The short and the long run relationship between fiscal decentralization and public expenditure composition in Italy

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HIGHLIGHTS

- We analyse the impact of fiscal decentralization on the composition of public expenditure.
- We distinguish between short run and long run effects of decentralization.
- A long-run relationship between decentralization and expenditure composition exists.
- The impact of fiscal decentralization varies across different public spending categories.

ARTICLE INFO

ABSTRACT

This article is an original contribution to the understanding of the relationship between fiscal decentralization and public expenditure composition. Relying on recent panel cointegration techniques, our findings show that the level of decentralization influences the expenditure composition of the Italian regional administrations in the long run.

1. Introduction

Over the past decades, institutional and fiscal decentralization has taken place in many developed and developing countries. The increased interest in fiscal decentralization is mainly fuelled by the widespread belief that decentralizing revenue raising and spending decisions is an effective tool for increasing the allocative efficiency in the public sector. Implicit in the argument that decentralization can increase allocative efficiency is the implication that a change in the level of decentralization is likely to alter the composition of public expenditures.

This paper adds to the evidence on the relationship between fiscal decentralization and composition of public expenditure by examining the impact of decentralization on the share of different types of public spending in total public expenditure of the Italian regional administrations over the period 1996–2012.

The original contribution of this paper to the literature is twofold. The first innovation comes from the methodology we use: a system of dynamic panel regressions is estimated in order to take into account both the short and long run effects of decentralization. Second, studying the case of a developed country, which has undergone radical reforms of intergovernmental fiscal relations in the last decades, our results have policy implications that can be of interest for countries facing the same decentralization process. Moreover, the one-country focus allows us to avoid problems of data comparability and multiple institutional, historical, and other external factors that are difficult to control for and are often encountered in cross-country studies in this field.

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2. Empirical specification and data

Since we are interested in both the short run and long run dynamics existing between decentralization and the composition of public expenditure, we estimate an error correction model (ECM):

$$\Delta g_{f,r,t} = (\phi_1 - 1)\Delta g_{f,r,t-1} + \alpha_0 \Delta Fis\_dec_{r,t}$$
$$+ (\alpha_0 + \alpha_1)\Delta Fis\_dec_{r,t-1}$$
$$+ \gamma(g_{f,r,t-2} - Fis\_dec_{r,t-2}) + \theta Fis\_dec_{r,t-2}$$
$$+ \beta_0 \Delta X_{r,t} + (\beta_0 + \beta_1)X_{r,t-1} + \varepsilon_{r,t} \tag{1}$$

where g is used as a generic notation to refer to the share of each expenditure category on total spending at regional level and the subscript f indicates the expenditure category.[1] Fiscal decentralization is measured by the level of decentralization of tax revenues (Fis_dec). Moreover, we include a set of control variables (X), based on standard models of demand for government expenditure, both in difference and in level.[2]

In Eq. (1), the sum of the coefficients of contemporaneous and one period lagged degree of decentralization provides information about the short run effect of decentralization, while the coefficient of error correction term ($g_{f,r,t-2} - Fis\_dec_{r,t-2}$) and the lagged level of decentralization explain the long run dynamics. The coefficient on the error correction term, γ, gives the adjustment rate at which the gap between decentralization and the size of the public sector is closed. If γ is negative and significant, the relationship between decentralization and the expenditure share exists in the long run.

The dataset we use is taken from the Territorial public accounts (*Conti pubblici territoriali*) produced by the Italian Ministry of Economy. These data provide the allocation of revenues and expenditure flows collected/paid by each level of government included in the general government among 20 Italian Regions for the period 1996–2012.

3. Empirical results

As a first step of our empirical analysis, we check whether the variables in our dataset are stationary. We rely on a 'second generation' panel unit root test, which relaxes the assumption of the cross-section members' independence. This condition is likely to be violated for units such as those in our panel data: we expect that regions within a country to be economically, fiscally and politically integrated. This idea is confirmed by the results reported in Table 1: using the cross-dependence test suggested by Pesaran (2004), we find that cross-sectional independence is rejected for all variables but one (*Pub_goods*). We, therefore, employ the Pesaran (2007) unit root test: the results indicate that the unit root null hypothesis cannot be rejected for all variables suggesting that variables are non stationary in levels and stationary in first differences (Table 2).[3]

The second step in our analysis is to test whether fiscal decentralization and expenditure categories are cointegrated using the error correction based cointegration test developed by Westerlund (2007). This test is suitable to our case considered that it has

Table 1
Cross-dependence tests.

Variable	CD-test	*p*-value
Pub_goods	−0.03	0.976
Soc_welfare	3.60	0.000
Inv_hc	22.52	0.000
Infrastructure	6.91	0.000
Prod_activities	25.33	0.000
R&D	7.22	0.000
Fis_dec	29.05	0.000
Exp_dec	38.62	0.000
Pop_den	28.75	0.000
GDP_pc	59.21	0.000
CG_Pub_goods	51.45	0.000
CG_Soc_welfare	48.90	0.000
CG_Inv_hc	43.00	0.000
CG_Infrastructure	33.45	0.000
CG_Prod_activities	51.96	0.000
CG_R&D	7.55	0.000

Note: CD presents the Pesaran (2004) cross-section dependence statistic which is distributed standard normal and tests the null hypothesis of cross-section independence.

been developed to cope for cross-sectionally dependent data. The Westerlund test has the null hypothesis of no cointegration; the alternative hypothesis depends on the specific test (the group mean test (G_t and G_a) and the panel test (P_t and P_a)). We focus primarily on the G_t and P_t statistics since, according to Westerlund (2007), these two tests are the most robust, especially in the case of cross-sectional correlations. The empirical results indicate that G_t and P_t test statistics reject the null hypothesis of no cointegration at the conventional significance level for 'Social welfare' and 'Infrastructure' expenditure categories. Based on the bootstrapped *p*-values of the two panel tests (P_t and P_a) we choose to interpret these results as evidence in favour of cointegration between 'Production activities', as well as 'Public goods', and fiscal decentralization, too. No cointegration cannot be rejected for the 'Investment in human capital' and 'Research and development' categories. See Table 3.

Therefore, we proceed to estimate the model in Eq. (1).[4] Considering the interdependence between expenditure categories, given that for a fixed budget any change in one category implies a matched change in some other expenditure categories, we estimate the error correction model using a three-stages least seemingly unrelated regression.

The results of Table 4 show that for all the expenditures categories the coefficient of the error correction term is statistically significant and negative confirming that a long run relationship exists. This implies that if there are deviations from the long run equilibrium, short run adjustments will be made to the dependent variable to re-establish this long run equilibrium.

The measure of the long run effect of fiscal decentralization is obtained subtracting the ratio of the coefficient of the lagged value of the decentralization variable to the coefficient of the error correction term, from one. The sign of the long run effect of fiscal decentralization on the expenditure share differs across functional expenditure categories. Our results indicate that fiscal decentralization reduces welfare spending even in the long period, as predicted by the competition thesis, as well as investments in infrastructure, while it has a positive effect on '*Prod_activities*'. They are in line with earlier empirical works, which analyse the relationship between fiscal decentralization and public expenditure

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[1] The functional breakdown of public expenditure is presented in Table A.1 in Online Appendix A.

[2] Table A.2 in Online Appendix A shows the descriptive statistics and sources of the variables used in the econometric analysis.

[3] Monte Carlo simulations have shown that the cross-sectionally augmented unit root test proposed by Pesaran (2007) performs well in small sample and that it is expected to be applicable also to panels with $N > T$ as in our case (Pesaran, 2007).

[4] We do not proceed to estimate the model with '*Inv_hc*' and '*R&D*' as dependent variables since we did not find evidence of cointegration with the measure of fiscal decentralization.