Speed of spending and government decentralization: evidence from Italy

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\textbf{ABSTRACT}
This paper investigates whether government decentralization affects the duration of public projects in Italy. Considering a large sample of 415,378 projects managed by different levels of government and co-funded by European funds within the 2007–13 programming period, we found strong differences between areas. In the South and in some Central regions, project duration was higher for the lowest level of government and lower at more centralized levels. This suggests that decentralization there reduced the speed of public spending and therefore spending efficiency. In the North and in most Central regions, the results were mixed. These regional differences were driven by the quality of local institutions.

\textbf{KEYWORDS}
decentralization; public spending; efficiency; European Union regional policy; OpenCoesione

\textbf{INTRODUCTION}

In the last few decades local communities have increasingly demanded more autonomy in many countries. Central governments have transferred responsibilities to lower levels of government to bring decision-making closer to citizens. This decentralization of powers has included administrative functions, political powers and budgetary competences. Fiscal decentralization, for example, provides subnational governments with the power to raise some taxes and carry out spending activities within clearly established legal criteria. Functional decentralization occurs when the responsibilities for centrally produced public goods and services are transferred to local governments. Administrative decentralization exists when most taxes are raised centrally, but funds are decentralized to local entities, who spend the funds as agents of the central government. Fiscal decentralization has been adopted in Germany, while functional and administrative decentralization have been implemented in Italy. Governance models therefore vary across countries, but decentralization has become increasingly common in Europe (Baier & Zenker, 2020). In a multilevel government system, it is important to determine which administrative level is the most appropriate for particular tasks. The use of public funds, in particular, is important because huge amounts of resources are provided by supranational and national authorities and are managed by local governments.

This paper analyses the impact of government decentralization on the efficiency of public spending. We used the duration of the public projects managed by different levels of government as a proxy for spending speed, and, ultimately, spending efficiency. Speed of spending is an important factor determining spending efficiency, or capacity, with which government administrations claim and use public resources: other things being equal, when less time is required to complete a project, the level of government that manages the project is more efficient. The pace of spending is a key indicator of project implementation, especially in countries that lag behind in the absorption of European Union (EU) resources, and a prerequisite for the effectiveness of EU regional policy (Bachtlér et al., 2018). Our empirical analysis was based on a large sample of 415,378 projects implemented in Italy...
and co-funded by Structural and Cohesion Funds – the financing instruments of the EU regional policy – during the programming period 2007–13. These projects were managed at both national and subnational government levels and are therefore particularly suitable for comparing the efficiency of public spending at different levels of government. We compared the efficiency of public spending at the following levels of Italian government: central or national (NUTS-1), regional (NUTS-2), provincial (NUTS-3) and municipal (LAU-2).

The results varied by region. In the South and in some Central regions, where the quality of institutions is typically low, project duration was generally higher when projects were managed by municipalities, the lowest level of government. Projects managed by central government authorities were the shortest, and projects managed by regional and provincial governments were between the two. These findings suggest that the efficiency of public spending is negatively correlated with government decentralization: central authorities are more efficient at spending public resources, and subnational governments are relatively inefficient because of the low quality of local institutions. In the North and in most central regions, where the quality of institutions is higher and more homogeneously distributed across the different areas, the results were mixed. Projects managed by municipalities took longer than projects at other subnational levels of government, that is, provincial and regional. Projects managed by central government, however, were longer than projects managed locally in the North, but had a similar length in Central Italy.

The study contributes to the following strands of literature. First, it provides a contribution to the debate on the advantages and disadvantages of decentralization. Previous studies have largely analysed fiscal decentralization and its impact on regional growth and convergence, neglecting other important issues such as whether the efficiency of public spending varies at different levels of government. Some articles have examined the efficiency of spending at a specific government level. For example, Balaguer-Coll et al. (2010) compared the efficiency of municipalities in Spain during the period 1995–2000 and found that decentralization of power from the central government made municipalities more efficient in their use of resources. Afonso and Fernandes (2006), instead, found that local spending in Portugal was relatively inefficient because municipalities could achieve the same level of output using around one-third fewer resources. To our knowledge, however, there is no comparative analysis on the efficiency of different levels of government. Our article fills this research gap by shedding new light on the performance of national and subnational levels of bureaucracy in the spending of public resources.

Second, we provide new evidence from Italy, where there is a heated debate on differentiated autonomy, or varying the type and extent of decentralization across regions. Italy does not have a strong fiscal decentralization system. A 2001 referendum allowed regions to ask for more functions, and since then, richer regions in the North have asked for fiscal decentralization and more functional autonomy. These regions argue that fiscal decentralization will improve the allocation of public spending by making it more consistent with the wishes of citizens. It may also encourage administrators and politicians in less efficient regions to make better use of the available resources. However, poor regions observe that the large differences in income per capita between rich and poor regions (on average, 60%) will mean that they have inadequate resources to offer the same quality of public services to their citizens. The debate on the success of autonomy and the guarantee of equal rights for all citizens therefore involves important issues including the varying efficiency of local governments and the availability of adequate resources to ensure that all regions can provide a similar quality of public services.

Finally, we provide some insights into the regional policies of the EU, suggesting that decentralization is an important factor to explain why some countries characterized by low quality of institutions take longer to spend EU resources. Previous studies have widely assessed the effectiveness of EU regional and development policies, or whether they have achieved their goals. The evidence is mixed (Dall’erba & Fang, 2017). Some studies found positive effects (Pellegrini et al., 2013), but others did not have statistically significant results (Mohl & Hagen, 2010). This inconsistency was probably because the effects were heterogeneous. Bouayad-Agha et al. (2013), for example, showed a positive impact only for Objective 1 regions. Crescenzi and Giua (2020) found that cohesion policy was mainly effective in German and UK regions, while the effects were less important and lasted much less time in Southern Europe. Institutional quality and good governance are important factors in explaining these differences (Crescenzi et al., 2020). Rodríguez-Posé and Garcilazo (2015), for example, demonstrated that poor institutional quality can determine the failure of EU regional development funds, and Accetturo et al. (2014) suggested that the quality of local government affects the economic impact of EU Structural Funds. We add to this strand of empirical research by using a different perspective and investigating the speed of spending rather than its effectiveness.

The paper is organized as follows. The next section reviews the literature on decentralization. The third section describes the decentralization process in Italy and provides insights into the efficiency of public spending in Italian regions. The fourth section describes the data and methodology. The fifth section presents the main results and the sensitivity analysis. The sixth section concludes.

DECENTRALIZATION IN THE ECONOMIC LITERATURE

Economists and policymakers are interested in fiscal federalism and decentralization. Studies have found both advantages and disadvantages, but it is still unclear whether decentralization or centralization is better. Apart from political arguments, the main justifications...
for decentralization are allocative or efficiency grounds (Tanzi, 1995). These economic arguments are rooted in the works of Tiebout (1956) and (Oates, 1972). Tiebout (1956) applied the theory of market competition to local government and argued that more competition between local governments would lead toward Pareto-efficient provision of public services. Decentralization can help to identify differences in local populations’ preferences for public goods, and local governments can supply these goods. Public services should therefore be decentralized, except when there are significant economies of scale or economic spillovers between local governments. In the first case, decentralization may lead to higher administrative costs, and in the second case, decentralized governments may ignore external economic costs and benefits. A more centralized structure of government is therefore better for society as a whole (Inman & Rubinfeld, 2017).

Oates (1972) recognized that centralization is costly if citizens’ needs and preferences for public goods and services vary across different areas. When these preferences vary geographically, a uniform package provided by a central government is likely to generate allocative inefficiency in the provision of public goods. In this case, a one-size-fits-all approach is not ideal, and decentralization can better match citizens’ preferences. Another argument for decentralization is that individuals who are responsible for the result of their actions and who have ownership rights over their outcome are likely to have strong incentives to perform better. Local public officials who are responsible for the goods and services they offer are acclaimed for success and pilloried for failure. When local governments bear the cost of providing public services to their community, they are also more likely to pursue cost efficiency. In other words, accountability brings responsibility (Rondinelli et al., 1989).

However, opponents of decentralization maintain that power should remain in the hands of central government because local governments often lack human, financial and technical resources and can be unable to provide adequate public services (Faguet, 2004). The quality of the personnel in local administrations, for example, varies considerably across levels of government and regions (Del Monte & Papagni, 2007). National bureaucracies often offer better opportunities than local bureaucracies, attracting more qualified and skilled individuals than local administrations (Prud’homme, 1994). In Italy, Putnam et al. (1993) documented a strong difference in the quality of local administrations between Northern regions, where the quality is high, and Southern regions, where it is low. A crucial assumption in studies that support decentralization is that central government has less information on local preferences, or less incentive to use this information, than lower levels of governments. It is not clear, however, if local officials are better able to identify local preferences and have less biased information than central officials. There are many reasons why local officials might not use correct information, including corruption. Local officials may have an incentive to exaggerate local demand for some public services to serve special interests rather than those of the community. Corruption is often stimulated by contiguity, that is, by the fact that officials and citizens live and work close together in local communities and officials can be ‘captured’ by particular individuals or groups. Corruption is therefore more common at a local than the national level (Tanzi, 1995). Decentralization can therefore have a negative effect on the quality of public goods, as well as on public expenditure and public deficit (Shah, 2006). In Italy, Cantabene and Del Monte (2017) found that corruption increased public expenditure at the subnational levels of government, especially in municipalities, but did not significantly affect central government expenditure. Lastly, decentralization could reduce the economies of scale associated with large-scale infrastructure planning, favouring spending in smaller regional projects.

Many empirical studies have also analysed the impact of fiscal decentralization on regional inequalities. Some showed that fiscal decentralization increased regional disparities (Rodríguez-Posé & Gill, 2005), while others concluded that decentralization reduced regional disparities in gross domestic product (GDP) per capita (Bahr, 2008). The relationship between fiscal decentralization and regional inequality is also mediated by factors such as the level of income (Rodríguez-Posé & Ezcurra, 2010) and the quality of institutions (Kyriaciou et al., 2015).

These analyses confirm that positive assertions about decentralization are only partially warranted. The effects of decentralization are highly heterogeneous and have to be considered in a much more differentiated way, including starting conditions and distinguishing between relevant performance dimensions and policy fields.

DECENTRALIZATION AND EFFICIENCY IN ITALIAN REGIONS

Decentralization in Italy

Italy originally had a highly centralized structure of government and experienced a slow and partially contradictory shift towards decentralization (Piperno, 2000). There are now three levels of territorial government below national: 20 regions (NUTS-2 level), 107 provinces (NUTS-3 level) and 7903 municipalities (LAU-2 level). Provinces and municipalities were established on unification, but regions were established more recently and only became operational in 1970.

Until the early 1990s, Italy was essentially a unitary state. Regions had legislative and administrative powers, especially in areas such as agriculture, commerce, public health, tourism, long distance transport and public works. Provinces had limited responsibilities, mainly around the coordination of small municipalities. Municipalities had a more important role, and were responsible for urban policies, town planning, traffic and transport, water, garbage management, and social, cultural and leisure services. Subnational governments, however, had no tax autonomy and were financed by central government transfers. They were controlled by the central government,
which determined the general principles for subnational governments and could veto initiatives.

From the mid-1990s, Italy has made significant steps towards federalism, granting more political, fiscal and administrative powers to subnational governments (Baldini & Baldi, 2014). Important decentralization reforms were approved in the period 1996–2001. Reforms in 1997–98 strengthened administrative decentralization, granting each territorial level of government more capacity and autonomy to pursue policies allocated to them by the constitution. The national healthcare system, for example, was regionalized, and subnational governments were provided with some resources for this, with continued transfers from central government. The 2001 constitutional referendum significantly changed the distribution of legislative and administrative powers between central and subnational governments, widening the fields where the latter had exclusive powers. Tax autonomy was also increased. Subnational governments could set and levy taxes and collect revenues, and central government could allocate additional resources. However, the legislation to implement these changes was adopted very slowly. The new legislative framework allowed subnational governments to collect taxes in all their fields of competence, but there was limited room to do so, mainly because of the constitutional principle that prohibits double taxation. Central government taxation already existed in many fields, so this reduced the opportunity for lower levels of government to introduce new taxation. Subnational governments therefore currently have little freedom over their own taxes, and the federal reforms are still ambiguous (Palermo & Wilson, 2013).

Differences in regional efficiency and public spending

An important element in the efficiency of regions is the time taken to complete projects. A recent report by Carlucchi (2019) gives information about the duration of public works projects. Excluding Calabria, projects lasted longer in Southern than Northern regions. Lombardy and Emilia-Romagna had the shortest project durations.

Several studies have shown a systematic difference in efficiency between Southern and Northern regions, drawing on data on public expenditure. Banfi (2019) compared indicators of local expenditure and supply of public services across six important functions (administration, local police, education, road and territory, rubbish collection, and social sectors), showing that 76.7% of municipalities in the Center–North were efficient, while in Southern Italy and Lazio the percentage was only 13.7%. Similar results were found for specific functions carried out by regions. Acampora and Rosano (2017), for example, found large differences between the quality and supply of health services in the North and South. The ranking of Italian regions by efficiency was confirmed by Charron et al. (2014) that presented a new indicator for the quality of government: the European QoG Index (EQI). The indicator was built on individual experiences and perceptions about the quality, impartiality, and corruption in some public services including education, health, and law enforcement. Based on EQI, the most efficient Italian region was Piedmont, at 118. The Southern regions were among the least efficient.

It is interesting to analyse fiscal residuals, that is, the differences between total expenditure and total receipts per head of population. Table 1 shows fiscal residuals computed by the Bank of Italy and Parliamentary Budget Office (PBO).

The data from the two institutions differ because they used a different criterion to allocate expenditure and receipts across regions. However, the items considered were the same. Interest was not computed in either case. Table 1 shows that the primary expenditure per capita in Southern regions was 95% of the national figure, according to the Bank of Italy, but receipts per capita were only 64%. The PBO data show the percentage of expenditure per capita in the South as 86.5%, and receipts as 69.0%. In both cases, the fiscal residuals are negative for the Center and North and positive for the South. The average capital expenditure per capita in the period 2000–16 was €945 in Southern Italy and €873 in the Center and North. These data show that Southern Italy could not raise enough resources to cover the expenditure necessary to provide public services for its citizens. The resources received from the central government were higher than in Northern regions.

DATA, VARIABLES AND DESCRIPTIVE STATISTICS

To investigate the determinants of project duration and the efficiency of the different levels of government that manage them, we estimated an econometric model with project duration as the dependent variable. This section describes the data, sample and construction of variables, as well as the methodology used in the empirical analysis.

Data and variables

The main source of data was the portal OpenCoesione, the open-government initiative on EU regional and cohesion policy in Italy managed by the Department for Cohesion Policy at the Italian Prime Minister’s Office. The portal provides access to detailed information on projects co-funded by EU Structural and Cohesion Funds, including individual data on the sources of financing, thematic areas, implementing authorities, beneficiaries, and start, end and payment dates. Data are available for the two EU programming periods 2007–13 and 2014–20. We focused on the former because many projects from the 2014–20 period are still ongoing. We used projects co-funded by EU funds to compare the efficiency of public spending at different levels of government because they were largely managed in a decentralized way. For the 2007–13 period, EU regulation laid down common rules for fund management, taking into account the overarching priorities of the EU regional policy. Central and regional governments of member states prepared operational plans to explain how EU resources would be used. Project
Other lower level educational institutions, public research authorities, working together with the European Commission.

At the point of data extraction, the portal covered 952,833 projects funded by national and EU resources to a total of €95.8 billion, including EU and national resources. Of the 952,833 initial projects, we excluded 447,117 whose start date coincided with the end date (generally monetary incentives for companies or capital injections), 1108 projects whose start date was later than the end date (error in filling information in the OpenCoe- sione database), and 65,306 projects that were still in progress. We also excluded about 25,000 projects with missing data on the start and end date or other relevant variables for our econometric analysis. Our final sample included 415,378 projects.

**Dependent variable**

The dependent variable for the model was a proxy of public spending (in)efficiency, covering project duration. Other things being equal, a longer project duration suggests that the efficiency or speed of public spending by the government managing the project is low. Our dataset provides information about the actual start and end date for each project, as well as the expected end date, or the end date expected before the start of the project. Using this information, we computed two variables: *Duration*, or the actual duration of a project, in number of days, from the actual start to the actual end date; and *Revision*, the number of days from the expected to the actual end date. The former was the dependent variable in the main analysis, and the latter was used as dependent variable in the sensitivity analysis.

**Explanatory variables**

The main regressors of interest were binary indicators for the different levels of government managing the public projects and a variable for the quality of local institutions. Our dataset allowed us to identify projects managed by central government (variable *Central MAA*), regional governments (*Region*), provincial governments (*Province*), municipal governments (*Municipality*), other public institutions (*Other public*), and private organizations (*Private*). *Central MAA* included projects managed by ministries, public agencies, and the Prime Minister’s Office. *Other public* included projects managed by universities and other lower level educational institutions, public research institutes, and public consortia. *Private* included projects managed by all types of companies. *Region*, *Province* and *Municipality* were projects managed by those levels of government. These variables were used to evaluate whether project duration depended on the level of government managing the project.

To assess the quality of local institutions, we used the composite indicator proposed by Nifo and Vecchione (2014). This is similar to the more famous World Governance Indicators (WGI) used by Kaufmann et al. (2010) to measure the quality of governance, where governance is defined as ‘the set of traditions and institutions that ensure the exercise of authority by a government’. Unlike the WGI, which is available at country level, the indicator constructed by Nifo and Vecchione is available at subnational level (only for Italy), at both NUTS-2 and NUTS-3 level. It is also based on actual data, while the WGI is based on the views of enterprises, citizens and experts. It is based on data from institutional sources such as the Italian Institute of Statistics and other national research institutes and professional registers, and it considers five dimensions: (1) participation in public elections and the phenomenon of associations and cultural livelihood in terms of books published and purchased; (2) the quality of public services provided by a government in the domains of health, waste management and environment; (3) the ability of a government to promote policies fostering firms and the private sector in general; (4) the rule of law in society measured in terms of crimes against persons or property, the degree of tax evasion and the shadow economy; and (5) the degree of corruption among public officials. The indicator is available for the years from 2004 to 2019. Our variable (*IQI*) used data from 2006 to 2014, or one year before the years of the programming period.

The regression model included a wide set of controls to account for the characteristics of the projects. *Amount* was a proxy for project size, and was the total financing, including both public and private funds. *Private funds* measured private funding as a percentage of the overall funding for each project. It was a proxy for the weight of private subjects. *Beneficiaries* was the number of beneficiaries linked to the project and can be considered as a proxy for project complexity because complexity increases with the number and type of people or organizations involved.

The speed of project implementation varies across types of projects, which are characterized by different

### Table 1. Expenditure, receipts and fiscal residuals per capita, 2013–20.

|                      | Bank of Italy | Parliamentary Budget Office (PBO) |
|----------------------|--------------|----------------------------------|
|                      | Primary expenditure | Receipts | Fiscal residuals | Primary expenditure | Receipts | Fiscal residuals |
| Italy                | 11,539       | 12,163  | −625            | 11,887       | 13,168  | −1281           |
| Center and North     | 11,819       | 14,407  | −2589           | 12,510       | 15,295  | −2785           |
| South                | 10,953       | 7801    | 3152            | 10,284       | 9115    | 1709            |

Note: 2010 constant prices.
complexity of management, administrative efforts, monitoring and evaluation. In addition, when decentralized, some categories of expenditure characterized by high discretion and proximity between public and private actors, such as public procurement spending, can facilitate rent-seeking by interest groups, leading to an inefficient use of public resources (Kyriacon & Roca-Sagalés, 2021). To take into account these differences, we followed the aggregation of EU priority themes and broke down the projects into different levels of government. The largest projects were managed at the central level (4320), with about €404,000 of total financing. Private financing was largely missing from projects managed by central government (only 0.5% of the total), and was 9.7% at regional level, about 2.7% for municipalities and provinces, and 1.5% for other public bodies. Panel B in Table 2 shows the number of projects by thematic area and levels of government.

Table A1 in Appendix A in the supplemental data online reports the descriptive statistics and correlations between the main variables. The variable IQI ranges between 0, for lower quality local institutions, and 1 for high quality local institutions.

Methodology
To investigate the determinants of project duration, we estimated an econometric model where the dependent variable measured the duration of the projects in number of days (Duration). The main variables of interest were the binary indicators for the managing organization (Central MAA, Region, Province, Municipality, Private and Other public), and the measure for the quality of local institutions (IQI). The observations of this model are the concluded projects co-funded by the EU within the 2007–13 programming period. Controls included the variables described above and accounted for the size of the projects and their complexity, the thematic areas of the investment, the sources of funding, provincial growth rate, and regional and provincial fixed effects.

In the first step of the analysis, the regression model was run on the whole sample, covering all of Italy. In the second step, the model was replicated in the main macro-areas of the country South, Center and North to understand whether there were regional differences in the impact of government decentralization on spending efficiency. Lastly, we interacted the binary indicators for the levels of government with the variable IQI to assess whether the impact of decentralization on spending efficiency depends on the quality of local institutions in different areas. The main analysis used the ordinary least squares (OLS) estimator with standard errors clustered at provincial level. In the sensitivity analysis, the main results were corroborated using alternative methodologies, including a discrete choice model and different estimators, as well as a larger sample that added projects that were not yet completed. The last check is important because, as mentioned before, 65,306 projects were still in progress when we extracted data from OpenCoesione. Not considering these at all could raise a problem of sample selection. To account for this potential source of bias, Appendix C in the supplemental data online presents some robustness checks, including a duration model.

Descriptive statistics
Table 2 shows the main characteristics of the projects broken down by level of government. Panel A shows that a substantial number of projects were managed by the private sector (150,551) and other public bodies such as universities, lower level educational institutions, public research institutes, and public consortia (118,775). Looking at the levels of government, most projects were managed by provinces (69,919) and regions (51,842), with fewer projects managed by municipalities (19,991) or at the central level (4320).

The average project duration varied by government level. Projects managed by municipalities (average of 916 days) and other public bodies (914 days) took longer. Projects managed by the private sector had the lowest duration (354 days). The size of the projects also varied among different levels of government. The largest projects were managed at the central level, with about €404,000 of total financing. Projects managed by municipalities were also quite large (€320,000), while projects at provincial and regional levels of government were much smaller, as were projects implemented by the private sector and other public bodies.

EMPIRICAL RESULTS
The results for the whole of Italy are shown in Table 3. The regression in column (1) includes only the binary indicators for the different managing organizations as explanatory variables. The coefficients of Central MAA, Region,
Table 2. Project characteristics by managing subject.

|                      | Municipality | Province | Region | Central MAA | Private | Other public |
|----------------------|--------------|----------|--------|-------------|---------|--------------|
| Number of projects   | 19,991       | 69,919   | 51,842 | 4320        | 150,551 | 118,755      |
| Project duration     | 916          | 409      | 483    | 468         | 354     | 914          |
| Amount               | 320,000      | 28,000   | 95,000 | 404,000     | 92,000  | 55,000       |
| Private funds        | 8850         | 770      | 9280   | 2100        | 83,340  | 840          |

B: Number of projects by thematic areas

| Thematic area                | Municipality | Province | Region | Central MAA | Private | Other public |
|------------------------------|--------------|----------|--------|-------------|---------|--------------|
| Digital agenda               | 1018         | 54       | 1040   | 62          | 1973    | 16,163       |
| Environment                  | 3457         | 491      | 590    | 81          | 574     | 625          |
| Culture and tourism          | 2296         | 449      | 1931   | 270         | 990     | 391          |
| Firm competitiveness         | 153          | 491      | 1267   | 2           | 10,171  | 61           |
| Energy                       | 3452         | 96       | 468    | 156         | 3200    | 768          |
| Social inclusion             | 1367         | 3994     | 618    | 3           | 9473    | 3232         |
| Education                    | 1461         | 7587     | 15,344 | 1978        | 24,916  | 85,523       |
| Employment                   | 2274         | 55,568   | 26,785 | 649         | 77,963  | 10,502       |
| Public administration        | 345          | 918      | 2953   | 1095        | 537     | 185          |
| Research and innovation      | 160          | 7        | 780    | 19          | 19,830  | 984          |
| Urban and rural policy       | 2381         | 15       | 29     | 0           | 358     | 44           |
| Child and elderly care       | 1246         | 0        | 8      | 1           | 65      | 78           |
| Transport and infrastructure | 381          | 249      | 29     | 4           | 501     | 199          |

Note: The variable Project duration measures the number of days from the start date to the end date for each project; the variable Amount is in euros; and the variable Private funds is the proportion of project funding that is from the private sector. Panel B gives the number of projects broken down by levels of government and thematic areas.

Province and Private were negative and statistically significant at the 1% level, suggesting that the projects managed by national, regional and provincial governments were shorter than projects managed by municipalities (the excluded dummy). The coefficients give the different duration, in days, of projects managed by each level of government compared to those led by municipalities. For example, the coefficient of Central MAA shows that the projects managed by national government lasted on average 447 days less than projects managed by municipalities. Projects led by private organizations were also shorter than local projects at municipal level, and projects managed by other public institutions (Other public) showed no significant differences. $R^2$ indicates that these variables together explained 14.4% of project duration.

Columns (2–4) show the impact of the controls on project duration. The regression in column (2) considers the controls for the size and complexity of the projects, as well as for the percentage of private funding. The variables Amount and Beneficiaries had positive and significant coefficients, indicating that project duration increased with increased total funding and number of beneficiaries. Private funds had a negative coefficient, but it was not significant. The low value of the $R^2$ (0.016) suggests that the explanatory power of these factors is quite low. The categories of the projects (column 3) appear to have a crucial role in shaping project duration ($R^2 = 0.372$). All the dummies except Urban and rural policy and Environment were statistically significant. The dummy excluded was for the projects in transport and other mobility infrastructures; we expected these to last longer because they are based on a fixed investment. It is also not surprising that digital agenda projects, which are essentially broadband infrastructure, last longer. All other projects last less time than transport and infrastructure projects because they are less capital intensive. Projects on social inclusion, firm competitiveness, employment and public administration efficiency were especially short. Surprisingly, projects on Culture and tourism and Child and elderly care, which do not involve large fixed investments, lasted longer than projects in Energy and Research and innovation, which are more capital intensive. In column (4), only the different sources of funding were included in the regression. Overall, these covariates explain only a small percentage of the variance of project duration ($R^2 = 0.009$). The point estimates show that projects financed by more types of funds, as well as by cohesion plan funds, lasted longer than projects funded by Structural Funds (the excluded dummy). Projects financed from the cohesion action plan were shorter. This is not surprising because the cohesion plan was created to accelerate the implementation of programs co-financed by Structural Funds.

Column (5) shows the model including the variables for the different levels of government and all controls. Except for Other public, where the sign changed from negative to positive and the coefficient became significant, all other variables retained their statistical significance and sign of the coefficient. Projects managed by other public...
Table 3. Determinants of project duration.

|                             | (1)          | (2)          | (3)          | (4)          | (5)          | (6)          |
|-----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Managing organizations      |              |              |              |              |              |              |
| Central MAA                | $-447.3^{***}$ (79.53) | $-188.1^{***}$ (56.22) | $-195.5^{***}$ (48.47) |              |              |              |
| Region                      | $-432.5^{***}$ (71.20) | $-124.2^{**}$ (57.21) | $-107.1^{**}$ (45.22) |              |              |              |
| Province                    | $-506.4^{***}$ (78.43) | $-107.2^{*}$ (59.38) | $-61.10$ (47.30) |              |              |              |
| Private                     | $-561.1^{***}$ (75.30) | $-242.2^{***}$ (54.41) | $-104.6^{***}$ (38.60) |              |              |              |
| Other public                | $-1.911$ (82.16) | $194.3^{***}$ (68.96) | $149.9^{***}$ (50.74) |              |              |              |
| Project amount and beneficiaries |            |              |              |              |              |              |
| Amount                      |              |              |              |              |              |              |
| Private funds               | $-0.001$ (0.001) | $-0.001$ (0.001) | $-0.001$ (0.003) |              |              |              |
| Beneficiaries               | $191.1^{***}$ (43.91) | $39.62^{*}$ (22.34) | $49.19^{***}$ (17.23) |              |              |              |
| Types of project            |              |              |              |              |              |              |
| Digital agenda              |              |              |              |              |              |              |
| Environment                 | $-237.5$ (221.2) | $-266.4$ (181.0) | $-237.6$ (156.3) |              |              |              |
| Culture and tourism         | $-590.0^{***}$ (100.0) | $-506.9^{***}$ (125.4) | $-437.5^{***}$ (109.6) |              |              |              |
| Firm competitiveness        | $-899.2^{***}$ (105.9) | $-678.6^{***}$ (130.8) | $-594.1^{***}$ (114.8) |              |              |              |
| Energy                      | $-819.2^{***}$ (87.73) | $-711.1^{***}$ (118.1) | $-593.7^{***}$ (103.1) |              |              |              |
| Social inclusion            | $-1020^{***}$ (87.51) | $-816.8^{***}$ (120.6) | $-686.3^{***}$ (107.3) |              |              |              |
| Education                   | $-868.4^{***}$ (92.22) | $-912.5^{***}$ (122.0) | $-790.8^{***}$ (109.1) |              |              |              |
| Employment                  | $-1035^{***}$ (87.47) | $-837.0^{***}$ (120.2) | $-690.6^{***}$ (106.5) |              |              |              |
| Public administration       | $-958.0^{***}$ (99.32) | $-784.1^{***}$ (128.9) | $-665.1^{***}$ (119.4) |              |              |              |
| Research and innovation     | $-835.3^{***}$ (90.07) | $-610.6^{***}$ (125.3) | $-517.1^{***}$ (112.1) |              |              |              |
| Urban and rural policy      | $-139.3$ (104.0) | $-25.36$ (132.5) | $-4.760$ (118.5) |              |              |              |
| Child and elderly care      | $-635.5^{***}$ (97.54) | $-531.1^{***}$ (133.3) | $-475.3^{***}$ (112.6) |              |              |              |

(Continued)
Table 3. Continued.

| Sources of funding | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------|-----|-----|-----|-----|-----|-----|
| Structural Fund + Cohesion Fund | 639*** (162.3) | 39.94 (136.1) | – | – | – | – |
| Cohesion Fund | – | – | – | – | – | – |
| Cohesion action plan | 254.4*** (33.58) | – | – | – | – | – |
| IQI | – | – | – | – | – | – |

| Territorial variables | (1) | (2) | (3) | (4) | (5) | (6) |
|-----------------------|-----|-----|-----|-----|-----|-----|
| GDP | 808.1*** (80.34) | 0.547 | 0.444 | 0.099 | 0.016 | 0.144 |

Note: The dependent variable measures the duration (days) of the projects. The excluded categories are: municipal government for the managing organizations (variable Municipality); transport and other mobility infrastructure for the types of project (variable Transport and Infrastructure); and projects financed only by Structural Funds (variable Structural Fund) for the sources of funding. Standard errors clustered at the NUTS-3 level are shown in parentheses.

* ** *** Statistically significant at the 1%, 5% and 10% levels, respectively.

The results for the managing organizations were still valid: projects managed by other public organizations lasted longest, followed by projects managed by municipalities (the excluded dummy). Projects managed by private organizations lasted on average 242 days less than projects managed by municipalities. They were also shorter than projects managed by provincial (−107 days), regional (−124 days) and central (−188 days) governments.

To assess whether the differences between the managing organizations were statistically significant, we used a series of tests for the equality of coefficient. The tests indicate that the coefficient of Central MAA was statistically different from those of Region, Province and Private. The coefficient of Region, however, was not statistically different from that of Province.

Finally, the regression in column (6) also includes the variables related to the local context, which account for the quality of institutions, the growth rate at the provincial level, and fixed effects at both regional and provincial level. The coefficient of IQI was highly significant and the negative sign indicates that project duration decreased with increasing quality of local institutions. The change in the GDP was also significant, with a positive coefficient. We did not have a clear expectation about the sign of this variable; the positive sign could be because when the economic cycle is growing, more challenging projects are implemented. The variable, however, is an important control given that it is always statistically significant and helps to reduce the omitted variable problem.

The results for the managing organizations were still valid: projects managed by other public organizations lasted longest, followed by projects managed by municipalities (the excluded category), provinces, private subjects, regions and central authorities. The tests for the equality of coefficient showed that the coefficient attached to Region was statistically different from that for Province. Taken together, these results suggest that across the whole country, central government manages projects more efficiently than local governments, such as provinces or regions, and municipalities are the least efficient. In addition, the quality of local institutions was an important determinant of project duration. To corroborate this finding, we re-ran the main regression in column (6) separately for each type of managing organization. This allowed us to assess whether the quality of local institutions also matters for project duration within each level of government that manage the projects, and not only between them. The results, reported in Table B1 in Appendix B in the supplemental data online, confirmed the main conclusion: the variable IQI had a negative and significant sign for all levels of government. The impact on project duration was higher in municipalities and decreased at more centralized levels of government.

The regional and provincial dummies included in column (6) of Table 3 are not shown to save space. They emphasized, however, that project duration varies strongly across geographical areas. Of 19 regional dummies, 13 were statistically significant at the 1% level, two at the 5% level and only four were not significant. Lombardy, Emilia-Romagna and Lazio were the most efficient regions, and Calabria, Campania and Sardinia were the
least efficient. In the second step of the analysis, we investigated these disparities in more depth by re-estimating the regression model across the different geographical areas of Italy.

We therefore considered the North, Center and South of Italy separately. The quality of local institutions varies strongly across these three areas. The average IQI is 0.41 in the South, 0.73 in the North and 0.81 in the Center. This indicates that there is a strong divide between the South and the rest of the country. North and Central Italy have similar mean values of IQI, although the quality of local institutions is more heterogeneous in Central (SD = 0.115) than Northern regions (SD = 0.06). The South shows the greatest variation of IQI across regions (SD = 0.176) suggesting that on average the quality of institutions is low, but there are some areas that perform better than others.

Table 4 shows the second set of estimates. To save space, it shows only the variables of interest, but all the regressions included the full set of controls as before. The regression for the South confirms the general results for the whole country, and all variables were statistically significant. Decentralization was associated with longer projects, and reduced the efficiency of public spending. The municipalities (the excluded dummy) were the least efficient in managing projects, and central authorities were the most efficient. Provinces and regions were more efficient than municipalities but less efficient than central authorities, with regions performing better than provinces. The size of the projects and the number of beneficiaries were positive and significant, while private co-funding was not significant. The coefficient of Beneficiaries was particularly large, suggesting that in the South there are strong difficulties in controlling and managing projects with many participants. The quality of local institutions also affected project duration: where the quality of local institutions was higher, the project duration was shorter.

The results for Central and Northern Italy were mixed. In the North, local governments were more efficient than central government, which is the level of government with the longer project duration. At subnational levels, projects took longer in municipalities than regions and provinces. The variable Province, however, was not significant. The efficiency of local governments here could be explained by the tradition of cooperation between institutions, which work together and share information in an efficient way.

In the Center, like the South, central government was more efficient than municipalities and regions, but less efficient than provinces. This finding is in partial contrast with the previous results showing that decentralization increased project duration, and therefore inefficiency. Municipalities were least efficient. The quality of institutions also reduced project duration in Central and Northern Italy, although the impact was lower than in the South. Looking at the variables for the other managing organizations, private subjects were more efficient than municipalities in all the macro-areas. Projects managed by other public institutions lasted longer than all other projects in the South, but were completed more quickly than projects managed by municipalities and regions in the Center.

Descriptive statistics on IQI suggested that the quality of local institutions varies both across and within macro-areas of the country. As emphasized above, the quality of institutions is lower in the South than in the rest of Italy but it has also greater variation there. It could be possible, therefore, that the relationship between decentralization and spending speed varies both by macro-area, as documented above, and by the quality of local institutions. To further analyse this heterogeneity, we replicated our main regression using two subsamples identified by whether the variable IQI was below or above the median.

### Table 4. Regional differences in project duration and levels of government.

| Managing organizations | North | Center | South |
|------------------------|-------|--------|-------|
| Central MAA            | 392.8*** | –240.1* | –275.1*** |
| (97.77)                | (118.4) | (45.34) |
| Region                 | –86.58* | –146.8*** | –185.3*** |
| (50.67)                | (64.61) | (48.80) |
| Province               | –50.10 | –278.7*** | –160.6*** |
| (44.19)                | (53.29) | (43.01) |
| Private                | –184.1*** | –289.4*** | –128.5*** |
| (41.65)                | (60.12) | (44.51) |
| Other public           | –80.47 | –177.2*** | 155.4* |
| (64.63)                | (69.42) | (80.33) |

| Project amount and beneficiaries |   |       |       |
|----------------------------------|---|------|------|
| Amount                            | 0.029* | 0.034** | 0.017*** |
| (0.016)                           | (0.012) | (0.004) |
| Private funds                     | –0.170*** | 0.005 | 0.001 |
| (0.060)                           | (0.004) | (0.001) |
| Beneficiaries                     | –41.55 | –13.66 | 75.58** |
| (27.18)                           | (46.19) | (33.06) |

| Territorial variables |   |     |   |
|----------------------|---|----|---|
| IQI                  | –309.8* | –536.5*** | –822.5*** |
| (155.9)              | (255.1) | (273.2) |
| ΔGDP                 | 381.9*** | 260.1*** | 1127*** |
| (76.03)              | (73.94) | (89.4) |

| Regional and provincial dummies |   |   |   |
|---------------------------------|---|---|---|
| Observations                    | Yes | Yes | Yes |
| R²                               | 0.355 | 0.234 | 0.636 |

Note: The dependent variable measures the duration (days) of the projects. The excluded category for the managing organizations was municipal government (variable Municipality). Standard errors clustered at the NUTS-3 level are shown in parentheses. ***, **, *Statistically significant at the 1%, 5% and 10% levels, respectively.
The estimates in Table 5 show that decentralization clearly reduced the speed of spending only where IQI was below the median value (column 1, IQI < 0.589). The great majority of provinces in this sample were in the South but some were also in the Center (e.g., Ascoli, Fermo, Rieti, Viterbo, Grosseto) and one in the North (Imperia). For values above the median, the speed of spending was not affected by the level of government that managed the projects. Provinces with IQI above the median were mostly in the North, with some in the Center (e.g., Ancona, Florence, Siena, Rome); none was in the South. In sum, this set of estimates corroborate previous (e.g., Ancona, Florence, Siena, Rome); none was in the

Table 5. Regional differences in project duration, levels of government and quality of institutions.

| Managing organizations | IQI < 0.589 | IQI > 0.589 |
|------------------------|------------|------------|
| Central MAA           | −385.8***  | 60.36 (77.94) |
|                        | (56.04)    |            |
| Region                 | −256.5***  | −39.99 (51.67) |
|                        | (52.27)    |            |
| Province               | −175.4**   | −43.46 (46.28) |
|                        | (71.65)    |            |
| Private                | −115.2**   | −227.2*** |
|                        | (45.27)    |            |
| Other public           | 89.54 (63.54) | −51.90*** |
|                        | (49.24)    |            |
| Project amount and beneficiaries |         |           |
| Amount                 | 0.023***   | 0.034**   |
|                        | (0.050)    | (0.011)   |
| Private funds          | 0.001 (0.001) | −0.079 (0.067) |
| Beneficiaries          | 120.4***   | −8.158 (21.14) |
|                        | (40.75)    |            |
| Regional variables    |            |           |
| IQI                    | −560.1***  | −232.8** |
|                        | (72.21)    | (98.95)   |
| ΔGDP                   | 1120***    | 307.3*** |
|                        | (87.41)    | (56.71)   |
| Regional and provincial dummies | Yes | Yes |
| Other controls         | Yes        | Yes       |
| Observations           | 207,690    | 207,768   |
| $R^2$                  | 0.512      | 0.216     |

Note: The dependent variable measures the duration (days) of the projects. The excluded category for managing organizations was municipal government (variable Municipality). Standard errors clustered at the NUTS-3 level are shown in parentheses. ***, **, *Statistically significant at the 1%, 5% and 10% levels, respectively.

Table 6. Regional differences in project duration by levels of government and quality of institutions.

| Managing organizations | IQI < 0.589 | IQI > 0.589 |
|------------------------|------------|------------|
| Central MAA           | −325.1***  | 320.0**   |
|                        | (74.83)    | (161.7)   |
| Region                 | −273.5**   | −78.63    |
|                        | (107.8)    | (120.2)   |
| Province               | −220.8***  | −98.33    |
|                        | (69.89)    | (76.93)   |
| IQI                    | −882.4***  | −411.9*   |
|                        | (269.3)    | (244.4)   |
| Central MAA*IQi       | −526.0***  | −451.2    |
|                        | (120.3)    | (507.7)   |
| Region*IQi             | −329.3**   | 124.8     |
|                        | (149.8)    | (507.4)   |
| Province*IQi           | −276.1***  | −230.5    |
|                        | (131.8)    | (216.4)   |

Note: The dependent variable measures the duration (days) of the projects. The excluded category for managing organizations was municipal government (variable Municipality). Standard errors clustered at the NUTS-3 level are shown in parentheses. ***, **, *Statistically significant at the 1%, 5% and 10% levels, respectively.
subsample in which \( IQI \) is below the median value. The variables for the levels of government and the quality of institutions were still significant and negative. The coefficients of the three interaction terms were also negative and statistically significant. Looking at the second column, which summarizes the estimates for the subsample with high values of \( IQI \), neither the coefficient of the interactions nor those of the underlying managing levels of government were significant (except \( Central\ MA \)). These results are consistent with the model specification in Table 5 and suggest that the quality of local institutions can explain the impact of decentralization on the efficiency of public spending, if and where this relationship is significant. Where decentralization does not affect spending efficiency, this effect is clearly absent.

The robustness of these main results were corroborated by several checks reported in Appendix C in the supplemental data online. They included both different model specifications and estimators, as well as a larger sample that considered both ongoing and concluded projects.

CONCLUSIONS

This paper assessed whether the spending efficiency of public resources is affected by government decentralization. The analysis considered the duration of projects implemented in Italy by different levels of government and co-financed by national resources and EU regional funds in the 2007–13 programming period. Efficiency was proxied as pace of spending, a measure that indicates how efficiently the various levels of government claimed, used and disbursed payments associated with the implementation of projects.

There were strong disparities across regions. The analysis suggested that decentralization reduced the pace of spending in the South and, to a certain extent, in some areas of the Center. Here, project duration was lower for projects implemented by central government and increased for projects managed at local levels, especially in municipalities. Several factors may explain the lower speed of spending of subnational governments. A drawback of decentralized models of government is that they increase the number of government levels and authorities involved in the implementation, management and control of tasks and competencies, generating a complex decision-making system. Local administrations can also be characterized by a lack of human capital and expertise, as well as by corruption. Low spending efficiency can also emerge when decentralization is limited to some competences or tasks. For example, fiscal decentralization is inefficient if the various levels of governments spend resources transferred to them by the central government, rather than raised directly by taxation. In our analysis, we investigated whether the quality of governance contributes to explain the different pace of spending across Italian regions. In the South, the low quality of institutions was clearly associated with high project duration and therefore less efficient local governments. In the North of Italy, where the quality of local institutions is higher, decentralization did not have a clear impact on project duration and local governments were more efficient than central authorities. Decentralization therefore reduces the efficiency of public spending only where the quality of local institutions is low.

In Italy, there are strong disparities between regions in the level of income per capita, fiscal revenues and the quality of institutions, and policymakers should consider these disparities carefully. The descriptive analysis showed that Southern regions do not receive fewer resources from central government than Northern regions. Rather, there are large differences in the spending efficiency of Italian regions, with Southern regions lagging well behind Northern and some Central regions because of the poor quality of local administrations. Decentralization is detrimental for regions with low quality institutions. Here, a type of federalism based on a pronounced functional decentralization is risky because citizens could receive low quality public services. Instead of decentralization, central government should retain a major role in both the financing of projects and functions and their control and management. A scheme in which the central government provides the resources and subnational governments manage them is unlikely to be efficient. This would imply negative effects on the development of less efficient regions, increasing their gap with the rest of the country. Alternatively, it would be useful to understand whether Southern regions are inefficient in all domains or if they could manage some types of projects and services efficiently. In this case, once identified, these projects and services could be decentralized, while others could be managed by central government.

More effort should also be made to increase the quality of local institutions in regions where this is lower. It is necessary, for example, to increase the quality of human capital in local administrations, training and focusing on more educated and skilled personnel. All these results could be generalized to other countries characterized by low quality of institutions and strong regional disparities.

With respect to European regional policy, some doubts have recently been expressed about the decentralized structure used to allocate EU resources. Countries such as Austria and Germany, for example, have reduced the number of authorities initially involved in the allocation and management of EU resources during the 2007–13 programming period. Theoretical and empirical studies show a growing consensus that, after the shift towards place-based settings, EU policies are only effective if they can establish a key role for central governments (Crescenzi et al., 2020; Vedrine, 2020). Member states should have strong leadership and responsibility in local initiatives, ensuring coordination between EU supra-national authorities and regional levels of government. In this way, national coordination will also allow regions with poorer quality of governance to identify local projects that are consistent with their own characteristics and
needs. Our results are consistent with this view, suggesting that the central level of government is crucial for both effectiveness and efficiency in terms of pace of spending of EU resources. This is especially true for regions with low quality institutions.

Our analysis had some limitations that call for future research. We focused on project duration, neglecting other important aspects such as the quality of public projects or their socio-economic impact. Future studies could examine these outcomes. Our empirical analysis may also suffer from endogeneity issues to the extent that public projects are decentralized across levels of government based on characteristics that also affect their implementation and length. We cannot completely rule out the problem of endogeneity; our empirical model, however, included a large set of controls to avoid the problem of omitted variables.

Future studies may also extend this analysis to other member states. This could help to assess the external validity of our results, and to understand whether the relationship between decentralization and spending efficiency varies across countries with different quality of governance, experience with EU regional policies, and institutional and economic contexts.

ACKNOWLEDGEMENTS

We are grateful to the associate editor and two anonymous referees for their helpful comments, which significantly improved the paper. We also thank the participants at the SIE (Turin, Italy) and AISRE (Lecce, Italy) conferences for valuable suggestions.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

NOTES

1. Data were extracted in November 2020 and were last updated on 31 October 2020.
2. The end of 2013 does not coincide with the actual deadline for the conclusion of the projects from the 2007–13 programming cycle. The projects could be completed anytime up to 31 December 2015, the last date for eligible expenditure.
3. Our variable IQI used provincial values (NUTS-3 level) if projects were managed by provincial or municipal governments (unfortunately IQI is not available for municipalities), regional values (NUTS-2 level) if projects were managed by regional governments, and the average of the regional values if projects were managed by the central government.
4. These areas correspond to NUTS-1 for Italy. For simplicity, the North includes both the North West and North East. The South includes the two islands of Sardinia and Sicily.

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