	5788986	424	17,5	15,3	84597	14,7	27	44,1
Puglia	RSO	19.362	4068167	209	15,7	17,3	60057	14,9	19,4	44,4
Basilicata	RSO	9.992	596546	60	14,5	19,9	9261	15,5	24,5	49,3
Calabria	RSO	15.080	2009268	133	15,3	18,3	27752	13,8	23,3	44,6
Sicily	RSS	25.708	5013081	195	16,2	18	73475	14,7	30,8	44
Sardinia	RSS	24.090	1650052	68	12,9	17,6	27594	16,8	15,9	51,4
Italy		301.338	58462375	192	14,1	19,7	1259437	21,8	11,1	57,5

Source: ISTAT.

Figure 1. Regional distribution of per family income, 1995-2000 averages, 95% confidence intervals.
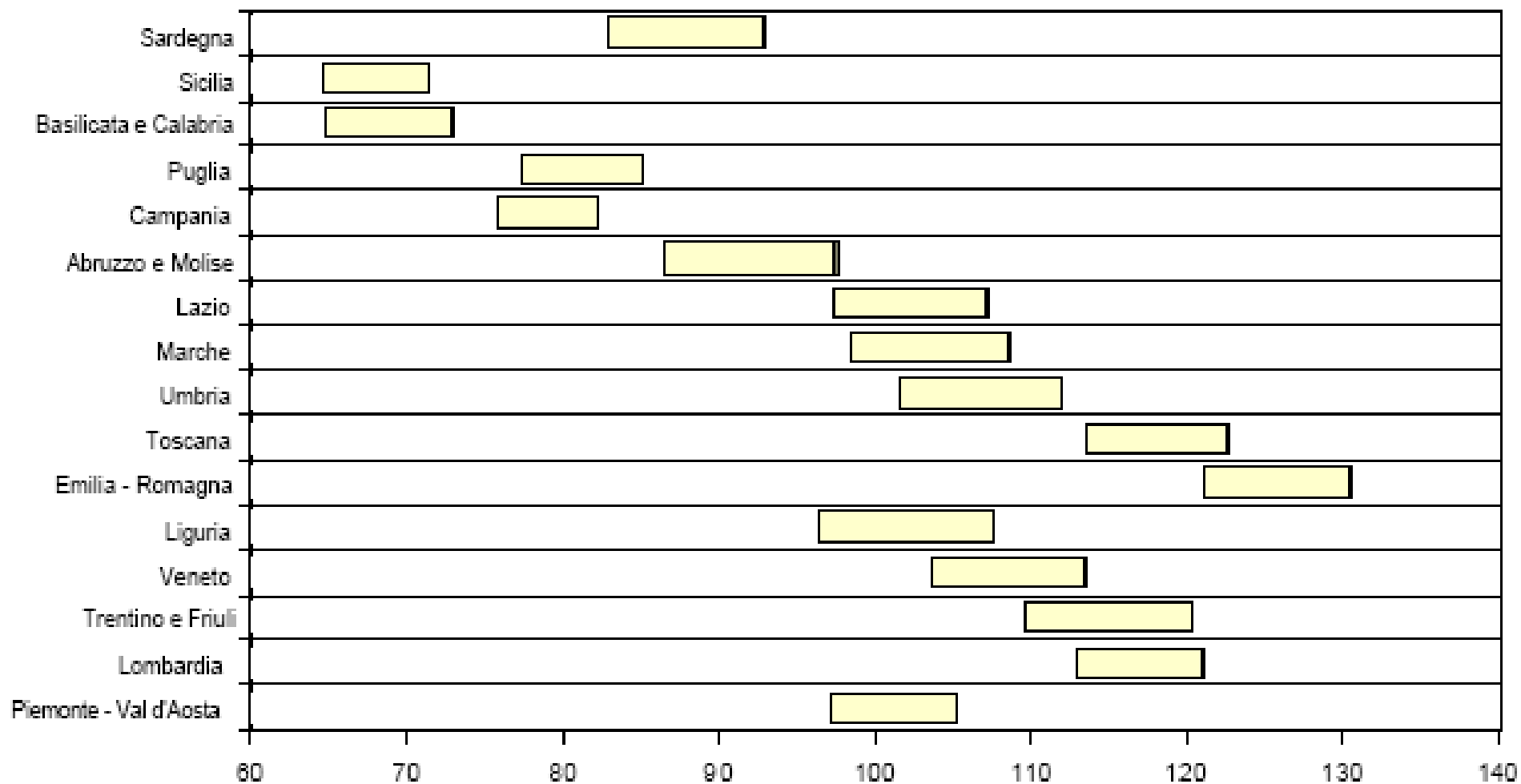
Source: Cannari and D'Alessio, (2003).

Table 2. General government financial indicators by government level, year 2002 (percentages of GDP).

|	General government	Central government		Sub-national governments		Social security institutions	
		Net of transfers from/to other public institutions	Net of transfers from/to other public institutions	Gross of transfers from/to other public institutions	Net of transfers from/to other public institutions	Gross of transfers from/to other public institutions	Net of transfers from/to other public institutions
Total expenditures	47,4	27,4	16,9	14,7	14,7	16,1	15,9
Total revenues	44,5	24,4	24,2	13,9	8,1	17,1	12,4
Deficit	-2,8	-3,0	7,3	-0,8	-6,5	0,9	-3,5

Source: ISTAT Conti ed aggregati economici delle Amministrazioni Pubbliche, SEC95 series.

Table 3. Financing and expenditures of government levels, year 2001 (percentages of total expenditures).

	Taxes	Social security contributions	Transfers from						Other Revenues	Deficit
			(1)	(2)	(3)	(4)	(5)	(6)		
Central government (1)	78,3	0,2	0,0	0,5	0,0	0,0	0,0	0,1	10,7	10,2
Social security institutions (2)	0,0	70,1	27,4	0,0	0,0	0,0	0,0	0,4	2,0	0,0
Regions (3)	40,9	0,0	53,0	0,0	0,0	0,0	0,2	0,3	4,9	0,8
Local Health Units (4)	0,0	0,0	0,0	0,0	90,2	0,0	0,2	0,3	4,9	0,8
Provinces and municipalities (5)0	28,5	0,0	21,9	0,0	13,2	0,0	0,0	1,3	33,5	1,6
Other public institutions (6)	3,6	0,2	52,0	4,7	12,6	0,0	3,4	5,1	18,6	-0,2
Duplications	0,0	0,0	57,7	1,2	33,5	0,0	0,6	1,6	5,5	-0,1
Public sector	58,3	23,6	24,2	0,5	14,0	0,0	0,2	0,7	11,5	6,6

Source: Ministero dell'Economia e delle Finanze (2001), Vol. III, Appendix SP1.

Figure 2. Fiscal autonomy of the Regions
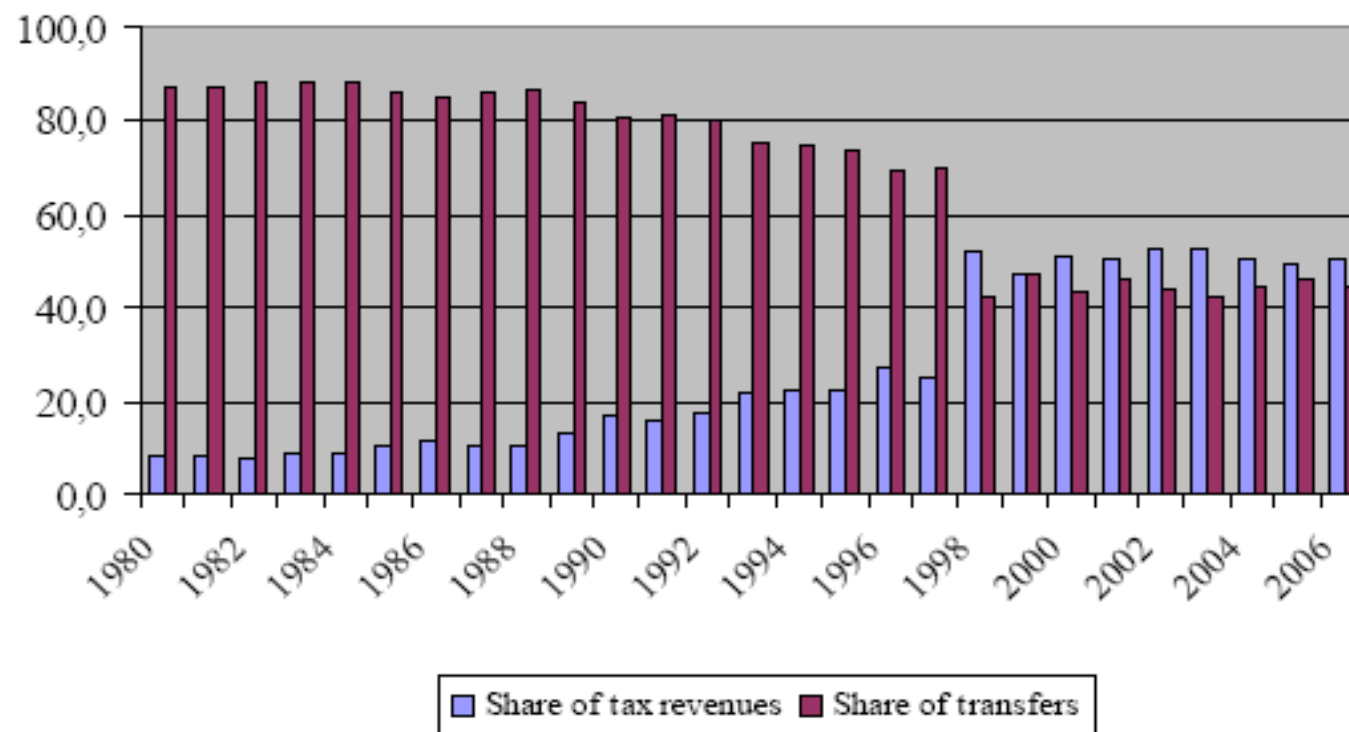
Source: Ambosianio, Bordignon and Cerniglia (2008)

Table 4. Descriptive statistics.

Variable	Mean	Median	Max	Min	Std. Dev.
TR/POP	0.785	0.712	8.739	0.138	0.73
ELN	0.163	0.00	1.0	0.00	0.37
ELR	0.2	0.00	1.0	0.00	0.401
YEARS	2.042	2.00	4.0	0.0	1.424
SAME	0.536	1.0	1.0	0.0	0.499
NDIF	0.031	0.038	0.038	0.023	0.007
RDIF	0.132	0.096	0.408	0.0014	0.107
RIGHT	0.431	0.0	1.0	0.0	0.496
POP	2825.	1649546	9393092	117065	2246760
POP15	0.14	0.135	0.196	0.101	0.023
POP65	0.19	0.188	0.265	0.128	0.029
HEXP/POP	1.282	1.275	2.018	0.794	0.261
PUPHY	5.791	5.751	8.961	4.143	7.252
PRPHY/POP	1.218	1.202	1.667	1.003	1.028
BEDS	518573.5	514300	998800	106200	233220.8
U	0.107	0.079	0.28	0.024	0.069
DGGDP/POP	-1.41^{-06}	0.0002	0.068	0.127	0.018

Table 5. Econometric results.

	Model	1	2	3	4	5	6	7	8
	Sample	20 regions 1996-2006	20 regions 1996-2006	15 RSOs 1996-2006	5 RSSs 1996-2006	20 regions 1996-2006	20 regions 1996-2006	20 regions 1999-2006	20 regions 1996-2006
	Dependent variable	TR/POP	TR/POP	TR/POP	TR/POP	TRCC/POP	TRCK/POP	TR/POP	TR/POP
State economy	U_{t-1}	3.121*** (0.303)	4.4644*** (0.38)	3.446*** (0.411)		2.845*** (0.592)	0.539*** (0.072)	4.122*** (0.48)	3.928*** (0.608)
	DGGDP/POP	-1.22*** (0.314)	-2.516*** (0.265)	-2.69*** (0.472)		-1.645 (0.532)	-0.895*** (0.089)	-2.407*** (0.307)	-2.636*** (0.388)
	GDP/POP								-13.088 (8.259)
	TREND		0.017** (0.008)	0.038 (0.04)	-0.086*** (0.024)		0.006*** (0.002)	-0.016** (0.007)	0.02*** (0.008)
Political	ELN		0.093*** (0.02)	0.103*** (0.025)		0.082*** (0.024)	0.032*** (0.004)	0.069*** (0.015)	0.103*** (0.021)
	ELR		0.128*** (0.02)	-0.119 (0.207)		0.071 (0.054)	0.02*** (0.007)	0.173*** (0.017)	0.128*** (0.022)
	YEARS		0.037*** (0.005)	-0.027*** (0.041)	0.05*** (0.01)	0.025** (0.012)	0.001 (0.001)	0.043*** (0.004)	0.039*** (0.006)
	SAME		0.035** (0.017)	0.066*** (0.014)		0.058** (0.027)	0.006*** (0.002)	0.023 (0.014)	0.032** (0.017)
	NDIF		-9.806*** (2.2)	-23.9* (14.19)		-16.942*** (2.98)	3.16*** (0.489)	-7.971 (1.69)***	-10.434*** (2.33)
	RDIF		1.126*** (0.174)	0.253*** (0.069)	15.928*** (2.16)	0.234*** (0.1)	0.045*** (0.016)	0.64*** (0.155)	1.023*** (0.19)
	$(RDIF)^2$		-1.372*** (0.393)		-38.144*** (5.87)			-0.459 (0.38)	-0.896** (0.489)
	RIGHT		-0.067*** (0.017)	-0.0005*** (0.00001)		-0.11 (0.03)	0.026*** (0.003)	-0.066*** (0.018)	-0.066 (0.018)

	Model	1	2	3	4	5	6	7	8
	Sample	20 regions 1996-2006	20 regions 1996-2006	15 RSOs 1996-2006	5 RSSs 1996-2006	20 regions 1996-2006	20 regions 1996-2006	20 regions 1999-2006	20 regions 1996-2006
	Dependent variable	TR/POP	TR/POP	TR/POP	TR/POP	TRCC/POP	TRCK/POP	TR/POP	TR/POP
Demographic	POP		-1.23^{-07***} (2^{-08})	-9.35^{-08***} (1.75^{-08})	8.89^{-06***} (1.59^{-06})	-5.49^{-08} (3.53^{-08})	-2.3^{-08***} (3.35^{-09})	-1.51^{-07***} $(2.68)^{-08}$	-1.44^{-07***} (2.33^{-08})
	POP15		5.989^{***} (1.772)	0.582 (1.843)		1.569 (1.157)	0.236 (0.358)	9.492^{***} (2.27)	5.405^{***} (1.756)
	POP65		7.178^{***} (0.805)	2.599^{**} (0.856)	28.852^{***} (11.01)	2.203^{***} (0.446)	0.707^{***} (0.19)	7.748^{***} (0.989)	6.818^{***} (0.84)
Health care	BEDS		3.00^{-05***} (4.23^{-06})	1.68^{-05***} (3.5^{-06})	5.31^{-05***} 1.52^{-05}	1.45^{-05} $(0.7.74^{-06})$	3.24^{-06***} (6.42^{-07})	-3.64^{-05***} (5.89^{-06})	3.41^{-05***} (4.89^{-06})
	PUPHY		0.0005^{**} (0.0002)	0.0006^{***} (0.0001)			0.0003^{***} (3.7^{-05})	-0.0002 (0.0002)	0.0004^{**} (0.0002)
	C	0.276^{***} (0.023)	-2.349^{***} (0.326)			-0.161 (0.74)	-0.377^{***} (0.07)	-2.263^{***} (0426)	-1.865^{***} (0.408)
Diagnostics	AR(1)	Yes	Yes	No	No	Yes	No	Yes	Yes
	Adjusted R^2	0.485	0.755	0.755	0.849	0.65	0.777	0.878	0.715
	S.E.R.	0.374	0.408	0.451	0.16	0.23	0.104	0.409	0.404
	F-statistic	50.92^{***}	25.67^{***}	30.5^{***}	47.617^{***}	17.96	42.75^{***}	59.86^{***}	23.405^{***}
	Durbin Watson	2.05	1.947	1.85	2.02	1.97	1.78	2.177	1.93
	Obs.	210	210	165	55	210	210	150	210

Note: standard errors in parentheses. *** denotes a 1% significance level, ** the 5%.

Table 6. Fixed effects models, intercept values

Region	Model 3	Model 4
PIE	6.25	
LOM	6.38	
VEN	6.71	
LIG	6.06	
ERO	6.31	
TOS	6.26	
MAR	6.29	
UMB	6.41	
LAZ	6.44	
ABR	7.26	
MOL	7.06	
CAM	6.67	
PUG	6.66	
BAS	6.49	
CAL	6.98	
VDA		-7.19
TAA		-14.05
SIC		-49.86
SAR		-19.26
FVG		-16.81

Table 7: Variable explanation and data sources.

Variable	Explanation	Data source
TR/POP	Real total transfers per capita, thousands of 2000 euros	ISTAT - Annuario Statistico
TRC/POP	Real total transfers for current expenditures, thousands of 2005 euros	ISTAT - Annuario Statistico
TRK/POP	Real total transfers for capital expenditures, thousands of 2005 euros	ISTAT - Annuario Statistico
ELN	National electoral year dummy	ISTAT - Annuario Statistico
ELR	Regional electoral year dummy	ISTAT - Annuario Statistico
YEARS	Number of years of tenure of the regional government	ISTAT - Annuario Statistico
SAME	Dummy that equals 1 if national and regional government are supported by the same political coalition	www.governo.it
NDIF	Margin of votes between the first and the second party in the last national elections	ISTAT - Annuario Statistico
RDIF	Margin of votes between the first and the second party in the last regional elections	ISTAT - Annuario Statistico
RIGHT	Dummy that equals 1 if regional government is ruled by a right wing coalition	www.governo.it
POP	Population resident in the region in thousands	
POP15	Share of the resident population with 15 years of age or less	ISTAT - Annuario Statistico
POP65	Share of the resident population with 65 years of age or more	ISTAT - Annuario Statistico
HEXP/POP	Total regional health care expenditures per capita, thousands of 2005 euros,	ISTAT - Annuario Statistico
BEDS	Number of hospital beds per 1000 inhabitants	ISTAT - Annuario Statistico
PUPHY	Number of doctors operating in public hospitals and public health firms	ISTAT - Annuario Statistico
PRPHY/POP	Number of doctors operating in public hospitals and public health firms divided by the regional resident population	ISTAT - Annuario Statistico
U	Regional unemployment rate	www.crenos.it
DGGDP/POP	Difference between the regional per capita growth rates and the national average	www.crenos.it