

PUBLIC SPENDING AND REGIONAL CONVERGENCE IN ITALY

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Abstract:

This paper examines the relationship between public spending and regional growth in Italy in the period 1996-2007. The main results suggest that, in the period examined, a phase of σ and β -convergence in productivity took place. Despite the profound regional disparities existing in Italy, the allocation of public spending calculated in per capita terms has favoured the most developed regions. When the entire sample of twenty regions is considered, no correlation between capital expenditure and productive growth is found. When the sample is split into Northern and Southern regions, differences in the links between public spending and productivity growth can be noted, however: only in the first group of regions, in fact, a significant, positive relationship between expenditure for development and growth can be found.

Keywords: Italy, regional convergence, development policy, public spending.

JEL Classification: O18, R 38, R 58.

1. Introduction

The aim of this paper is to examine the relationship between public spending and regional growth in Italy in the period 1996-2007. The empirical analysis, based on a standard framework of conditional convergence, uses data for different categories of public expenditure: capital, current and for development. The paper is structured as follows. The second section introduces a short literature review on the role of recent regional development policies in Italy. The third section takes a look at the regional convergence in per capita GDP and in productivity and, through a panel dataset, investigates the relationship between public spending and growth. Some conclusive remarks follow.

The main results suggest that, in the period examined, a phase of absolute convergence in productivity took place. Despite the profound regional disparities existing in Italy, the allocation of public spending in per capita terms has favoured the most developed regions. When the entire sample of twenty regions is considered, no correlation between capital expenditure and productivity growth is found. When the sample is split into Northern and Southern regions, differences can be noted, however: only in the first group of regions, in fact, a significant, positive relationship between expenditure for development and growth can be found.

2. Recent policies and regional growth

During the 1990s, in Italy, the regional development policy underwent a profound change. In 1992 ceases the “Extraordinary Interventions” for the development of the *Mezzogiorno*¹ that, for over forty years, constituted the framework within which the measures for less developed areas were implemented. In the second half of the 1990s, a new phase of regional policy replaced the previous one. This so-called “new regional development policy” was formulated in the context of the EU’s policy scheme and characterised by a bottom-up approach and a multi-level governance system [Loddo, (2004); Chiri (2006)].

The policy measures adopted are diverse. In particular, some measures are included in “Negotiation planning”, such as Territorial Pacts for local development, Planning contracts for industrial investments and Area contracts for the implementation of new business initiatives in some circumscribed areas, notably those facing employment crises. Other measures added to these: in particular, incentives and subsidies for investments (provided through the financial incentive scheme in which the main instrument is the law no. 488/92) and the initiatives included in the EU regional policy for the less developed areas.

At a distance of more than ten years from its commencement, the evaluation of the results obtained by the new development policy has brought different, often opposing, interpretations [Rossi,

¹ The well-known term “Mezzogiorno” is referred to the eight Southern Italian regions, historically less developed.

(2005); Viesti, (2009)]. According to some scholars [Rossi, (2004); Atella, (2004)], this policy would have substantially failed in its objective to reduce the gap between the North and the South appearing as “staggeringly wasteful” for its inefficiency in the use of public resources. According to others, however, this policy would have gained valuable results; nevertheless some limitations primarily derived from the lack of resources actually available for the less developed regions [Viesti, (2009)]. In a less sophisticated version, the argument according to which the Southern regions received and substantially wasted a huge amount of financial resources finds a wide consensus in Italian public opinion and among politicians. Very frequently, however, these arguments are not supported by data or any empirical evidence.

The effectiveness of public policy to promote regional economic convergence is a theme extensively examined in the literature. For instance, several studies have been devoted to investigate have evaluated the impact of EU regional policies – in particular structural funds — on growth. The results reached are sometimes controversial. For instance, some authors find that the European structural and cohesion funds have had a positive impact on regional economic growth [Cappelen *et al.*, (2003); Beugelsdijk, Eijffinger, (2005); Checherita, (2009)] while others reached the conclusion that EU regional policies principally serve for redistribution purposes, motivated by political reasons, but they have no effect in fostering economic growth [Boldrin and Canova, (2001); Dall’Erba *et al.*, (2007)].

Relatively few studies have examined the case of Italy. For instance, Coppola and Destefanis (2007) have investigated the effects of EU structural funds in the period 1989-2003 for the main economic sectors, finding a positive but weak fund effect on capital accumulation and total factor productivity. Percoco (1999) studied the impact of EU regional policy in the programming period 1994-1999, showing a high variation in the rate of growth induced by structural funds. This study suggests that the effects have been related with the efficiency in the allocation of financial resources from regional administrations. Aiello and Pupo (2009) estimated the effects of structural funds on regional economic growth in the period 1980-2007. The analysis is carried out in a model in which funds are considered as an explanatory variable in the convergence equation. The authors found the effects of funds were mainly redistributive, and they did not contribute to the factors that influence long run regional economic growth.

With regard to the policy implemented in the period 1996-2007 — the “new development policy” — studies have evaluated the results obtained from some instruments, such as the Territorial pacts [Accetturo e De Blasio, (2007)], the Programming contracts for industrial development [Giunta e Florio, (2002); Bianchi, (2007)] or from the incentives to investments [Bronzini e De Blasio, (2006)]. The results emerging from these studies are not univocal. If, as in the case of Territorial pacts for local development, the overall results appear very modest, for other kinds of intervention, such as the Programming contracts, the evaluations show a different situation, in which there have been some successful results. On the basis of these studies it appears very hard to take conclusive stock of the new development policy. In the light of this debate, the analysis concerning the evolution of regional disparities and the regional distribution of public expenditure can offer some policy implications.

3. The empirical analysis

3.1. Methodology and data

The relationship between public spending and regional economic growth is analysed in the standard framework of conditional convergence [Barro and Sala-i-Martin, (1991)]. The estimations are based on the equation 1:

$$\left(\ln y_{i,T} - \ln y_{i,t} \right) \frac{1}{T} = \alpha_i + \beta_1 y_{i,t} + \beta_2 PS_{i,t} + \beta_3 X_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

with: $\varepsilon_{i,t} = \lambda_i + u_{i,t}$

in which the dependent variable is the rate of growth of per capita (or per worker) GDP, $y_{i,t}$ the log of the same variable in the region i at time t , $PS_{i,t}$ is the share of public spending on GDP, and $X_{i,t-1}$ a

set of variables that captures the “fundamentals“ of the economy, that is those characteristics that have a permanent effect on its growth rate.

Data consist in a balanced panel and a fixed effect (FE) model is used for estimations. The advantages of using a panel data model are several. Studies show in fact, how the cross-section approach leads to a downward bias of the convergence coefficient. The reason is that the steady state of an economy is affected by a number of factors that cross-section analysis tends to neglect, suffering an omitted-variable bias. These regional-specific unobservable factors can be modelled through panel data techniques [Tondl, (2001); Islam, (2003); Durlauf *et al.*, (2005)].

Data on public expenditure refer to the period 1996-2007 — for which homogeneous time-series are available — and derived from Regional Public Accounts (RPA), a detailed database, published by the Italian Ministry for the Economy, which measures public financial flows at the territorial level. The RPA database can be used to analyse different two reference universes: general government and the “public sector” which includes general government plus enterprises subject to the direct or indirect control of public entities. For each macro-category of expenditure series for individual spending chapters are available: for instance, the expenditure for development contains different capital expenditure categories. For the high degree of disaggregation, RPA accounts constitute a complete dataset for measuring and evaluating public policies at the regional level [De Luca *et al.*, (2005)].

Since the variables potentially correlated with regional economic growth are numerous, to select those to be included as control, the results of some recent studies that employ the Bayesian approach to check the robustness of the explanatory variables used in the cross-section studies on economic growth [Doppelhofer *et al.*, (2000), Fernández *et al.*, (2001)] were considered. The Bayesian technique was also recently used in regional studies. For example, examining the Spanish case, León-González and Montolio (2004), found that the initial level of per capita GDP and some types of private and public investment are strongly related to growth. Other variables, such as human capital proxies and the sectoral composition of production — measured by the relative share of agriculture and industry product — have a relatively high inclusion probability. On the basis of these studies, the model estimated included the subsequent control variables: the share of gross fixed investment on regional GDP (*Investment*); a proxy of human capital, given by the average number of years of schooling for each region (*School*); the shares of agricultural (*Agriculture*) and industrial (*Industry*) employment in total regional employment. Data on regional GDP, investment and sectoral employment are derived from the Regional accounts database published by Istat (2005; 2007), while the years of schooling are calculated on the basis of estimation contained in Ciccone (2004).

3.2. Evidence on convergence

The literature on convergence among the Italian regions is very extensive [Paci e Pigliaru, (1996); Terrasi, (1999); Ciriaci, (2001); Vamvakidis, (2003); Maffezzoli, (2006); Magrini, (2007); Daniele, (2008)]. Even if the methods and the period examined in these studies are diverse, main findings show how a process of absolute β -convergence in per capita GDP took place during the period 1960-1975, while in the subsequent period regional disparities remained stable or, in certain phases, increased. Only in recent years, notably during the second half of the 1990s, a process of convergence in productivity and, to a lesser extent, in per capita GDP has taken place.

As a first step in the empirical analysis, convergence across GDP per capita and per worker is examined. The examination covers the period 1980-2007, in order to offer a relative long term picture of the evolution of regional disparities.

Figure 1 illustrates the correlation between the level of development of the Italian regions relative to the national average in 1980 and 2007. The picture displays a substantial stability in the distribution of per capita GDP ($r^2 = 0,90$) even if it is possible to note some changes in the relative position of some regions, in particular those in the Mezzogiorno.

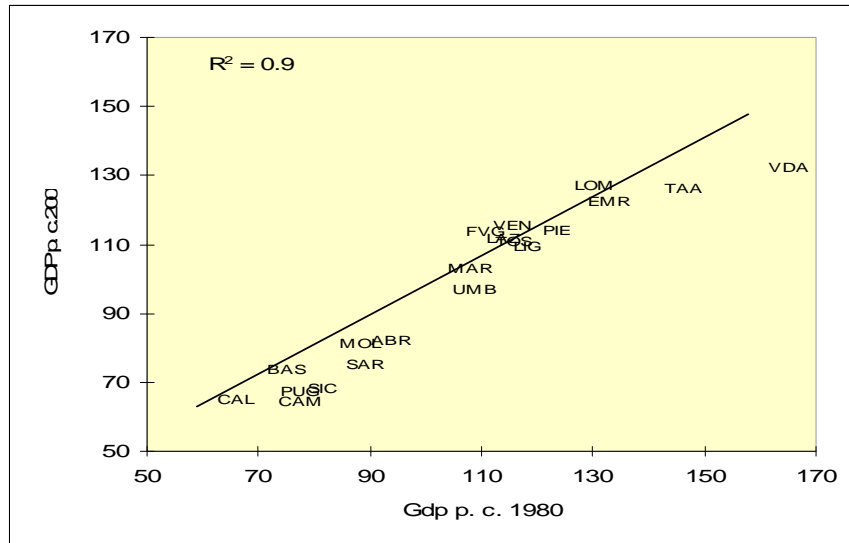


Figure 1. Correlation in regional per capita GDP 1980 and 2007 (Italy = 100)

Source: Calculations on Istat, *Regional Economic Accounts*.

The process of σ -convergence is illustrated in Figure 2 that presents the dynamics over time of the dispersion (variance) of regional per capita GDP. The dispersion increased during the period 1980-95, in which a phase of σ -divergence occurred, while a slight reduction can be observed for the subsequent years. Overall, the degree of dispersion remains roughly the same. To examine the proximate forces at the basis of this dynamics, it is possible to decompose the variance of per capita GDP according to the following identity:

$$\text{var} \ln(Y / P) = \text{var} \ln(Y / E) + \text{var} \ln(E / P) + 2 \text{cov}[\ln(Y / E), \ln(E / P)] \quad (2)$$

in which Y is the GDP, P population and E the employment. Figure 3 shows the variance of productivity and unemployment rate. It is easy to observe how the phase of σ -divergence in GDP per capita is mainly explained by the increase in the dispersion of regional employment rates. The variance of productivity exhibits a decreasing trend between 1980 to 1999, remaining roughly stable in the subsequent period. This description suggests that the Italian regions converged mainly in terms of productivity, while the convergence in per capita GDP was a weaker process.

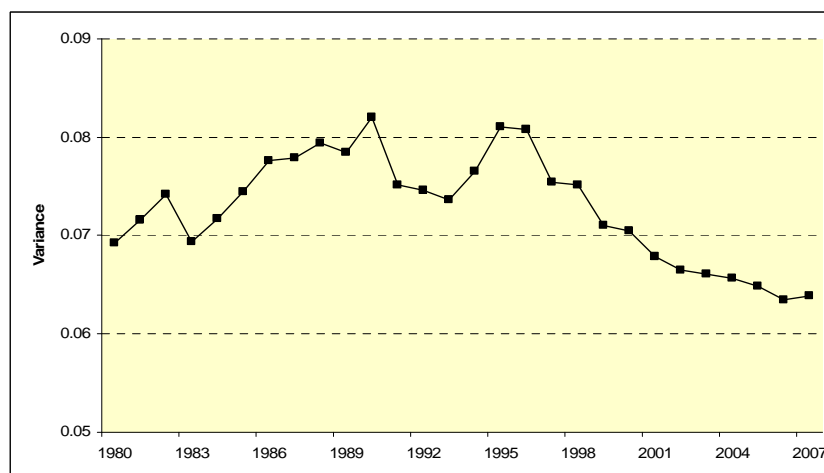


Figure 2. Variance of per capita GDP among Italian regions, 1980-2007

Source: Calculations on Istat, *Regional Economic Accounts*.

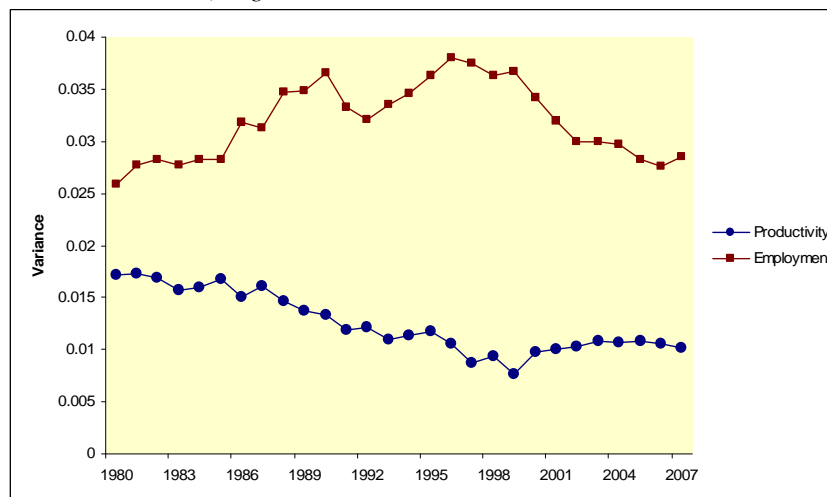


Figure 3. Variance of GDP per worker and of employment rates 1980-2007.

Source: Calculations on Istat, *Regional Economic Accounts*.

Table 1 report the results of regressions of the growth rates on the initial levels of GDP per capita and labour productivity. Both in pooled OLS and fixed effects (FE) estimations the β coefficient is negative and significant, but the value of r^2 indicates that the model is not robust for per capita GDP, while it has a sufficient explanatory power for productivity. The values of the F statistic and of the Hausman's test show, in fact, how the FE model is consistent, while the OLS is not adequate for the nature of the data.

Table 1. Absolute β -convergence

	GDP per capita growth		Productivity growth	
	Pooled OLS	FE	Pooled OLS	FE
Const	0.0779** (3.822)	0.2812** (7.467)	0.3039** (11.12)	0,4441** (13,67)
Log y	-0.0065** (-3.114)	-0.0278** (-7.061)	-0.0277** (-10.65)	-0,0411** (-13,27)
F stat.	1.10 [0.36]		0.61 [0.88]	
Hausman		12.0 [0.00]		6.44 [0.01]
N	100	100	100	100
Adj. R ²	0.03	0.05	0.20	0,13
lnL	326.8	338.6	329.3	336,2

5-years annual growth rates. T-statistics in parentheses. * indicates significance at the 10 percent level; ** indicates significance at the 5 percent level. For F and Hausman's tests, p-value are reported in squared parentheses; a low p-value counts against the null hypothesis that the random effects model is consistent, in favour of the fixed effects model.

3.3. Public spending and regional growth

Before analysing the role of public spending, territorial distribution is examined. Data show that the regions of the Centre-North, where 64% of Italian population live, received over 71% of total expenditure, while the South just 28,5% (Table 2). The disaggregation of expenditure in macro-categories confirms that the Centre-North area received the largest part of spending flows (Table 3), both current and for development expenditure in particular. Significant differences can be observed even when the expenditure is calculated in per capita terms. An inhabitant of the Mezzogiorno area

received, on average, 9,103 euro of current and 1,666 euro of capital expenditure, while an inhabitant of the Centre-North area, 13,078 and 2,022 euro respectively (Table 4). In per capita terms, the distribution of public spending has, clearly, privileged the more developed part of Italy.

Table 2. Centre-North and Mezzogiorno: main indicators and public spending (Italy = 100)

	Population	GDP	GDP per capita	Total public expenditure
Centre-North	64,1	75,9	117,1	71,5
Mezzogiorno	35,9	24,1	67,8	28,5

Source: Calculations on Istat and RPA Database.

Table 3. Territorial distribution of public expenditure, 1996-2007 (%)

Categories of expenditure	Centre-North	South
Capital	68,5	31,5
Current	72,0	28,0
Investment	71,2	28,8
Development	66,2	33,8

Calculated on cumulated values in current prices. Data are referred to the “enlarged public sector”.

Source: Calculations on RPA Database.

Table 4. Public expenditure, average 1996-2007

	As a % of GDP		Per capita	
	Centro-Nord	Mezzogiorno	Centro-Nord	Mezzogiorno
Correnti	41.0	50.0	13,078	9,103
Capitale	4,5	7,5	2,022	1,666
Investimenti	2.1	3.2	958	693
Sviluppo	3.4	6.5	1,227	1,121

In current prices. Data are referred to the “enlarged public sector”.

Source: Calculations on RPA Database.

Figure 4 illustrates the relationship between public expenditure for development and the per capita GDP in the twenty Italian regions. It is easy to see that there is no correlation between the two variables: in the considered decade three Northern Italian regions with “Special statute”, (Valle d’Aosta, Trentino Alto Adige and Friuli Venezia Giulia) received the highest share of spending flows; other regions, such as Sicily, Campania, Apulia and Calabria (the less developed) the lowest share. The regional distribution of public expenditure offers some important elements for consideration of the implementation of regional policy. In a nation in which profound regional development disparities exist, the distribution of financial resources aimed at territorial re-balancing should privilege the areas lagging behind. It does not seem to be the case of Italy, despite the fact that the programming documents and Development plans established that 45% of the public spending total should have gone to the Mezzogiorno area [Viesti (2009)].

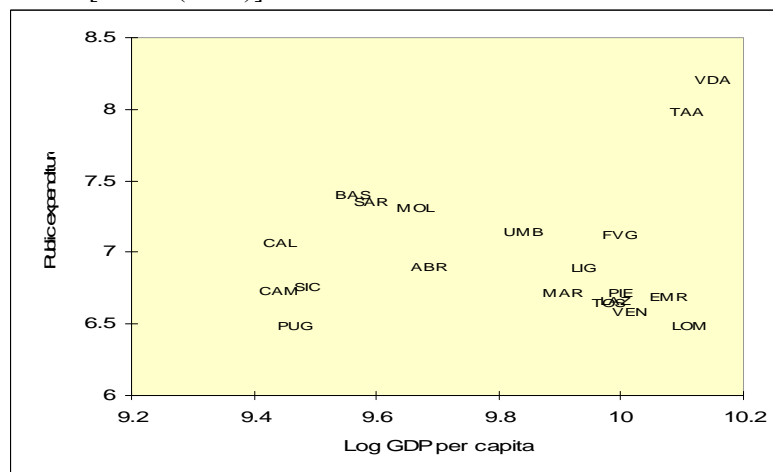


Figure 4. Public expenditure for development and per capita GDP – average 1996-2007. Source: Calculations on Istat and RPA Database.

Table 5 reports the results of FE estimations, in which the dependent variable is the rate of growth of labour productivity and different categories of expenditure are considered. The results suggest the existence of conditional convergence. Both the capital and development expenditure categories seem not to have influenced regional growth, while the current expenditure exhibits a positive and significant correlation. Regions with a large agricultural employment share have grown faster: this result is consistent with the hypothesis of conditional convergence, given that in the less developed regions the share of the agricultural sector is, on average, larger.

Table 5. Public spending and productivity growth: all regions

	(1)	(2)	(3)	(4)	(5)	(6)
Const	3.382** (8.01)	3.013** (8.70)	3.374** (7.91)	3.989** (8.52)	3.614** (11.80)	3.981** (8.64)
Log y	-0.3191** (-8.12)	-0.2901** (-8.74)	-0.3183** (-8.01)	-0.3863** (-8.90)	-0.3506** (-12.24)	-0.3858** (-9.01)
Development exp.	0.1305 (0.91)			0.1538 (0.87)		
Current exp.		0.1283** (4.64)			0.0915** (2.50)	
Capital exp.			0.1421 (1.00)			0.1718 (1.01)
Investment				-0.2346** (-2.20)	-0.1290** (-1.99)	-0.2386** (-2.32)
Agriculture				0.0915** (2.64)	0.0889** (2.91)	0.0913** (2.66)
Industry				-0.0836 (-1.08)	-0.1008 (-1.32)	-0.0836 (-1.11)
School				0.0913** (6.13)	0.0684** (4.61)	0.0919** (6.30)
<i>Hausman</i>	54.9 [0.00]	68.7 [0.00]	55.3 [0.00]	81.3 [0.00]	87.6 [0.00]	82.2 [0.00]
<i>N</i>	100	100	100	100	100	100
<i>Adj. R²</i>	0.30	0.37	0.30	0.39	0.41	0.39
<i>lnL</i>	330.5	335.7	330.6	340.1	341.7	340.4

Two-years annual growth. Fixed effect estimates. T-statistics in parentheses. * indicates significance at the 10 percent level; ** indicates significance at the 5 percent level. For Hausman's tests p-values are reported in squared parentheses; a low p-value counts against the null hypothesis that the random effects model is consistent, in favour of the fixed effects model.

Different results are obtained when the sample of twenty regions is split into groups. Table 6 reports the results for the twelve Centre-North regions. It is possible to observe a positive and significant correlation between the three categories of expenditure and growth, even when the control variables are included. In the Southern regions the results presented in Table 7 show quite a different situation: in fact while in the basic specifications it is possible to find a significant relationship between public spending and growth (with development and capital expenditure with negative coefficients), when controls are inserted the correlations are weak. In all estimations, the Hausman's test confirms that FE model is consistent with the nature of dataset.

Table 6. Public spending and productivity growth 1996-2006: Centre-North regions

	(1)	(2)	(3)	(4)	(5)	(6)
Const	2.830**	2.309**	2.804**	2.961**	3.143**	2.968**
	(8.79)	(5.30)	(8.90)	(6.32)	(9.70)	(6.45)
Log y	-0.2669**	-0.2211**	-0.2644**	-0.2760**	-0.3067**	-0.2766**
	(-8.70)	(-5.41)	(-8.80)	(-5.87)	(-9.74)	(-5.97)
Development exp.	0.3709**			0.3873**		
	(3.18)			(2.22)		
Current exp.		0.1097**			0.1079**	
		(2.39)			(2.27)	
Capital exp.			0.3843**			0.3924**
			(3.18)			(2.16)
Investment				-0.2882*	-0.2702*	-0.2764*
				(-1.83)	(-1.98)	(-1.81)
Agriculture				-0.1374	-0.0644	-0.1332
				(-0.88)	(-0.55)	(-0.85)
Industry				-0.0786	-0.0617	-0.0842
				(-0.74)	(-0.60)	(-0.78)
School				0.0437**	0.0853**	0.0446**
				(2.58)	(5.94)	(2.67)
Hausman	36.3	19.1	36.2	37.6	27.3	37.2
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
n	60	60	60	60	60	60
Adj. R ²	0.31	0.20	0.31	0.30	0.22	0.30
lnL	210.5	206.1	210.5	213.0	209.7	212.8

Two-years annual growth. Fixed effect estimates. T-statistics in parentheses. * indicates significance at the 10 percent level; ** indicates significance at the 5 percent level. For Hausman's tests p-values are reported in squared parentheses; a low p-value counts against the null hypothesis that the random effects model is consistent, in favour of the fixed effects model.

The results obtained can be explained in the light of previous literature on the effects of regional policy in Italy. Firstly, *caeteris paribus*, the impact of financial resources on productivity growth depends not only on their quantity, but also on the efficiency of their allocation. In general, this concerns different resources, both those aimed at physical capital accumulation and those devoted to human capital formation.

Table 7. Public spending and productivity growth 1996-2006: Southern regions

	(1)	(2)	(3)	(4)	(5)	(6)
const	4.145**	3.757**	4.161**	4.731**	4.058**	4.703**
	(6.77)	(15.49)	(6.75)	(6.75)	(20.21)	(6.95)
Log y	-0.3910**	-0.3647**	-0.3928**	-0.4503**	-0.3919**	-0.4498**
	(-6.80)	(-16.05)	(-6.76)	(-8.88)	(-22.34)	(-9.04)
Development exp.	-0.3181**			-0.2039		
	(-3.00)			(-0.64)		

Current exp.	0.1401**		0.0965			
	(5.24)		(1.68)			
Capital exp.	-0.2884**		-0.1416			
	(-3.61)		(-0.49)			
Investment	-0.1154		-0.1123*			
	(-0.84)		(-1.94)			
Agriculture	0.0897**		0.0761**			
	(3.62)		(2.99)			
Industry	-0.2413		-0.1544			
	(-1.20)		(-1.37)			
School	0.0938**		0.0569**			
	(4.22)		(2.05)			
<i>Hausman</i>	22.5	38.5	21.6	40.0	43.9	36.2
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
<i>n</i>	40	40	40	40	40	40
<i>Adj. R²</i>	0.45	0.51	0.44	0.48	0.49	0.47
<i>lnL</i>	129.9	132.2	129.5	133.8	134.2	133.5

Two-years annual growth. Fixed effect estimates. T-statistics in parentheses. * indicates significance at the 10 percent level; ** indicates significance at the 5 percent level. For Hausman's tests p-values are reported in squared parentheses; a low p-value counts against the null hypothesis that the random effects model is consistent, in favour of the fixed effects model.

In the case of Italy, some studies proved that the intervention policies for the development of the Mezzogiorno area had indirect effects – such as the reinforcement of rent-seeking behaviour - that notably limited the policies' effectiveness [Del Monte e Giannola, (1997)]. Differences between North and South were also found for human capital allocation among sectors, with a large prevalence of less productive activities (such as those in the public sector) in the Mezzogiorno [Di Liberto (2001)]. Secondly, great waste and inefficiency in the use of financial resources and in public investments are documented [Rossi, (2005)]. Finally, as shown by a study of Marrocu and Paci (2005) different impacts of the productive inputs exist between the North and the South. These authors estimated a production function for Italy for the period 1996-2003, showing that the stock of public capital exhibits different degrees of elasticity for the two macro-areas of the Country. More specifically, the economic infrastructures, which account for the largest proportion of the public stock, were much more productive in the South compared to the rest of the Country. In contrast, all the other types of public intervention showed a negative impact in the South and a low impact in the Centre-North. The cited analysis leads to the conclusion that in the Mezzogiorno the regional and local administrations are much less efficient in delivering public funds than in the rest of Italy.

4. Conclusive remarks

This paper has examined the evolution of regional disparities in Italy and the relationship between public spending and productivity growth. The results obtained can be summarised as follows. During the period 1980-2007, regions converged significantly in productivity levels but much less so in per capita GDP. Despite the profound regional disparities existing among the Italian regions, the distribution of public spending has not privileged the less developed areas. In per capita terms, in fact, the Centre-North received a higher public expenditure than the South. Differences in advantages for the less developed regions can be found if the expenditure is considered as a share of GDP.

The regression analysis shows how the impact of public spending on growth differs, dependent upon the regions and the categories of expenditure. When the entire sample is considered, a positive relationship between current expenditure and productivity growth is found. If the sample is split into Northern and Southern regions, the estimates lead to different results. In the first group, composed of the most developed Italian regions, results show a positive and significant correlation between capital public expenditure and growth, while in the less developed Southern regions productivity growth

results as only weakly linked to current expenditure. Despite the fact that the analysis refers to a relatively short period of time, it is coherent with the findings of previous studies and tends to suggest the existence of differences, not only in the amount of financial resources devoted to the North and the South of Italy, but also in the efficiency of their allocation.

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