

A Quantitative Evaluation of EU and National Cohesion Policies

Giulia Nunziante

Since the Treaty of Rome (1957) EU funds have been devoted to rebalancing regional economic and social disparities. Today more than ever, it does not seem feasible to advance towards a closer integration of the European Union, without favouring a greater economic and social cohesion between its countries. Yet, there are still very deep economic and social disparities both between countries and between regions that compose the Union, undermining its unity and cohesion. In order to rebalance these disparities, the EC Member States have developed a unitary strategy, namely the European Cohesion Policy, which has taken through different configurations according to the economic and political environment, the member states priorities, the financial resources, the past governance experience. In any case, the need to evaluate the appropriateness and effectiveness of development policies implemented through this powerful tool cannot be underestimated. For the new programming period (2021-2027), an amount of € 330.2 billion has been allocated in Europe for this policy, almost one third (30.7%) of the total budget of the European Union (€ 1,074.3 billion Euro net of Next Generation EU). See <https://www.consilium.europa.eu/it/policies/the-eu-budget/long-term-eu-budget-2021-2027/>.

The analysis of Cohesion Policy is very complex considering the different regional, multiregional and interregional programmes. There is an abundant and sophisticated literature on the effectiveness of EU Cohesion policy urged by the size of the budget and the critical role of the multilevel governance of development programmes. In most cases, this policy seems to have a positive impact on growth, but the significance of the results is far from uniform. A feature that emerges across various studies is that the policy impact depends on a series of conditioning factors (see Fratesi, 2016). Indeed, recent contributions pay attention to the relevance of some conditioning variables such as the quality of institutions – which positively affect Structural Funds effectiveness -, the expenditure typology – suggesting that investment in education and human capital are more viable for economic growth -, the territorial endowment in private, public, physical, and immaterial capital.

The endowment of public capital is considered among the most relevant factors impacting the growth process (Romp and De Haan, 2007). In that perspective, the Cohesion policy aiming to rebalance regional and social disparities, is largely involved in co-financing major infrastructure projects. Furthermore, the Cohesion policy effectiveness is improved by regional infrastructural endowment (Crescenzi and Giua (2016), Fratesi and Perucca (2014)). Therefore, investment flows in infrastructure should positively impact on social and economic wellness while the public capital stock should enhance EU action to development objectives, generating a virtuous circle. However, the efficiency of spending in public capital is not homogeneous, and the virtuous circle may be broken if the government cumulative investments – which is the basis of the Perpetual Inventory Method (PIM) used to measure the public capital in monetary terms – do not correspond to equivalent physical infrastructure due to waste, corruption, or other forms of inefficiency.

Inspired by Golden and Picci (2005a) who define the difference among the public capital in monetary terms and the public capital in physical terms (controlled for cost differences in infrastructure construction) a measure of corruption, “indicating waste, fraud, and mismanagement in the public contracting process”, we investigate in Chapter 2 of the thesis the sectoral efficiency public spending across the Italian regions.

The approach adopts the following strategy. Firstly, we build a set of time-varying indicators to measure regional sectoral physical infrastructural endowment over the last 30 years, thanks to the collaboration with the research centre Studiare Sviluppo involved in the industrial PhD. In particular, in order to measuring regional public infrastructure in physical terms for the very long period 1987-2016, we detect 30 elementary indicators mostly mentioned by main approaches used to compute infrastructural endowments. The collection of the elementary indicators has been challenging because of the long period being considered and the different sources adopted (Istat, Eurostat, MIT, Terna, Unionpetrolifera, Autorità di regolazione per Energia, Reti e Ambiente (ARERA), Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA)).

Secondly, we update the regional sectoral public investment elaborated by Picci (2001) for 9 assets for 1890-1998 using the public expenditures from the database *Conti Pubblici Territoriali* (CPT). Some relevant assumptions must be taken since CPT data are organized in 30 Functions of Government classes (COFOG). Then, we tackle the public capital stock measurement for 7 assets by cumulating gross fixed capital formation year by year and deducting depreciation. The estimation approach for capital computation follows the methodology developed by EUKLEMS and used by the Fundacion BBVA-IVIE (The Valencian Institute of Economic Research), the foreign research centre involved in the industrial PhD.

Finally, we measure public spending efficiency throughout the long and updated period 1987-2016 adopting a novel methodological approach. We regress the infrastructure index in physical terms on the net public capital stock based on the PIM, allowing for a series of control variables. The regression is carried out over period 1987-2016 using regional (NUTS2) data. For all assets, we observe a high fit of the model and positive and significant coefficients for the net public capital stock. The new public spending efficiency index is then constructed using the area-related fixed effects and trends from these regressions, along with the mean values of the residual terms.

We assess the robustness of the new public spending efficiency index and conclude that our measure of public spending efficiency is broadly capable of bringing to a panel, time-varying, setup the cross-region institutional features highlighted by the Golden-Picci measure. We then reproduce the econometric approach used in Coppola et al. (2018) to analyze the impacts of European and national cohesion policies on the GDP per capita of the 20 Italian NUTS Regions over the period 1994-2016, introducing the new Public Spending Efficiency index as a conditioning factor for the effectiveness of these policies. Some interesting findings emerge from this analysis.

A traditional indicator of quality of government (Charron et al., 2014) is characterized by a positive influence on the effectiveness of current-account subsidies to firms and of national cohesion funds, and a negative (not easy to rationalize) influence on national public investments. The corruption index (Golden and Picci, 2005) only interacts positively with current-account subsidies to firms (it also some marginally insignificant negative interaction with national public investments). The new index of public spending efficiency for all assets has a more widespread positive interaction with all national policies (but, again, for national public investments), although this interaction is fully significant only for current-account subsidies to firms. The spending efficiency in Roads, Buildings and Health interacts strongly and positively with the effectiveness of both current-account subsidies to firms and national cohesion funds. However, in the first two cases, it also interacts negatively with the effectiveness of national public investments. The pattern for Rails, Water and Others is, by and large, close to that of the aggregate index. All in all, the new indexes of spending efficiency seem capable to bring about interesting information in the debate about the effectiveness of regional policies. There is, however, both for some of these indexes and for the former ones (from Charron et al., and, to a lesser extent, from Golden and Picci) a *negative* interaction between spending efficiency (or good governance) and the effectiveness of national public investments that is not easy to explain. A final important point is that the effectiveness of EU funds, like in Coppola et al. (2018) is impervious to the influence of the regional context. Arguably, this feature is linked to the effectiveness of the multilevel and multiannual programming governance of EU funds.

In the last decades, despite various impressive technological waves, Italy and Spain experienced a very disappointing evolution of Total Factor Productivity (TFP) – contrary to most advanced countries. However, the two countries differ from their capital dynamics. In fact, Spain reveals a strong capital accumulation while Italy experienced a relative delay in capital growth since the 1990s. Moreover, both countries presented relevant productive fragilities and regional dualisms, characterized by disparities in local production structure and specialization, ICT pervasiveness, human capital, infrastructure endowment.

In chapter 3, we explore similarities and differences of the Italian and Spanish economies at the regional (NUTS2) level. We rely on the Solow neo-classical growth model for closed economies, supposing that if regions in the two countries are similar with respect to preferences and technology, they converge to a long-run steady-state per capita capital per worker (and TFP level), poor regions tending to grow faster than rich ones. This comparative convergence analysis is carried out over period 1980-2016.

In order to carry out this analysis, we construct long times series for regional capital stock by asset and sector. In doing so, we fill an important gap in the statistical information available for Italian regions. These key statistics are indeed crucial for the study of several relevant issues relative to the effectiveness of structural policies, regional growth and convergence/divergence, the disparities in productivity in Italy with their economic and social implications. The methodology used to construct regional investment and capital series for Italy by assets and economic sectors, relative to the period 1970-2016. The approach is based on the EUKLEMS adaptation of the PIM, basically already used by BBVA-IVIE to compute regional series for the capital stock in Spain.

Moreover, we elaborate regional series throughout 1970-2016 for human capital by gender, level of education, 8 sectors (Agriculture, Energy, Manufacturing, Construction, Trade, Transport and Communication, Finance and Insurance, Others) using the methodology introduced in Destefanis et al. (2004). Specifically, the interpolating procedure adopted two sources of data, one with higher (annual) frequency, but less detailed - *Annuario di statistiche del lavoro* and the *Bollettino mensile di statistica* -, and another one (from census data) much more detailed, but only available at ten-years intervals.

We take advantage of these data to construct and discuss beta and sigma convergence statistics for regional productive capacities over the period 1980-2016 and propose a regional taxonomy from the convergence perspective for Italy and Spain. This descriptive analysis highlights that the process of convergence, both for capital per worker and TFP, has been stronger in Spain than in Italy. Hence, we proceed to analyze the impact of EU and national cohesion policies on the convergence process in Italy and Spain during 1980-2016 adopting two different approaches.

First, we update and extend the analysis by Destefanis and Sena (2005), who considered the empirical long-run relationship between public capital and TFP across Italian regions. We now examine a more recent sample, we extend the analysis to the Spanish regions, and we consider other potential determinants of TFP, such as human capital and direct indicators of EU structural funds. The main findings from this analysis validate the previous descriptive evidence. In fact, only in Spain core public capital and, to a lesser extent, human capital affect TFP in differences and in levels. This means that these regressors influence the steady state of TFP in Spain, thus achieving a stronger convergence. In Italy, core public capital only affects TFP in differences, which means that it cannot influence the steady-state level of TFP. On the other hand, EU funds are significant in Italy and not in Spain. Our interpretation, consistent with some literature (de la Fuente and Vives, 1995; de la Fuente, 2003), is that in Spain ESIFs work out their effect entirely through public capital and human capital, while in Italy they have an extra impact on TFP (because, for instance, of a better management of funds as explained in Coppola et al., 2018).

In order to acquire further knowledge upon the role of European structural funds and of national funds in the convergence process, we run a second econometric exercise, extending and updating the work of Coppola et al. (2018) of GDP per capita determination to both Italian and Spanish regions over 1993-2016. This exercise highlights again a strong independent role for ESIFs in Italy but not in Spain. On the other hand, the measures of public investment are basically insignificant in Italy and very significant in Spain. Human capital is somewhat significant in Spain but only shows up in Italy in terms of variations. Once more, one gets the impression that in Spain ESIFs work out their effect entirely through capital accumulation, while in Italy they have an extra impact on TFP, which can be rationalized in terms of a better management of EU funds vis-à-vis nationally funded policies.