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Net fiscal flows and interregional redistribution in Italy: A long-run perspective (1951-2010)

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Abstract: This paper carries out a long-run reconstruction of the pattern of interregional redistribution in Italy operated through fiscal imbalances. In particular, by resorting to different sources, a discontinuous time series of Net Fiscal Flows for Italian regions and macro-regions from 1951 to 2010 is built up. The evidence collected is the basis to put forward both an assessment on the intensity and adequacy of redistribution, and an evaluation of the actual relationship between the deepening of Southern fiscal imbalance and the implementation of regional policies. On the first point, the main result of the paper is that, although the amount of resources transferred to Southern Italy from the rest of the country has been significant and increasing over time (at least up to the end of the 1990s), redistribution cannot be judged disproportionately large, in the light of income differences among regions. the public commitment in regional policies and the constitutional principles of equal access of citizens to the basic public services. Secondly, the analysis of data and the inspection of facts indicate that the relationship between the intensity of interregional redistribution and the effort of regional policies is definitely weak. This supports the view that increasing NFFs have little served the purpose of regional convergence; rather, the rise of imbalances seems to be mainly connected to the overall escalation of public expenditure, following the institutional break occurred in mid-1970s with the establishment of Regional Governments.

JEL classification: H50, H70, H72, R10.

Keywords: regional redistribution, regional convergence, net fiscal flows, Italy

1. Introduction

The dualistic structure of the Italian economy is unique among the countries of the European Union, for both the width of the gap between rich and poor regions and the geographic size of the relatively underdeveloped area – the so-called Mezzogiorno –, which accounts for more than 40% of national territory¹. Despite more than 60 years of regional policies, nowadays in the regions of Mezzogiorno (i.e. Abruzzo, Molise, Campania, Apulia, Basilicata and Calabria plus the islands Sicily and Sardinia) GDP per capita and GDP per worker are still respectively around 60% and 80% of that of Centre-North, and the unemployment rate nearly twice as much as the national average.

The presence of large and long-lasting differences between North and South of Italy in many indicators of economic and social development has urged public intervention and a strong financial commitment by central and local governments for the implementation of policies sound to promote regional convergence and territorial rebalancing at least since the 1950s. Characterized over time by different strategies, intermediate objectives and financial constraints, any public policy designed to fill the economic gap and apply the constitutional precepts of citizens' equality in accessing essential public services and progressivity criteria in income taxation has to some extent involved an inevitable redistribution in favor of Mezzogiorno from the more affluent Northern regions. This has originated an ongoing debate on the size of the Southern Net Fiscal Flow (NFF), i.e. the difference between total public expenditures targeted to Mezzogiorno regions and public revenues raised from that area², as well as on the burden imposed on contributing regions, its economic sustainability and even possible consequences on country stability, territorial conflict and incentives to secessions.

The relevance of this issue is clearly not restricted to the Italian case, which is both a particularly controversial one and peculiar since Italy is not even a federal country. A flourishing literature on the interregional redistribution operated through fiscal flows (see for example Bayoumi and Masson 1995, Barberán *et al.* 2000, Bosch *et al.* 2002, Rodden *et al.* 2003, Bosch *et al.* 2010) has pointed out how the issue is multifaceted and contentious in many countries, especially for the difficulty to single out how much of vertical (from central to local governments) and horizontal (from rich to poor local governments) transfers are worth (i.e. can be actually ascribed to the genuine purpose of offsetting

¹ Historical roots and structural changes in the North-South divide characterizing the Italian economy are spelled out in Malanima and Zamagni (2010).

² Postponing details on the definition of NFF to section 3, it is however the case to recall here that in the literature NFF takes on a variety of other names, such as fiscal residuum, fiscal balance, net fiscal transfer and so on.

geographical disparities) or instead unjustified and due to other motivations (political interests, lobbying, corruption and inefficiencies in the provision of local public services).

The subject of this paper is closely connected to this debate. Our objective is threefold. First, we intend to carry out a historical reconstruction of regional NFFs throughout six decades (1951-2010), with the purpose of estimating the size of interregional redistribution and describing its evolution over time. To the best of our knowledge, it is an unprecedented attempt, since existing literature has dealt with short time spans so far³. Secondly, we aim at supplying an assessment on the intensity of the observed interregional redistribution, taking into account the size of regional imbalances but also inequalities among regions, the public commitment in regional policies and the constitutional principles of equal access of citizens to the basic public services. Thirdly, we want to verify the role of regional and development policies devoted to fill the North-South gap in the deepening of Mezzogiorno fiscal imbalance occurred in the considered period.

The main results of the paper are that the amount of transferred resources to Mezzogiorno from the rest of the country has been significant and increasing over time (at least up to the end of the 1990s) but that, on the other hand, considering the severity of regional income differences and the burden imposed to contributing regions, the extent of interregional redistribution operated by fiscal flows cannot be deemed excessive. Also, regional policies do not turn out to be the most important determinant of NFFs rise; instead, the growth of regional imbalances seems to have been mainly engendered by the escalation of primary public expenditure characterizing in particular the period between mid-1970s and early 1990s, when the decentralization of expenditure responsibilities connected to the creation of “Regioni a statuto ordinario” (Regional Governments) and the concomitant centralization of revenues from municipalities to the national government have hampered fiscal discipline and encouraged public overspending.

After this introduction, section 2 is devoted to a survey on the long standing debate on interregional redistribution in Italy, from its origins to the recent contributions. Section 3 covers the long-run reconstruction of regional NFFs, carried out by building up discontinuous time series of public revenues and expenditures for regions and four macro-regions (i.e. groups of regions named

³ The only exception is the recent paper by Buiatti *et al.* (2014) where the ratio of Government Surplus to GDP is estimated for North, Centre and South for the period 1963-2007. However in that case the estimation method is based on an indirect reconstruction operated from national account data, and results only partially coincide with ours.

North-West, North-East, Centre and Mezzogiorno)⁴. Methodology, data and results are presented and an assessment is given on the intensity and adequacy of the redistributive effort in favor of Mezzogiorno. Section 4 addresses the issue of the causes of the observed dynamics of regional NFFs, arguing that the inspection of facts and data identifies the boom in overall public expenditure occurred from mid-1970s on (rather than regional policies for the development of Mezzogiorno) as the driving force of rising regional imbalances. Section 5 concludes the paper.

2. The North-South dualism and interregional redistribution: a long standing discussion

Early empirical studies on the regional redistributive effects of public finance in Italy date back to Pantaleoni (1891) and Nitti (1900). According to these studies, unification in 1861 led to increased fiscal pressure in the provinces of Mezzogiorno, due to the extension of the fiscal system of the former Kingdom of Sardinia, which was characterized by more numerous and higher taxes and tributes, to the other pre-unitary states. As a consequence, the South of the newborn country was called to contribute to the financing of national public budget to a higher extent than the North, despite its lower per capita income and population. On the other hand, the governments of the time targeted the North with relatively high levels of public investment for infrastructures aimed to support the ongoing industrial take off of local economies, while for the South an agricultural-based model of development was preferred. Thus, in the post-unitary period (1861-1900), the South suffered from a substantial drain of public resources.

Pantaleoni (1891) provides the first attempt to evaluate regional fiscal pressure relative to the regional distribution of national wealth for the years 1884-1889. To this purpose, the author considers taxes levied in each region on income, business activities, consumption and lotteries as the regional fiscal burden and, in the absence of figures on regional income and wealth, estimates the regional shares of national wealth by using the regional distribution of estate tax revenues. Finally, by comparing the regional distributions of fiscal burden and wealth, he shows how the uneven (i.e. not proportional to wealth) regional distribution of fiscal burden across regions favors residents in the North of the country. In fact, Northern regions (Piedmont, Liguria, Lombardy, Veneto) hold 48% of national wealth, bearing only 40% of national fiscal burden; for Central regions (Emilia, Tuscany,

⁴The geographical aggregation of Italian regions in “macro-regions” presented here is often used in the literature. It splits the country in four parts named North-West (Piedmont, Aosta Valley, Lombardy, Liguria), North-East (Veneto, Trentino Alto Adige, Friuli Venezia Giulia, Emilia Romagna), Centre (Tuscany, Umbria, Marche, Lazio) and Mezzogiorno.

Marche and Lazio) the corresponding figures are 25% of wealth and 28% of taxes; for Mezzogiorno 27% of wealth and 32% of taxes.

Nitti (1900) is the first to deliver regional estimates of the distribution of both tax burden and public expenditure for the years 1893-94 and 1897-98. On the tax revenues side, he basically shares the Pantaleoni opinion: fiscal pressure comes out to be relatively higher in the South, the gap being larger for income taxes. Likewise, he finds evidence of a clearly uneven regional distribution of public spending in favor of the North, especially for military expenditures (at that time the main category of primary public expenditure), public investment in infrastructures, public security and public workers' salaries⁵. Summarizing, in the view of Nitti, during most of the first 40 years after unification, the combination of higher fiscal pressure and lower public spending in the South produced a net flow of public resources toward the North. Northern tax payers were indeed contributing to the financing of public services by less than their potential fiscal capacity, while benefiting from relatively higher per capita levels of public services than the South⁶.

After Nitti (1900), none other empirical investigation has attempted to get reliable estimates of the regional distribution of public spending until the 1960s. Conversely, much effort has been devoted to the estimation of fiscal pressure at the regional level, and the debate mostly focused on size and direction of the implied fiscal redistribution among the macro-regions of the country. In this vein, Bernardino (1928) and Zingali (1933) reach opposite conclusions by looking at the years just before and after the First World War (respectively 1911-13 and 1919-21). A major feature of Bernardino (1928) is the regional repartition of excise and customs duties, made under the assumption that their incidence in a given region be proportional to the amount of all other taxes collected in the same region. Following this assumption, the contribution of Northern regions to tax revenues is estimated at about 58.9%, while their share of wealth amounts to 53.5%. On the other hand, the South contributes to tax revenues by less than its share of wealth. The higher contribution of the North as compared to its

⁵ In detail, Nitti found that military expenditure in the North was about twice as much as in the South, even if only half of the army was located in the Northern regions. Payments of the Ministry for Public Works (including public investment in railways) were as well considerably higher in the North.

⁶ The results of Pantaleoni (1891) and Nitti (1900) were carefully examined and criticized in the following years. Gini (1962) pointed out some severe methodological flaws of those studies, in particular due to the use of data on taxes collected in a given region as an indicator of fiscal pressure in that region, neglecting the problem of the geographical distribution of the real incidence of taxes. However, Gini himself, after a number of methodological corrections, obtained a regional distribution of the fiscal burden very similar to the one described by Nitti. Many years later, Giarda (1982) reaches similar conclusions. According to this latter, in the years 1860-1897, the South contributed to national tax revenues by more than its own fiscal capacity; with particular reference to 1897-1898, per capita fiscal burden was only 7.5% higher in the North than in the South, although the difference in per capita income among the two areas was not lower than 30%.

fiscal capacity is estimated to be even greater in the period 1919-21. Zingali (1933) criticizes the methodology of the regional allotment of taxes employed by Bernardino. As a result of his adjustments, Zingali finds the North to be beneficiary of a net transfer of resources.

Soon after the Second World War, the debate is revitalized by the availability of new data allowing for more appropriate regional sharing of fiscal burdens. In particular, regional data on consumption become available and this makes it possible to provide estimates of the distribution of indirect taxes based on their actual geographical incidence. Employing this additional information, but considering two different spans of time, i.e. respectively 1952-53 and 1953-34, and using different methods to evaluate the regional incidence of taxes, De Meo (1955) and Stammati (1955) find starkly different results. According to De Meo, Northern regions contribute about 60% of total tax revenues while accounting for 62% of national income; Central and Southern regions respectively pay 21% and 19% of total taxes, producing 20% and 18% of national income. Instead, Stammati (1955) maintains that the North contributes to national tax revenues by more than its own fiscal capacity.

The first attempt to supply regional estimates of both tax revenues and public expenditure after Nitti (1900) is made by Tarquinio (1969). This study, using cash-flow data on revenues (collected taxed) and payments (public spending), registered by Provincial Treasuries and reported in the “Conto Riassuntivo” (Summary Statistics) of the Ministry of Treasury from 1951 to 1965, suffers from two main limitations. First, as noticed by Forte *et al.* (1978), tax collected and/or payments settled by a given Provincial Treasury are not necessarily linked to economic facts taking place in the same Province; as Tarquinio himself recognizes, public works carried out in Naples could in principle be paid by the Provincial Treasury of Milan, or *vice versa*. Second, Tarquinio does not consider the payments settled by the “Tesoreria Centrale” (Central Treasury); moreover, he takes into account only a share of the payments settled by the Provincial Treasury of Rome. These omissions, according to Geri and Volpe (1985), imply that only 45% of total public expenditure is actually attributed to regions, while the remaining 55% is left out of the picture. On the other hand, Tarquinio (1969) presents three important merits. First of all, this study fills a research gap after many years. Second, unlike previous investigations, it uses *actual* public finance data, rather than data *estimated* from the distribution of personal income, personal wealth or other macroeconomic variables available at the regional level. Finally, it considers a remarkably long span of time. Its main results indicate that Northern regions have benefited from a relatively higher level of public expenditure, while the regional disaggregation of the tax burden shows a slight relative advantage for Southern regions in terms of both fiscal pressure and per capita fiscal burden. This evidence leads the author to conclude that between 1951 and 1965

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ordinary public resources have mainly been allotted to territories in accordance with their economic weight in terms of share of GDP and political importance, despite the rebalancing goals of the ongoing policies of “Intervento Straordinario” (Special Aid Program) for the development of Mezzogiorno.

The onset of Regional Governments in the early 1970s represents a structural break to the national tradition of strong centralization of the public sector. Fiscal decentralization and the presence of different levels of government bring about additional difficulties for a correct imputation of revenues and expenditures to the different regions. Forte *et al.* (1978) and Geri and Volpe (1985) try to cope with such difficulties in two alternative ways and reach very different conclusions. Forte *et al.* (1978) find a strong redistribution from North to South, while Geri and Volpe (1985) identify in the regional distribution of public spending the source of a relative advantage for the North.

Forte *et al.* (1978) estimate regional fiscal imbalances for the years 1971-1973 by using a number of indicators to proxy the regional distribution of taxes and public expenditure items. The evidence they collect allows them to document the existence of a significant drain of resources from the North to Mezzogiorno, occurring through both a lower tax pressure and (especially) a higher expenditure in the South. Notably, according to Forte *et al.* (1978), redistribution seems to be more effective in reducing current disposable income differences than filling the infrastructural and production gap between the two areas.

Geri and Volpe (1985) regionalize public expenditure flows in the 1970s by following the alternative strategy of using actual data retrieved from the “Conti consolidati del settore pubblico” (Public Administration General Accounts) in order to provide a quantitative assessment of the regional relative advantage or disadvantage produced by the allocation of public resources for the years 1971, 1975, 1977 and 1981. To do that, they compare the regional shares of public spending with the regional distribution of population and GDP, so identifying two stable patterns for Northern and Southern regions. On the one hand, Northern regions receive a share of public expenditure that is proportional to inhabitants but below their contribution to the formation of national income. On the other hand, the share of public expenditure received by the South is lower than the share of population but higher than their contribution to national GDP. More importantly, the fairness of the regional distribution of public expenditure is evaluated by analyzing disaggregated data on current and capital expenditure. The richer Northern regions benefit from higher per capita levels of current public spending with respect to Southern regions, this pattern being stable for the whole 1970s. On the other hand, consistent with the territorial cohesion objective of regional policies, per capita public investment turns out to be higher in the South, although this relative advantage progressively declines over the considered period.

Since the mid-1990s the political discussion on regional fiscal imbalances has been increasingly characterized by claims on a presumed excess in transfers of public resources from the North to the South, with some advocates of the federalist reform⁷ conceiving fiscal decentralization as a tool to empower Central-Northern regions to retain their own resources otherwise wasted in Mezzogiorno. The need to offer documented research about this issue, on which the debate has been often distorted by partisan attitudes, has spurred the recent resurgence of interest on the topic of interregional redistribution, also favored by the great improvement in the quality and quantity of data. Since 1996, the Italian Economic Development Ministry has started to systematically collect data on public revenues and expenditures at a regional level, providing the publicly available dataset of “Sistema Conti Pubblici Territoriali” (Regional Public Accounts System)⁸. These data represent a valuable source of information and have been indeed extensively used in a number of studies for the purpose of estimating regional NFFs or other facets of the North-South redistribution.

The main recent contributions include Pisauro (2009), Staderini and Vadalà (2009), Ambrosanio *et al.* (2010), Arachi *et al.* (2010), Grasso and Garganese (2010), Ferrario and Zanardi (2011), Giannola *et al.* (2011), Arachi *et al.* (2013), Cerea (2013), and Piperno (2013). Although these studies are heterogeneous for objectives, approaches, covered time spans (within the period 1996-2010) and even for data and computation methods, they share the common conclusion that a substantial amount of resources is transferred every year from Centre-North to Mezzogiorno, in the face of a Southern gap in per-capita income and the endowment of socio-economic infrastructures, at least partly justifying differences in per capita revenues and outlays originating NFFs.

3. Estimating regional Net Fiscal Flows and evaluating interregional redistribution

3.1. Methodology

This section is devoted to a reconstruction of regional public revenues, expenditures and NFFs in Italy throughout the period 1951-2010. Going back in time to six decades, a major difficulty of this task is connected to the lack of primary data from direct sources, at least for years prior to 1996. This problem obliges to resort to secondary data available from indirect sources, i.e. studies that provide estimates of regional tax revenues and public expenditures, with reference to different spans of time. In particular,

⁷ After the introduction of Regional Governments between 1972 and 1977, since 1992 a reform process aiming at adopting a more decentralized fiscal framework has got under way. In 2001 the Constitution was changed to recognize a wider scope to local governments' action. More recently, fiscal autonomy has been enhanced by law 42/2009.

⁸ See the websites <http://www.dps.tesoro.it/cpt/cpt.asp> and <http://www.rgs.mef.gov.it/> for more detailed information.

in what follows we employ data drawn from Tarquinio (1969) for the years 1951 to 1965, Forte *et al.* (1978) for the years 1971 to 1973, ISTAT (1996) for the years 1983 to 1992, and Fondazione Agnelli (1998) for the year 1995.

In order to deal with the heterogeneity of sources, we conduct a careful screening of both the items included and excluded in the calculation of aggregate variables and the methods employed for computation/estimation in each study. Then, we make the needed adjustments to make comparisons sensible: details on these adjustments are given in the following pages and shortly recalled in the Notes to Tables A1-A6 (Appendix). More generally, we are aware of limitations due to the quality of information on Italian territorial accounts, which especially before 1996 is often deemed not very reliable, also due to the national tradition of extreme centralization of the public sector. Nevertheless, we believe that our exercise is worthwhile and significant, considering that on one hand the previous literature has acknowledged the overall trustworthiness of our sources (even the oldest ones), and on the other hand the results we work out from our analysis are sufficiently neat to support at least qualitative (if not quantitative) conclusions on the dynamics of the examined variables. A further implication of the lack of primary data is that the time series we obtain are discontinuous, since many observations are only yearly averages over longer periods, while for some years data are missing. The nature of data, together with the small sample size, makes our data not suitable for time series analysis.

To integrate the series with the data of the last two decades, we consistently select the studies by Arachi *et al.* (2010) for the years 1996-2002, Staderini and Vadalà (2009) for the years 2004-2006 and Arachi *et al.* (2013) for the years 2007-2010, which considering the employed methodology, supply the most homogeneous data with those of the previous years.

Another important methodological point concerns the exact definition of our main variable, i.e. the Net Fiscal Flow: what is NFF and how is it measured? It is worth mentioning that there are several more or less similar ways to compute NFF⁹. The definition that we and most of our source papers adopt considers NFF as the difference between what the residents of a region or a macro-region contribute to the general (central, local and social security) government and what they gain from it in terms of public spending targeted to that (macro-)region¹⁰. This approach is quite comprehensive and in principle

⁹ The methodological problems connected to measuring NFFs are addressed for instance by the papers in Part I of Bosch *et al.* (2010); for a survey, see in particular Ruggeri (2010).

¹⁰ The opposite definition (i.e. public expenditure minus taxation) is also common. More generally, in federal contexts, NFF is alternatively calculated as the payments made by residents and regional government to other (federal or regional) governments minus what a region receives through direct spending and intergovernmental transfers (Ruggeri, 2010). A partly different approach distinguishes between vertical and horizontal fiscal imbalances (e.g. Bird and Tarasov, 2004);

meant to include all public revenues and expenditures (with the exceptions mentioned below) relevant to a given territory. In particular, both current and capital expenditure are taken into account, while conversely revenues/expenditures of public enterprises and transfers from/to all other levels of government are excluded.

A common feature of previous studies on regional NFFs is the omission from computations of interests on public debt. This is usually motivated by the practical problems involved in the allocation of interests among regions. Several authors also argue that interest payments should be kept out of NFFs calculation because they do not bestow additional benefits on the recipients, who would have otherwise purchased private securities. As pointed out by Ruggeri and Yu (2000), this argument is little convincing since the cost of servicing public debt is borne by taxpayers often dwelling outside the region where interests are paid and/or public debt accumulated because primary outlays were not financed by current taxes. Although the payment of interests constitutes an additional component of interregional redistribution (see Giannola and Scalera, 1995 for more detail on the Italian case), we will not include it in NFFs, given the difficulty of evaluating this item. However, some descriptive data on the regional distribution of interest payments on public debt are reported in section 3.4 to highlight its potential relevance in the North-South redistribution.

An additional issue we deal with concerns the possible adjustment of regional NFFs to account for aggregate public surplus or deficit. In fact, when the purpose of reckoning NFFs is that of representing the intensity of regional redistribution operated through the public sector, it seems sensible to cleanse regional balances from the amount accounting for the regional share of the overall surplus or deficit (McCracken, 1993; Mansell and Schlenker, 1995; Ambrosanio *et al.*, 2010; Arachi *et al.*, 2013). To do that, we amend original data by allocating surplus or deficit to regions on a per capita basis, so as to have a zero aggregate net fiscal flow (i.e. national aggregate NFF=0 and therefore national per capita NFF=0). Finally, concerning the regional gains from public spending, the approach adopted by all our sources and ourselves is the one known as the benefit approach (for alternative approaches, see Ruggeri, 2010) which focuses on the actual beneficiary of spending. As it is known, this latter is not always residing in the region where expenditure is formally recorded, like in the case of general public services concentrated in Lazio, the region of the capital Rome, but actually regarding all residents throughout the country.

Arachi *et al.* (2010) evaluate NFFs for Italian regions and then break them down in their vertical and horizontal components.

3.2. Data

The Data Appendix collects six Tables displaying the data on regional per capita public revenues and expenditures (yearly averages on 11 periods between 1951 and 2010) that we employ in this section and the following ones. The figures reported in Tables A1 to A6 are derived from original data supplied by the source papers after suitable manipulation. All of them are converted from Liras current values into constant 2010 Euros values through a national-wide GDP deflator.

The data drawn from Tarquinio (1969) for the period 1951-1965 are definitely the most difficult to be made homogeneous with other information. Regional revenues are originally constituted by cash inflows to Provincial Treasuries of the Ministry of Economy and Finance, i.e. taxes on personal income, business activities, production, consumption, customs, revenues from lotteries and public monopolies. Similarly, expenditures are calculated as the regional sum of the payments made by Provincial Treasuries of the Ministry of Economy and Finance. As revenues and expenditures pertaining to the Central Treasury of the Ministry of Economy and Finance are left out, we correct the original data by adding a proportional (to the population residing in the region) share of the overall amount revenues and expenditures of Central Treasury to revenues and expenditures of Provincial Treasuries. In addition, since Tarquinio (1969) omits capital expenditures, we proceed to a further adjustment by estimating the missing items. To do that, we use data from Ministero dell'Economia e delle Finanze (2011) and Picci (2002): in particular, we retrieve from the former (Table 22, p. 50) the shares of current and capital public expenditure for the years 1950 to 1970 so as to estimate the total capital public expenditure, and then attach to each region a share of it according to the estimated allocation of public investments among Italian regions in years between 1948 and 1969 (Picci, 2002, pp. 32-34). This procedure yields reasonably reliable estimates of *total* regional revenues and expenditures which are the basis for calculation of the per capita data reported in Table A1.

Table A2 reports data relative to years 1971-73 originally presented in Forte *et al.* (1978). Tables A3, A4 and A5 summarize the same kind of data for years 1983-85, 1986-89 and 1990-92 retrieved from ISTAT (1996). Unlike Tarquinio (1969), the more refined detail of information allows in these cases to distinguish not only between current and capital expenditures but also to single out social security revenues and expenditures. As a consequence, Tables A2 to A5 show both total regional NFFs (total revenues minus total expenditures) and “Net of social security” regional NFFs (tax revenues minus the difference between total expenditures and social security payments). Table A6 collects data from Fondazione Agnelli (1998) for the year 1995, Arachi *et al.* (2010) for years 1996-2002, Staderini

and Vadalà (2009) for 2004-2006 and Arachi *et al.* (2013) for 2007-2010. Since Fondazione Agnelli (1998) does not supply data on social security payments, these are supposed to be equal in real per capita terms to the values of 1990-1992. In Table A6 no distinction is made between social security and other items for both payments and revenues, since the source papers do not supply these details. Finally, following Arachi *et al.* (2010) and Arachi *et al.* (2013), only data on NFFs are shown for 1996-2002 and 2007-2010.

Data of Tables A1 to A6 are the basis to build up the series of yearly averages of regional NFFs in absolute Euro 2010 values reported in Table 1. These values are adjusted for aggregate budget surpluses or deficits (i.e. modified as explained above to make aggregate surplus/deficit equal to zero), in order to highlight the inter-regional redistribution operated through the public sector, regardless the occurrence of aggregate primary surpluses or deficits. Table 2 shows the NFFs in absolute Euro 2010 values for four macro-regions, and also reports both per capita and NFF/GDP ratios.

<< TABLE 1 >>

<< TABLE 2 >>

3.3. Results

To have a first glance on the outcome of our reconstruction, we can look at Table 2 and Figures 1a, 1b, 2a and 2b¹¹, where the time paths of NFFs (in 2010 billion Euros absolute and per capita values) for the four macro-regions are displayed. The figures show that the evolution of NFFs over time is characterized by the following major features:

a) despite the multiplicity and heterogeneity of sources, NFFs of all macro-regions follow a consistent and relatively smooth pattern throughout the whole period;

b) a strong and continuous (at least until the end of the 1990s) increase in absolute e per capita values of NFFs in favor of the South takes place, with an apparent deepening of redistribution;

c) North-West and Mezzogiorno increasingly assume opposite roles as structural donor and recipient, while North-East and Centre are initially neutral and turn out to appreciably contribute from mid-1970s onwards. More precisely, both absolute and per capita values of Mezzogiorno NFFs follow a U-shaped curve with the trough in the second half of the 1990s, while North-West shows a symmetrically opposite evolution. For the other two macro-regions the variability of NFF indicators is

¹¹ Figures 1a and 2a show the time dynamics of actual values, while figures 1b and 2b present the Kernel-weighted local polynomial smoothing for each macro-region.

definitely lower. North-East initially exhibits NFFs close to 0 in terms of both absolute and per capita values while later on, between 1984 and 1999, the trend is increasing. Since 1999 the NFF of this macro-region again shrinks in both absolute and relative terms. Finally, for the regions of Centre, the NFF is negative and close to the figures of Mezzogiorno up to the beginning of the 1970s; then it turns to be positive and increases steadily throughout the period. Finally, in the last four years (2007-2010), the NFF becomes greater in Centre than North-East.

<< FIGURES 1a – 1b >>

<< FIGURES 2a – 2b >>

3.4. *An assessment of redistribution*

The purpose of this section is to provide an overall assessment on the intensity of the observed interregional redistribution in Italy by making use of indexes and analytical procedures intensively employed in the literature. As it is customary, in evaluating the extent of redistribution, we take into account actual inequalities among regions, the public commitment to reduce regional disparities and the constitutional principles of equal access of citizens to the basic public services. Also, our judgment is somehow based on comparisons with redistribution carried out through public finance flows in other countries, even if these comparisons always require great caution, due to heterogeneity in defining and measuring redistribution (Lambert *et al.*, 2011). Before starting our analysis, we must recall that, following the most common approach in the literature, our data on NFFs do not include the payment of interests on public debt. It is important to bear in mind that over the whole period 1951-2010 the share of public bonds held by residents in Mezzogiorno has been much lower than the one belonging to Northern residents, so that Southern regions have permanently received lower interest payments by the State than other macro-regions (see Table 3; the average value of interests paid in the Centre-North is set equal to 100; only selected years are reported due to data availability). The lack of public outlays connected to interest payments obviously affects our results: considering interest expenditure would reduce the extent of interregional redistribution in a significant way (Giannola and Scalera, 1995).

<< TABLE 3 >>

To assess the actual extent of the interregional redistribution emerging from Figures 1 and 2, it is preliminarily useful to look at the relationship between regional per capita NFFs and per capita GDP between 1951 and 2010, to check whether the correlation between NFFs and regional fiscal capacity is positive and high enough to indicate a substantial redistribution. The four graphs depicted in Figure 3 are related to different time intervals, i.e. the whole period 1951-2010 in the top left, and the three sub-

periods 1951-90 (top right), 1984-2010 (bottom left) and 1991-2010 (bottom right). As shown in the top panels, the link between regional income and fiscal balances turns out to be fairly weak on the whole, and particularly for the first four decades. Consistently, R^2 values are low for the whole sample regression and for the years 1951 to 1990. For this latter period the regression coefficient is not even statistically significant. This evidence is partially contrasted in the bottom panels, indicating a much stronger relationship for the last two decades. From the mid-1980s onwards, more affluent regions start recording significant increases in NFFs: according to regressions' coefficients, on average, an additional per capita euro involves a rise of about 35-40 cents in per capita NFFs.

<< FIGURE 3 >>

The descriptive evidence just described is made more significant by estimating the Bayoumi and Masson (1995) and Bosch *et al.* (2002) equations on the same data. Bayoumi and Masson (1995) estimate the size of territorial redistribution by studying the relationship between regional disposable income after that public revenues and expenditures have taken place (i.e. $y_i^d = GDP_i - NFF_i$; i stands for region) and initial regional income GDP_i . Dividing these variables by average values to normalize, and taking logarithms, we get the equation to estimate:

$$\ln \frac{y_{it}^d}{y_{at}^d} = \alpha_i + \beta \ln \frac{GDP_{it}}{GDP_{at}} + e_{it} \quad (1)$$

where the subscripts t and a respectively denote time and national average value. The estimated value for β can be used to account for the redistributive impact of public finance. As a matter of fact, if an increase of 1% in $\frac{GDP_i}{GDP_a}$ involves a corresponding increase of 1% in $\frac{y_i^d}{y_a^d}$, then the redistributive impact is zero, whereas when the increase of $\frac{y_i^d}{y_a^d}$ is only 0.7%, then redistribution can be assessed at 30%. Therefore $(1-\beta)$ represents the size of redistribution brought about by interregional fiscal flows.

A complementary way to accomplish the task of assessing the redistributive impact of fiscal flows is the estimation of the Bosch *et al.* (2002) equation:

$$\ln \left(1 - \frac{NFF_{it}}{GDP_{it}} \right) = \theta_i + \gamma \ln \frac{GDP_{it}}{GDP_{at}} + e_{it} \quad (2)$$

where γ (the income elasticity of NFFs) is again a measure of the intensity of redistribution. In the presence of a redistributive function for NFFs, we expect that $\hat{\gamma}$ takes negative values: the higher its absolute value, the stronger impact of fiscal flows¹².

Table 4 summarizes the results of estimation of the two equations (the first six columns refer to equation 1; the last six columns to equation 2) for both the whole period 1951-2010 and the sub-period 1984-2010, during which the extent of NFFs has become more significant. Over the entire span of time 1951-2010, the extent of redistribution turns out to range from 8% (Fixed Effects estimates) to 35% (OLS estimates). Since, according to the Hausman test reported in the eighth row of the Table, FE should be preferred to the other two kind of estimations, we can conclude that over the whole period 1951-2010 the redistributive impact of public financial flows can be deemed rather weak. On the other hand, the picture is somewhat different when only the last 25 years are taken into consideration, since now the size of estimated redistribution looks more substantial, ranging between 38% and 46% (in the case of Random Effects estimates, i.e. the ones obtained with the most appropriate method, according to the Hausman and Breusch and Pagan tests, the redistributive impact of public financial flows is estimated around 44%).

<< TABLE 4 >>

Although comparisons with other studies and other countries require the due circumspection, weighing this result against most of the existing literature confirms that the intensity of interregional redistribution in Italy can be judged limited over the entire period and relatively higher (but not disproportionately elevated) in the sub-period 1984-2010. In fact, the size of redistribution through public fiscal flows is estimated around 40% (average over several countries) by MacDougall (1977); 30% for Spain by Castells *et al.* (1981); 39% for Canada and 22% for the United States according to Bayoumi and Masson (1995); 38% in France, 26% in UK, 18% in Canada and 16% in the USA by Méliz and Zimmer (1998); 40% for Germany by Duboz and Nicot (1998); 45% on average in several European countries, by Castells (1998). More recently, Barberán *et al.* (2000), estimating equation (1) for Spain in 1991-96, evaluate between 32% and 38% the redistributive power of the activity of the Spanish central public administration. Bosch *et al.* (2002) evaluates redistribution as follows: 28% for Australia in 1985-1999, 33% for Spain in 1991-1996, 18% for the United States in 1981-1998 and 5%

¹² Bosch *et al.* (2002) show that there is a precise relationship between β of equation (1) and γ of equation (2), i.e. the redistributive power $(1 - \beta)$ is equal to $-\gamma$.

for the European Union in 1986-1999¹³. Rodden (2010) estimates the redistributive power of public grants between 1990 and 2005 as follows: less than 10% in Argentina, Brazil, India, United States and European Union; between 10% and 20% in Australia, Germany and Spain; around 23% in Canada. Finally, Decressin (2002) and Arachi *et al.* (2010) use similar estimates to assess the extent of redistribution in Italy respectively in the periods 1983-1992 and 1996-2002; the former finds that the redistributive power of fiscal flows is around 24% while for the latter the estimate is about 28%¹⁴.

Additional information is conveyed by Figures 4a and 4b, concerning the actual real burdens and benefits (i.e. relative to regional GDP) imposed to (enjoyed by) residents of contributing (benefited) regions. While absolute and per-capita NFFs remarkably increase in the last 20-25 years, the ratios of NFFs to regional GDP show more moderate dynamics. Figures 4 show these ratios in the four macro-regions. While not surprisingly North-West turns out to be the macro-region with the most significant contribution to interregional transfers relative to its own GDP, in accordance with the progressivity of the Italian fiscal system, its role in nourishing the redistribution toward Mezzogiorno appears to be declining over time. As a matter of fact, from 1980s onward (and particularly in 2007-10) the weighted-by-GDP contribution of North-West to transferring resources to the South comes out to be less than in 1950s-1960s. Concerning North-East, the weight of NFF on its own GDP remains always rather low, within 6%, even in the 1980s and 1990s when absolute and per capita transfers significantly increase. Concerning Centre, from 1972 onward its NFF/GDP ratio is always very close to North-East and at the end of the period it is about 5.13%, not much lower than the value of North-West (7.43%).

<< FIGURES 4a – 4b >>

Finally, to complete our assessment of the magnitude of interregional redistribution we separately consider the evolution of public outlays and revenues (Figures 5 and 6). Figure 5 shows the relative values of per capita public expenditures in the four macro-regions between 1971 and 2006. The graph highlights that while in the 1970s per capita public expenditure is higher in Mezzogiorno than in all the

¹³ “However, if we consider that the relative size of the European Union budget in terms of GDP is quite small..., the redistributive power is in fact very high” (Espasa, 2001, page 31).

¹⁴ Looking at comparisons of per capita regional or macro-regional NFFs across countries, the case of Northern Ireland is particularly striking: according to recent estimates (N.I. Department of Finance and Personnel, 2014), in 2011-12 per head NFF was about 6700 Euros, i.e. 4000 Euros net of UK aggregate per capita deficit (in 2009-10 the same figures were respectively 7500 and 4500 Euros). Wales and North-East England show smaller but still significant and long-lasting imbalances (Economic Outlook, 2008; Eden, 2011). In Germany, some Länder display large per capita differences between received and disbursed payments (considering both horizontal LFA and vertical BEZ transfers, see Deutsche Bank Research, 2011). Throughout the period 1995-2010, this aggregate, similar to NFF, amounts to about 1800 Euros and 1600 Euros per year respectively for Bremen and Berlin. These comparisons, even if require even more caution than the ones on the redistributive power of public finance, highlight that the figures of the Mezzogiorno imbalance do not look disproportionately large with respect to other European territories.

other macro-regions, from the beginning of the 1980s, it is steadily below the national average, with the difference increasing over time (in 2004-06, more than 5% with respect to Italy and about 8% with respect to the North). Conversely, per capita public expenditure in North-West and North-East is almost always above the national average, whereas in the Centre it is increasing throughout the period: lower than in all the other macro-regions until the end of the 1990s but higher in 2004-06.

To set up Figure 6, we resort to the notion of regional “normal” per capita tax revenues, meant as the personal income tax (IRPEF) payment owed by a resident earning an income equal to average regional GDP¹⁵. Figure 6 illustrates the time path of macro-regional ratios actual/normal per capita tax revenues (normalized by setting the value of Italy equal to 1), pointing out that (except in the 1970s) the ratio is for Mezzogiorno always well above the national average (at least 5% higher from the 1990s onward). In North-West and Centre the ratio is steadily close or just above the average (around 4% higher in North-West), while in North-East it is permanently lower (more than 15% lower from 1995 onward). This evidence confirms that while in absolute terms per capita values of tax revenues in Mezzogiorno are always significantly lower than in the other macro-regions, due to the lower income of this area, the Southern citizens end up with paying considerably more than they would if overall fiscal revenues were shaped by the same progressivity involved by IRPEF personal income tax.

<< FIGURES 5-6 >>

Summarizing, the evidence shown above seems to supply little ground for extreme judgments on the extent of interregional redistribution in Italy over the considered span of time. While in fact in absolute terms the amount of transferred resources is significant and increasing over time (at least up to the end of the 1990s), many indicators show that the impact of redistribution can be deemed to be moderate considering the severity of regional income differences and the relatively reasonable burden imposed to contributing regions.

4. Why have regional NFFs increased so much?

Whatever the judgment on the intensity of the North-South redistribution, the evolution of NFFs over the considered six decades raises a question on the reasons behind the observed increase in interregional imbalances. In this section we consider and contrast two alternative explanations, to argue

¹⁵ To reckon macro-regional normal tax revenues, we assume that the taxpayer is a household with two children and both parents employed, with income equal to the average macro-region income. Then, by making use of the procedure implemented at the website <http://www.dossier.net/irpef/calcolo-irpef.htm>, we calculate her tax bill. Tax rates and family tax credits refer to fiscal year 2012. For example, the taxpayer of North-West in 1971-73 has a taxable yearly income of 16,891 Euros, a tax credit of 677 Euros and a theoretical tax bill of 3,284 Euros.

that the most likely cause of NFFs deepening has not been in regional and development policies aiming at filling the North-South gap, but rather in the remarkable increase of the overall primary public expenditure occurred from mid-1970s on. To that escalation contributed a condition of softened public budget constraint, brought about by the overhaul of local government financing system which in the same period led to more centralized revenues from municipalities to the national government and a strong decentralization of expenditure (in particular health and transportation expenditures) due to the establishment of Regional Governments.

Looking at the width of the historical gap between rich and poor regions of the country, the first natural candidate to explain the NFFs dynamics is the implementation of regional policies implying the transfer of large amounts of financial resources to Mezzogiorno¹⁶. In this view, the rise in North-South transfers may have served the purpose of reducing the social and economic gap of Mezzogiorno by financing the needed public investments. To explore this conjecture, in the following we consider the progression of the Southern per capita GDP relative to the national average, some additional evidence on socio-economic indicators of the gap, as well as the main facts and features of regional policies in Italy throughout the period 1951-2010.

Important aspects of the dynamics of the Mezzogiorno gap are illustrated by Figure 7 and Table 5 which respectively show the time path of relative per capita GDP (the national average per capita GDP being set equal to 100), and indexes of aggregate productivity, accumulation and industrialization rates (figures expressed in relative terms, 100 being the national average). The reported evidence allows identifying four different phases in the process of regional convergence/divergence in Italy¹⁷, the turning points being related to changes in the nationwide economic cycle and regional policies' switches.

<< FIGURE 7>>

<< TABLE 5>>

¹⁶ A rise in total investment expenditure in the South connected to the implementation of regional policies has to be backed by increases in domestic (i.e. Southern) private or public saving or/and outside saving. This latter includes public (NFFs) and private (mainly, direct investments by firms and financial flows by banks) components. To the extent that domestic saving falls short of total investment, transfers from outside are needed. An application of national accounting methodologies to the case of Mezzogiorno imbalance is carried out by Savona (2010).

¹⁷ The evolution described by these four stages strictly complies with the main results of the large extant literature on regional convergence in Italy, in particular with the evidence that "per capita income inequality has decreased over the period 1960-75, but (...) it has started to increase again from the mid-1970s" (Paci and Saba, 1997, page 1). Among other references, see for example Dow *et al.* (2012), Iuzzolino *et al.* (2011), Di Liberto *et al.* (2008), Terrasi (1999), Mauro and Podrecca (1994).

Stage 1: Convergence. From (late) 1950s to the early 1970s, a relatively long period of substantial regional convergence takes place.

Stage 2: Stability. After the Southern relative GDP reaches its maximum value in 1972-74, in the following decade the nationwide economic slowdown coincides with a stage of stability in regional disparities, with Mezzogiorno going through a progressive rundown of industrial investments and a fall in relative productivity.

Stage 3: Divergence. In the decade from mid-1980s to the end of the 1990s, while the Italian economy experiences a stage of sluggish recovery, the North-South gap deepens.

Stage 4: Stability (again). From the end of the 1990s onward, the North-South output gap remains substantially steady, thus keeping Mezzogiorno relative output at a level barely higher than in the 1950s.

Tables 6 and 7 emphasize the persistence of the Italian dualism considering socio-economic facets of the gap. According to Table 6, the share of households in poverty is in 2008 still significantly higher in the South than in the rest of the country. Disaggregated data on the Human Development Index (Felice and Vasta, 2012) reported in Table 7 confirm that in Italy, even from the more general perspective of socio-economic development, the regional convergence came to a halt in the 1980s, despite the subsequent substantial increase in NFFs.

<< TABLES 6-7 >>

Concerning regional and development policies, in the first two stages (until mid-1980s), covering years of rapid growth (the so-called Italian economic miracle) and a final decade of stabilization, regional policy is driven by the Special Aid Program leading Mezzogiorno to start industrialization and significantly reduce its development gap. The policy stance is characterized by centralized (at a national level) governance and a strong supply-based approach, typically following a top-down pattern. The “Cassa per il Mezzogiorno” (Mezzogiorno National Agency) is the main responsible for both planning and funding interventions, focusing its action on: a) public investment in infrastructure; b) public investment in state-owned enterprises; and c) funding of private investment through both capital and interest subsidies.

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Between the end of 1980s and the first 1990s regional policy comes to a major turning point. The Mezzogiorno National Agency is dismissed and the Special Aid Program abolished and replaced by ordinary regional policies operating for all depressed areas in the country. The new “bottom-up” approach, more consistent with the European Cohesion Policy framework, focuses on local systems of small and medium-sized firms mostly operating in traditional industries and is based on the idea that

“endogenous” development may be triggered by active participation of local agents in the policies’ programs. Public support to local demand is expected to foster local supply and boost local industrial activities: this justifies fiscal incentives to firms, income subsidies for households and job creation measures in the public sector (especially in Regional Governments). Since the late 1990s, a strategy of public intervention named “Nuova Programmazione” (New Planning) has been adopted, reconciling the confidence in the ability of Southern regions to attain endogenous development, with extensive external intervention aimed at improving the local social and economic context. The declared ultimate aim of this strategy is the creation of conditions suitable for a self-sustaining development process through improvements in the socio-economic and institutional context of Mezzogiorno. The evidence of lacking regional convergence supports the view that this strategy has not been successful, although the causes of the failure are still an open question (Erbetta and Petraglia, 2011).

In terms of resources allotted to the South through regional policies, Tables 8 and 9 provide some valuable information. Table 8 shows that the financial effort of regional policies has increased up to mid-1970s and decreased afterwards, depicting a path which closely resembles the evolution of the gap. In percentage of national GDP, total resources deployed for public intervention in Mezzogiorno increased from 0.73% in 1951 to 1.32% in 1980, while the only funding of public investment and business incentives rose from 0.73% to 0.90%. The decreasing trend experienced in the following years occurred in correspondence with: the progressive decline of the activities of Mezzogiorno National Agency in the 1981-1986 period (1.19%), the ending of extraordinary intervention in 1987-1993 (1.10%), and the beginning of the ordinary intervention for depressed areas in 1994-1998 (0.74%). In addition, Table 8 emphasizes the effects of switching regional policies from supply side interventions to demand-targeted measures (fiscal subsidies to firms, income support for households and job creation measures in the public sector), mirrored by the increase in the share of public resources assigned to payroll tax reductions. Table 9 shows that the decline in capital public expenditure in Mezzogiorno has become even sharper in the last years, amounting in real per capita terms to a shrink of about 30% between 2001 and 2010.

<< TABLES 8-9 >>

Due to limitations of our data, it is difficult to ascertain whether and how much the rise of NFFs may be ascribed to the evolution of regional policies aiming at filling the North-South gap. However, by focusing on the relationship between the dynamics of NFFs and the time path of regional convergence/divergence, we get some useful hints. Considering the relative regional income $RRI_{it} \equiv$

$\frac{GDP_{it}}{GDP_{at}}$ (symbols are the same as in Section 3.4), Table 10 shows the coefficients of linear correlation between (a) absolute and percentage changes in RRI_{it} , and (b) regional NFFs in absolute per capita terms (b1), as ratios to regional GDP (b2), and as natural logarithms of that ratio (b3), considering both current and lagged values. As one can see, no significant correlation emerges at the usual threshold of 5% confidence. The same conclusion is confirmed by an inspection of Figure 8, where percentage changes in RRI_{it} are contrasted to lagged per capita NFFs and lagged natural logarithms of NFF to GDP ratios: both the scatter plots depict a point cloud without any hint of a possible relationship between net fiscal flows and relative GDP growth¹⁸. Although data are little suitable to econometric applications, we also made several attempts to detect a possible influence of NFFs on convergence of Italian regions. In no case we found significant effects of Southern regions imbalances on β and σ convergence.

<< TABLE 10>>

<< FIGURE 8>>

Summarizing, from the scrutiny of the events occurred throughout the four phases of convergence/divergence and the examination of Tables 5-10 and Figures 7-8, the link between the dynamics of regional NFFs and the evolution of the North-South gap appears faint, so that regional fiscal imbalances do not seem to have regional policies aiming at the development of Mezzogiorno among their main motivations. Indeed, for the first three phases, there is no evidence that increasing NFFs have been accompanied by a reduction in the gap: actually, on one side the sustained process of regional convergence of the 1950s-1970s was achieved at the cost of moderate interregional transfers; on the other, the gap widened just in correspondence to larger and increasing NFFs. Finally, in the last stage (from the mid-1990s onwards), a stable or slightly decreasing gap has been matched by shrinking NFFs.

While the hypothesis that regional imbalances have been caused by the need to finance development policies does not seem to hold, alternative explanations of rising NFFs may be rooted in the escalation of primary public expenditure, which especially characterizes the period between mid-1970s and early 1990s. The size of the growth in the value of public expenditure can be appreciated by

¹⁸ Many other attempts to detect correlation between NFFs and indicators of the Mezzogiorno gap yield similar results. In particular, aware that the relationship between relative regional GDP and NFFs might go the other way round (i.e. increasing NFFs may have been the effect of excess consumption in the South and fiscal sterilization of the Southern balance of payments' deficits), we also tested the existence of correlation between per capita NFFs and natural logarithms of NFF to GDP ratios on one side, and lagged RRI_i on the other, obtaining again the result of low and insignificant correlation.

examining the data of Ministero dell'Economia e delle Finanze (2011): between 1950 and 1999, the total expenditure increases from 30 to 721 million Euros (real values at 2009 prices) then declining to 699 million in 2009. As a ratio to GDP, public expenditure is around 25% in 1950, 30% in 1960, 33% in 1970 and then 41% in 1980, up to 56% in 1993, to reduce just below 50% after 2000. Based on the same source, Giarda (2011) estimates that primary expenditure is 22.5% of GDP in 1951, 27.6% in 1960, 31.8% in 1970, 36.9% in 1980, 43.2% in 1990, 41% in 2000 and 46.7% in 2010. According to ISTAT (2010), primary government expenditure increases from 37% to 44% of GDP between 1980 and 1993, then declines to 40%, to increase again in the years of the crisis (44% in 2008 and 48% in 2009). Parallel to the observed rise in public expenditure, since mid-1970s an overhaul of local government financing system occurs with the centralization of revenues from municipalities to the national government and the establishment of Regional Governments, involving a strong decentralization of expenditure (in particular health and transportation expenditures). As a consequence, the weight of local administrations' expenditure remarkably increases: according to Giarda (2011), from 19% of total expenditure (1951) to 29% (1980) and 35% (2008); according to ISTAT (2010), from 31% in 1984 to 35% in 2004. The institutional break connected to the establishment of Regional Governments is probably among the causes of the escalation of public expenditures and deficit. A wide literature (Weingast *et al.*, 1981; Persson and Tabellini, 2000; Velasco, 2000; Pisauro, 2001; Rodden *et al.*, 2003; Rodden, 2006) has proved that the blend of decentralized expenditure decisions and a centralized financing might be highly detrimental for fiscal discipline. In particular, the well known common-pool argument points out that in this case the budget constraint is softened and regional governments are induced to overspend (specifically on the Italian case, see Bordignon, 2000; Giarda, 2011; Padovano, 2012; Buiatti *et al.*, 2014).

In the face of such an intense expansion of public expenditure, the growth of Mezzogiorno NFF (rising *only* from 10-13% of local GDP in the 1950s-1960s, to 22% in the 1990) seems to be somehow unavoidable, in the light of differences in regional income and the progressivity of taxation system. As a matter of fact, to the extent that increased public expenditure is equally distributed across regions and the related increasing revenues are collected in accordance with local income, the deepening of NFFs inevitably follows. Worthwhile to remark, this argument does not necessarily imply that the escalation of expenditures and deficit have been an effect of Mezzogiorno imbalances; rather, the “decentralization without responsibility” model prevailing after mid-1970s plus a strong propensity of policy makers to inflating public expenditure may have been likely reasons for both loose fiscal discipline and increasing NFFs.

A final argument in favor of the hypothesis that the path of NFFs has had little to do with regional policies is supplied by the trend of current and capital components of public expenditure. Consistent with the evidence of Table 8, showing a clear decrease in the share of capital to total public expenditure in the South, Ministero dell'Economia e delle Finanze (2011) reports that between 1950 and 2009 the capital public expenditure dramatically decreases from 47% (1950) of total expenditure (net of interests and debt reimbursements) to 39% (1960), 19% (1970), 17% (1985), 11% (1995), 10% (2009), while the local governments' share of capital expenditure rises in the same period from 20% to 60%¹⁹. Since capital expenditure is the component of public outlays most relevant to development and regional policies, its reduction over time further corroborates the conclusion that interregional redistribution has not been functional to the purpose of territorial rebalancing.

5. Concluding remarks

This paper carries out a long-run reconstruction of the pattern of interregional redistribution in Italy operated through fiscal imbalances. In particular, by resorting to different sources, a discontinuous time series of NFFs for Italian regions and macro-regions from 1951 to 2010 is built up. The evidence collected is the basis to put forward both an assessment on the intensity and adequacy of redistribution, and an evaluation of the actual relationship between the deepening of Southern fiscal imbalance and the purposes of regional policies. On the first point, the main result of the paper is that, despite the amount of transferred resources to Southern Italy from the rest of the country has been significant and increasing over time (at least up to the end of the 1990s), redistribution cannot be judged disproportionately large, in the light of income differences among regions, the public commitment in regional policies and the constitutional principles of equal access of citizens to the basic public services. Secondly, the analysis of data and the inspection of facts indicate that the relationship between the intensity of interregional redistribution and regional convergence is definitely weak. This supports the view that increasing NFFs have little served the purpose of regional catching up; rather, the rise of imbalances seems to be mainly connected to the overall escalation of public expenditure,

¹⁹ These figures show both the reduction and the reallocation at a regional level of capital public expenditure. Scalera and Zazzaro (2010) highlight that this reallocation may be unfavorable to growth, due to poor skills of local bureaucracies. In the same vein, Mauro and Pigliaru (2013) argue that the effectiveness of public investments is related to the local endowment of social capital: if this latter is lower than the national average level (as it happens in Mezzogiorno), a project managed by central government institutions is more productive and conducive to growth than one managed by local institutions. This statement is in line with the empirical evidence on the role of government quality in shaping the relationship between fiscal decentralization and regional disparities: fiscal decentralization will promote regional convergence only in high government quality settings, while it will magnify regional disparities in contexts with poor governance (Kyriacou *et al.*, 2013).

following the institutional break occurred in mid-1970s with the establishment of Regional Governments.

The evidence of relatively worthless transfers to Mezzogiorno might supply the underpinning for a radical critique against interregional redistribution: given that NFFs have shown to be little useful to closing the gap, why not reducing them substantially? While the analysis of the design flaws which impaired the ability of regional policies implemented in the last couple of decades to activate a virtuous process of convergence among Italian regions needs certainly more careful quantitative investigation, we believe that the evidence presented in this paper should not be considered as a good argument to call for a drastic cut in transfers, but that past failures have rather to stimulate the search for more effective policies for rebalancing geographical disparities than be used as an excuse for egoistic localism.

TABLES AND FIGURES

Table 1. Regional net fiscal flows in Italy, average values,1951-2010, billions of 2010 Euros.

Regions	1951-57	1958-61	1962-65	1971-73	1983-85	1986-89	1990-92	1995	1996-02	2004-06	2007-10
Piedmont	2.050	2.062	3.555	5.957	5.321	7.433	8.127	7.509	6.719	4.409	6.292
Aosta Valley	0.000	-0.019	-0.032	-0.009	-0.331	-0.358	-0.274	-0.522	-0.624	-0.560	-0.087
Lombardy	8.341	10.699	12.751	16.964	27.242	31.307	35.609	42.145	45.235	43.550	24.222
Trentino A. A.	-0.204	-0.082	-0.154	0.016	-1.591	-0.950	-1.434	-3.013	-1.669	-1.901	-1.128
Veneto	0.593	0.063	0.066	0.716	5.244	5.622	7.398	12.986	11.149	9.054	3.585
Friuli V. G.	-0.137	-0.042	0.272	-0.669	-0.479	-0.655	0.012	-1.373	-0.143	-0.474	0.869
Liguria	2.837	3.243	3.646	1.510	-0.793	-0.798	-0.870	-3.178	-2.117	-2.460	2.714
Emilia Romagna	0.826	1.478	0.598	1.092	4.555	5.078	6.130	9.758	11.493	9.551	8.610
Tuscany	0.301	-0.167	0.000	-0.164	2.639	1.438	1.411	1.142	0.973	2.595	2.491
Umbria	-0.233	-0.416	-0.492	-0.719	-0.955	-1.188	-1.286	-1.868	-1.663	-1.905	0.029
Marche	-0.066	-0.203	-0.028	-0.653	-0.479	-0.734	-0.624	-0.326	-0.514	-0.168	-0.552
Lazio	-7.150	-2.929	-7.666	3.092	4.542	8.456	8.283	11.045	9.225	11.861	13.604
Abruzzi	-0.423	-0.871	-0.764	-1.956	-3.044	-2.310	-2.236	-2.659	-2.520	-2.191	-1.600
Molise	-	-	-	-0.681	-1.101	-1.069	-1.156	-1.348	-1.331	-1.342	-0.639
Campania	-1.053	-2.542	-2.195	-4.332	-10.043	-13.377	-13.996	-16.060	-19.574	-16.715	-18.345
Apulia	-1.135	-2.405	-1.990	-5.547	-6.385	-6.938	-7.854	-10.802	-12.625	-11.412	-9.737
Basilicata	-0.302	-0.540	-0.500	-1.432	-2.657	-2.683	-2.665	-2.391	-2.796	-2.663	-1.735
Calabria	-0.821	-1.351	-1.304	-3.722	-5.969	-7.080	-8.223	-11.835	-10.786	-9.231	-6.988
Sicily	-2.432	-4.096	-3.957	-6.413	-11.169	-15.167	-17.312	-22.691	-22.979	-17.684	-17.221
Sardinia	-0.822	-1.667	-1.858	-3.042	-3.880	-4.016	-4.494	-6.531	-6.994	-5.696	-4.384

Source: Own elaboration on Tarquinio (1969), Forte *et al.* (1978), ISTAT (1996), Fondazione Agnelli (1998), Arachi *et al.* (2010), Staderini and Vadalà (2009) and Arachiet *et al.* (2013).

Table 2. Macro-regions' net fiscal flows in Italy, averages, 1951-2010.

		1951-57	1958-61	1962-65	1971-73	1983-85	1986-89	1990-92	1995	1996-02	2004-06	2007-10
Billions of Euros (2010 prices)	North-West	13.227	15.986	19.921	24.421	31.439	37.584	42.591	45.955	49.213	44.940	33.141
	North-East	1.079	1.417	0.782	1.156	7.729	9.095	12.106	18.357	20.830	16.229	11.936
	Centre	-7.148	-3.715	-8.185	1.557	5.747	7.972	7.784	9.993	8.020	12.384	15.572
	Mezzogiorno	-6.989	-13.470	-12.566	-27.125	-44.249	-52.640	-57.936	-74.316	-79.605	-73.797	-60.649
Per capita Euros (2010 prices)	North-West	1,096	1,248	1,466	1,625	2,070	2,484	2,850	3,066	3,263	2,918	2,152
	North-East	114	149	81	114	742	875	1,167	1,756	1,967	1,474	1,084
	Centre	-805	-402	-848	150	527	728	714	909	724	1,103	1,387
	Mezzogiorno	-387	-729	-669	-1,424	-2,150	-2,515	-2,821	-3,561	-3,811	-3,561	-2,927
Ratios to regional GDP	North-West	12.97	10.78	11.19	9.62	9.23	10.12	10.37	10.92	11.10	9.57	7.43
	North-East	1.72	1.63	0.71	0.74	3.31	3.63	4.32	5.92	6.30	4.58	3.56
	Centre	-12.65	-4.77	-8.16	1.05	2.66	3.38	3.03	3.58	2.68	3.87	5.13
	Mezzogiorno	-9.65	-13.13	-9.70	-14.00	-15.45	-16.94	-17.65	-22.26	-22.16	-19.70	-16.98

Source: Own elaboration on Tarquinio (1969), Forte *et al.* (1978), ISTAT (1996), Fondazione Agnelli (1998), Arachi *et al.* (2010), Staderini and Vadalà (2009) and Arachi *et al.* (2013).

Table 3. Per capita interest payments on public debt in Mezzogiorno (Centre-North = 100)

1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
20.0	25.6	28.1	28.1	29.7	30.0	30.8	30.9	31.1	29.8	29.0	29.1	29.0
1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
19.1	19.3	20.2	19.6	18.2	18.5	17.0	20.0	18.3	18.5	18.1	17.0	14.5
1983	1984	1985	1986	1987	1988	1989	1990	1991	1992			
14.5	15.4	23.3	24.3	23.8	24.7	28.1	23.6	20.9	18.6			
2003	2004	2005	2006	2007	2008	2009	2010	2011	2012			
33.5	27.9	34.3	34.8	33.9	32.9	29.6	31.1	32.4	31.8			

Sources: Magnani (1997) for years 1970-1992. For the other two periods 1951-1963 and 2003-2012, interest expenditure is ascribed to each macro-region according to the distribution of the stock of public debt owned by residents (Manfredi, 2008). In 1951-1963 and 2003-2012 periods, residents include financial institutions and households. In 1970-1992 residents are solely households.

Table 4. Redistributive power and income elasticity of NFFs.

	1951-2010			1984-2010			1951-2010			1984-2010		
	OLS	RE	FE	OLS	RE	FE	OLS	RE	FE	OLS	RE	FE
$\hat{\beta}$	0.642275*** (0.038565)	0.670624*** (0.022680)	0.918975*** (0.075670)	0.544188*** (0.010742)	0.555833*** (0.025939)	0.615150*** (0.084091)						
$\hat{\gamma}$							-0.35772*** (0.038565)	-0.32938*** (0.022680)	-0.081025 (0.075670)	-0.45581*** (0.010742)	-0.44417*** (0.025939)	-0.38485*** (0.084091)
Constant	0.011474*** (0.001697)	0.013784** (0.006490)	0.034021*** (0.007220)	0.011554*** (0.002152)	0.012462* (0.007306)	0.017092** (0.007179)	0.011474*** (0.001697)	0.013784** (0.006490)	0.034021*** (0.007220)	0.011554*** (0.002152)	0.012462* (0.007306)	0.017092** (0.007179)
Adjusted R^2	0.903051		0.925765	0.931122		0.973612	0.742691		0.802974	0.904598		0.963451
F	2040.924***		137.554***	1132.175***		257.428***	633.1176***		45.6265***	1318.995***		184.2043***
Hausman		22.767***			1.154			22.767***			1.154	
Breusch - Pagan		21.285***			156.422***			21.285***			156.422***	
Observations	220	220	220	140	140	140	220	220	220	140	140	140

Source: Own elaboration on Tarquinio (1969), Forte *et al.* (1978), ISTAT (1996), Fondazione Agnelli (1998), Arachi *et al.* (2010), Staderini and Vadalà (2009) and Arachi *et al.* (2013).

Note: (*), (**) and (***) denote statistical significance respectively at confidence levels of 10%, 5% and 1%.

Table 5. Productivity, accumulation rate and industrialization rate in Mezzogiorno (Italy = 100)

Years	Productivity (Euros)	Accumulation Rate (%)	Industrialization Rate (‰)
1951	64.2	120.0	48.7
1961	65.7	156.4	45.0
1971	93.7	219.6	49.6
1981	89.7	145.1	50.1
1991	88.5	170.6	49.6
2001	85.8	133.1	50.4
2009	83.9	128.4	51.2

Source: SVIMEZ (2011).

Notes: Productivity is the ratio value added / units of labor x 1000; the accumulation rate is the ratio gross physical investment / value added; industrialization rate is the ratio units of labor employed in industry / population.

Table 6. Households in poverty (% of total population)

	1931	1967	1971	1978	1981	1991	2008
Italy	29.7	17.9	20.1	7.2	4.5	3.4	4.4
Centre-North	26.9	12.5	14.4	4.2	3.2	1.5	2.2
Mezzogiorno	35.0	32.8	32.8	12.7	8.7	7.3	9.2

Source: Vecchi (2011).

Table 7. Human Development Index

	1951	1961	1971	1981	1991	2001	2007
Italy	0.631	0.709	0.778	0.817	0.850	0.883	0.899
Centre-North	0.659	0.726	0.792	0.828	0.860	0.894	0.909
Mezzogiorno	0.574	0.671	0.749	0.794	0.831	0.862	0.877
Mezzogiorno/Centre-North	0.87	0.92	0.95	0.96	0.97	0.96	0.96

Source: Felice and Vasta (2012).

Note: The synthetic HDI index, varying between 0 and 1, is constructed so as to capture three variables salient to human life quality (i.e. longevity, knowledge and income).

Table 8. Financial resources devoted to regional policies in Italy 1951-1998

Years	Public investment and business incentives (a)		Payroll tax reductions (b)		Total	
	in 2008 million Euros	as % of Italian GDP	in 2008 million Euros	as % of Italian GDP	in 2008 million Euros	as % of Italian GDP
1951-1957	1,519	0.73	-	-	1,519	0.73
1958-1965	2,321	0.74	-	-	2,321	0.74
1966-1970	2,329	0.74	361	0.13	3,607	0.80
1971-1975	5,808	0.90	1,969	0.33	7,777	1.27
1976-1980	7,119	0.90	3,643	0.46	10,762	1.32
1981-1986	5,974	0.65	5,089	0.55	11,063	1.19
1987-1993	6,305	0.57	6,215	0.55	12,521	1.10
1994-1998	6,081	0.49	3,331	0.26	9,412	0.74

Source: Bianchi *et al.* (2012).

Notes: From 1951 to 1993: total expenditure for the Special Aid Program in the Southern regions by Mezzogiorno National Agency plus total payments by central government for other programs. Data include expenditure for: general infrastructures, sector-specific infrastructures, support to private investment in the form of both capital and interest subsidies. From 1994 to 1998: total payments by central government for intervention in all depressed areas of the country (data do not include programs financed by European funds); (b) introduced from 1968 onward.

Table 9. Capital public expenditure in Mezzogiorno (in per capita 2013 euro, 2001- 2010)

Years	Public Investment	Business incentives	Total
2001	657.2	598.9	1,256.1
2002	607.2	636.7	1,243.9
2003	564.0	587.2	1,151.2
2004	639.9	518.6	1,158.6
2005	630.3	476.6	1,106.9
2006	604.9	487.6	1,092.5
2007	613.1	442.5	1,055.6
2008	618.9	428.8	1,047.7
2009	622.3	468.2	1,090.4
2010	560.0	322.7	882.7

Source: Own elaboration on “Sistema Conti Pubblici Territoriali” (Regional Public Accounts System), <http://www.dps.gov.it/it/cpt/index.html>

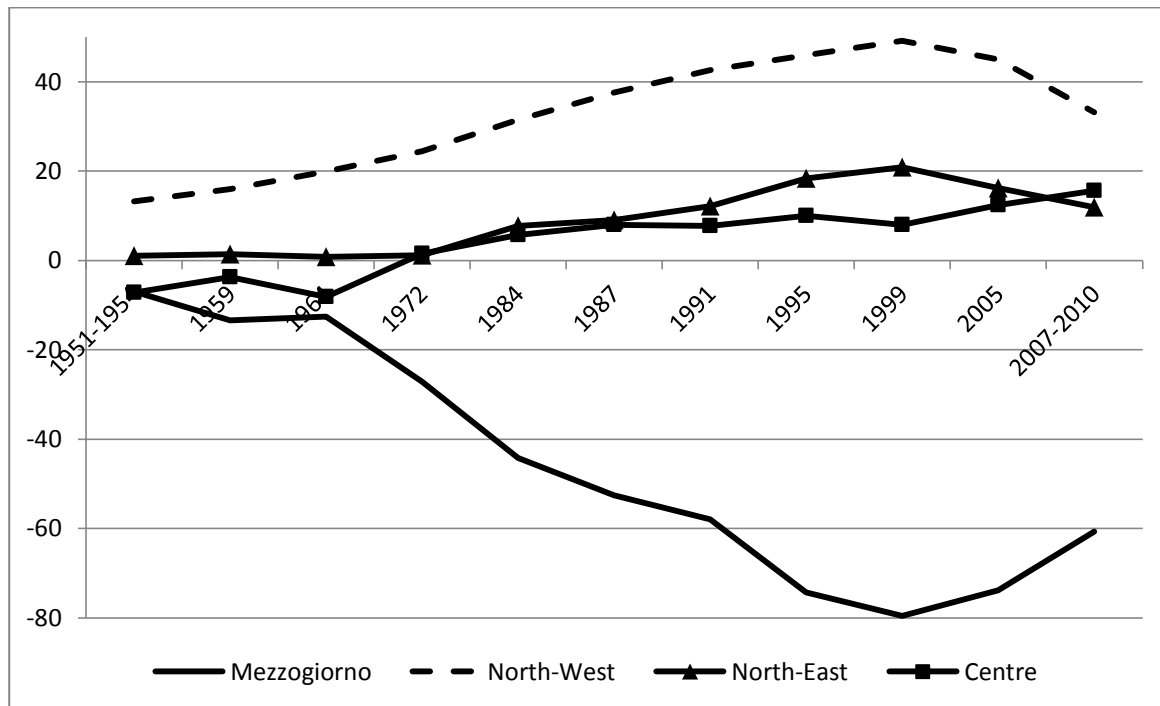
Table 10. NFFs and the North-South gap. Coefficients of linear correlation

	(a)		(b)		(c)	
	$-NFF_{it}$	$-(NFF_{it})_{-1}$	$\left(1 - \frac{NFF_{it}}{GDP_{it}}\right)$	$\left(1 - \frac{NFF_{it}}{GDP_{it}}\right)_{-1}$	$\ln\left(1 - \frac{NFF_{it}}{GDP_{it}}\right)$	$\ln\left(1 - \frac{NFF_{it}}{GDP_{it}}\right)_{-1}$
$\Delta \frac{GDP_{it}}{GDP_{at}}$	0.0538 (.2246)	0.0649 (.1806)	0.0962* (.0877)	0.0922* (.0971)	0.1035* (.0724)	0.1017* (.0759)
$\Delta \ln \frac{GDP_{it}}{GDP_{at}}$	0.0414 (.2803)	0.0420 (.2774)	0.0792 (.1325)	0.0716 (.1568)	0.0859 (.1132)	0.0791 (.1328)

Source: Own elaboration on Tarquinio (1969), Forte *et al.* (1978), ISTAT (1996), Fondazione Agnelli (1998), Arachi *et al.* (2010), Staderini and Vadalà (2009) and Arachi *et al.* (2013).

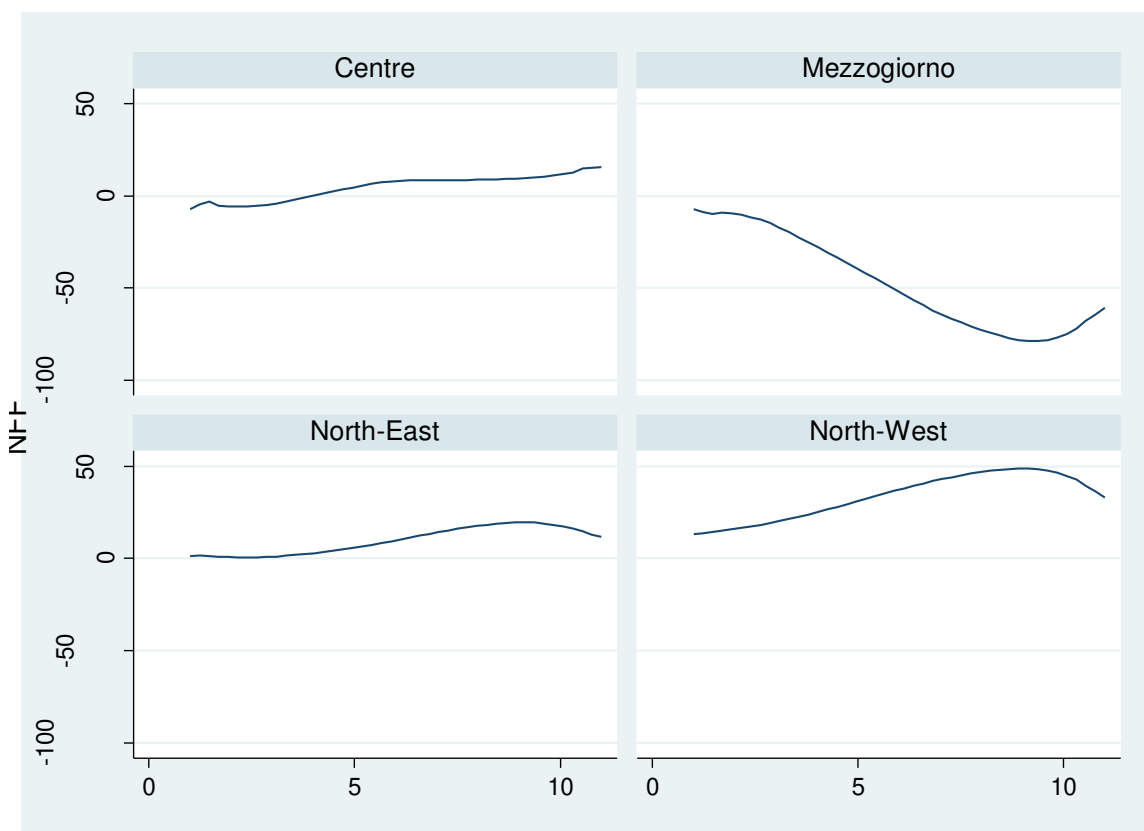
Note: In parentheses p-levels; one asterisk (*) stands for significant at 10% level.

Figure 1a. Macro-regions' NFFs (2010 billion Euros), 1951-2010.



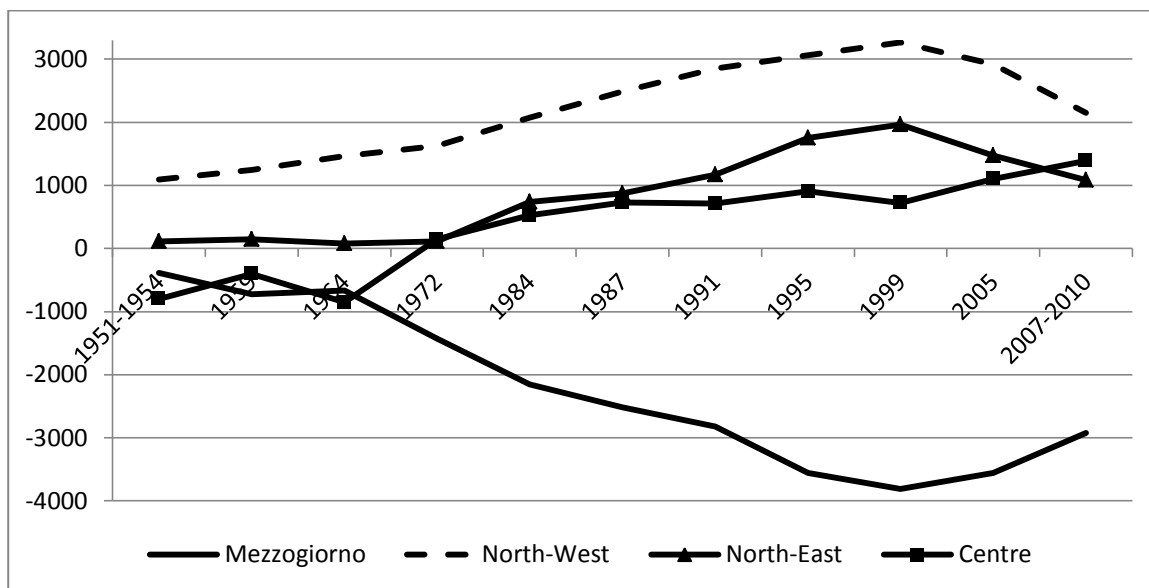
Source: Own elaboration on Tarquinio (1969), Forte *et al.* (1978), ISTAT (1996), Fondazione Agnelli (1998), Arachi *et al.* (2010), Staderini and Vadalà (2009) and Arachi *et al.* (2013).

Figure 1b. Macro-regions' NFFs (2010 billion Euros), 1951-2010, Kernel Smoothing



Note: Graphs are obtained by using Kernel-weighted local polynomial smoothing for each macro-region separately.

Figure 2a. Macro-regions' per capita NFFs (2010 Euros), 1951-2010.



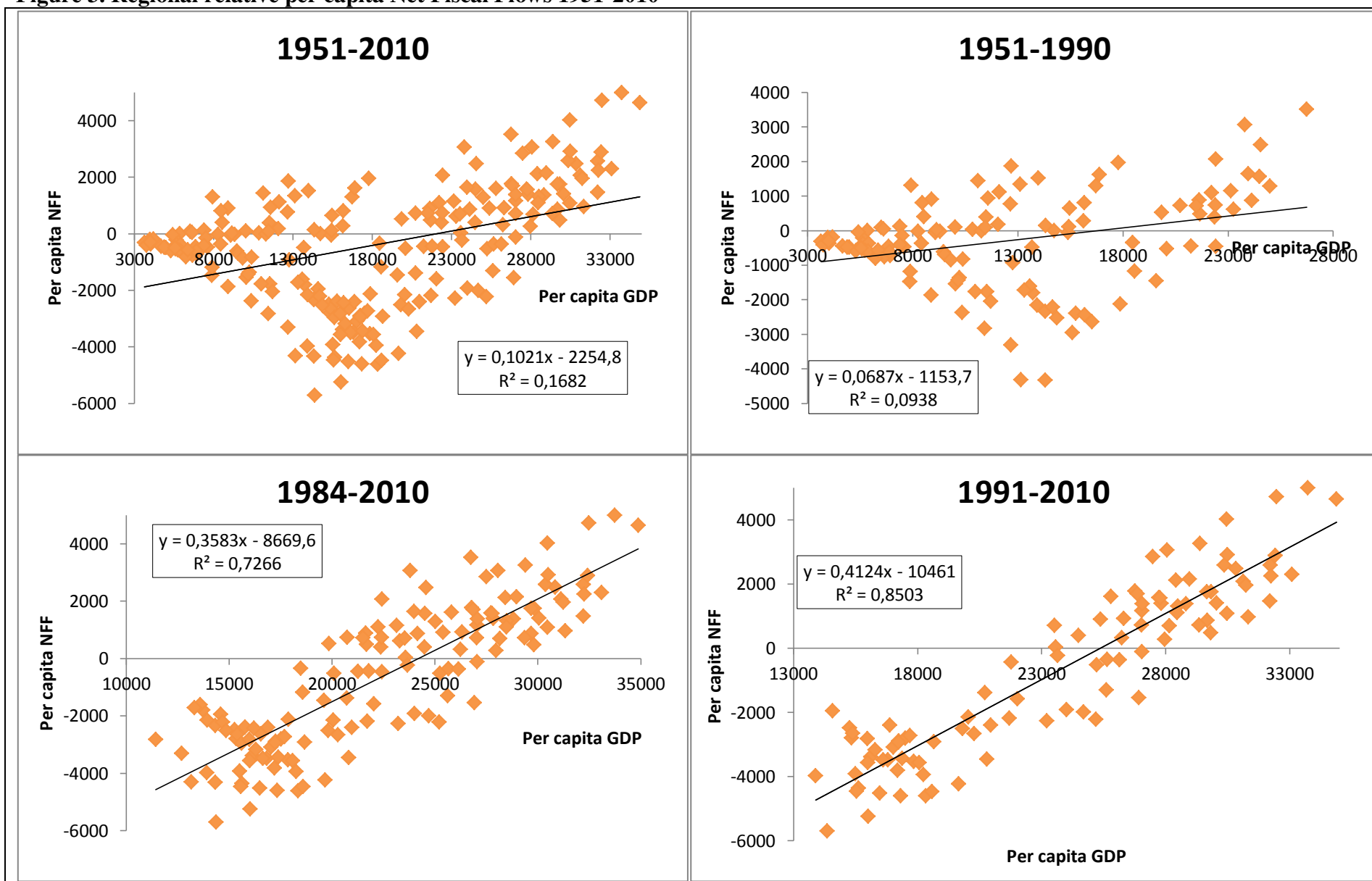
Source: Own elaboration on Tarquinio (1969), Forte *et al.* (1978), ISTAT (1996), Fondazione Agnelli (1998), Arachi *et al.* (2010), Staderini and Vadalà (2009) and Arachi *et al.* (2013).

Figure 2b. Macro-regions' per capita NFFs (2010 Euros), 1951-2010, Kernel Smoothing



Note: Graphs are obtained by using Kernel-weighted local polynomial smoothing for each macro-region separately.

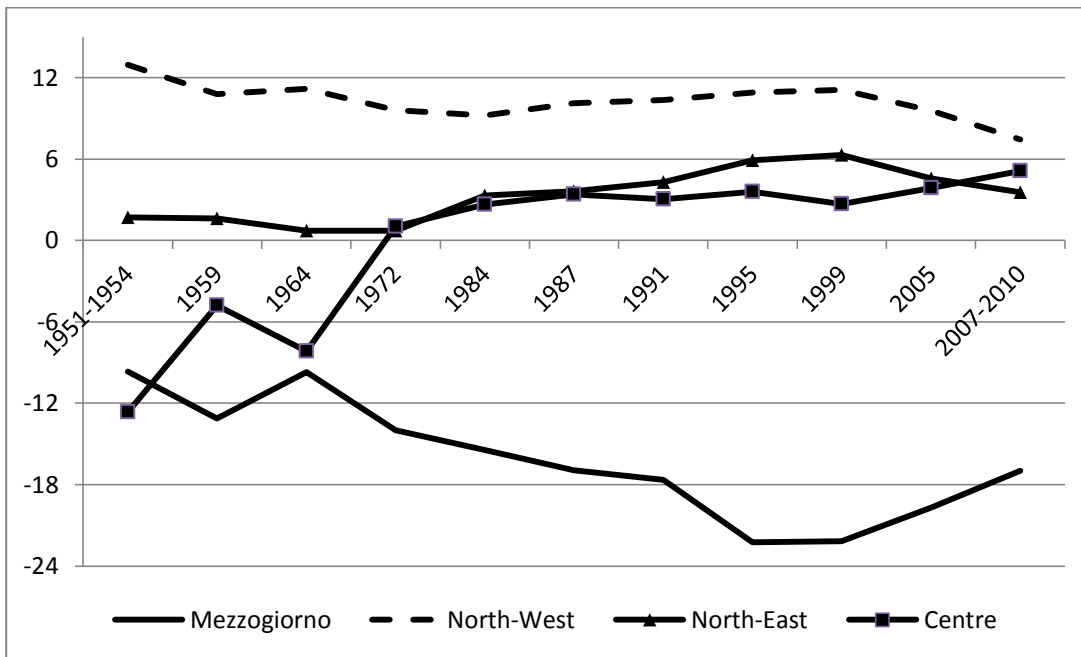
Figure 3. Regional relative per capita Net Fiscal Flows 1951-2010



Source: Own elaboration on Tarquinio (1969), Forte *et al.* (1978), ISTAT (1996), Fondazione Agnelli (1998), Arachi *et al.* (2010), Staderini and Vadalà (2009) and Arachi *et al.* (2013).

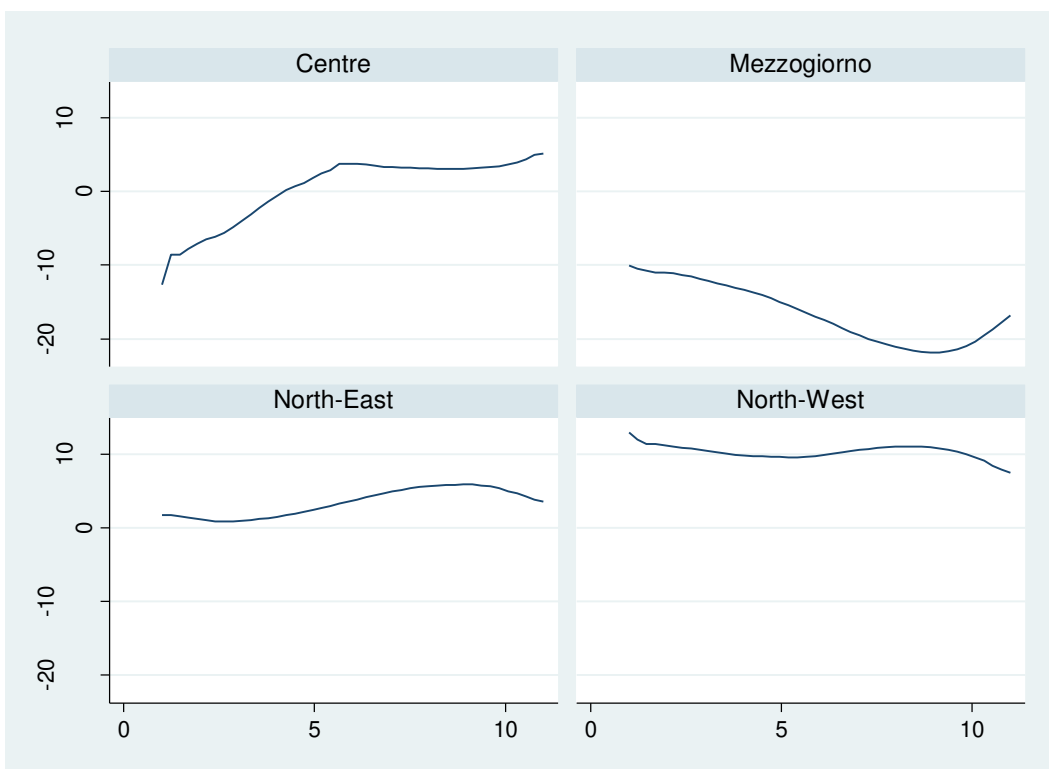
Note: y = per capita NFFs; x = per capita GDP.

Figure 4a. NFF/GDP ratios (%) in macro-regions, 1951-2010.



Source: Own elaboration on Tarquinio (1969), Forte *et al.* (1978), ISTAT (1996), Fondazione Agnelli (1998), Arachi *et al.* (2010), Staderini and Vadalà (2009) and Arachi *et al.* (2013).

Figure 4b. NFF/GDP ratios (%) in macro-regions, 1951-2010, Kernel Smoothing



Note: Graphs are obtained by using Kernel-weighted local polynomial smoothing for each macro-region separately.

Figure 5. Per capita public expenditures in macro-regions, 1971-2006 (Italy = 1).



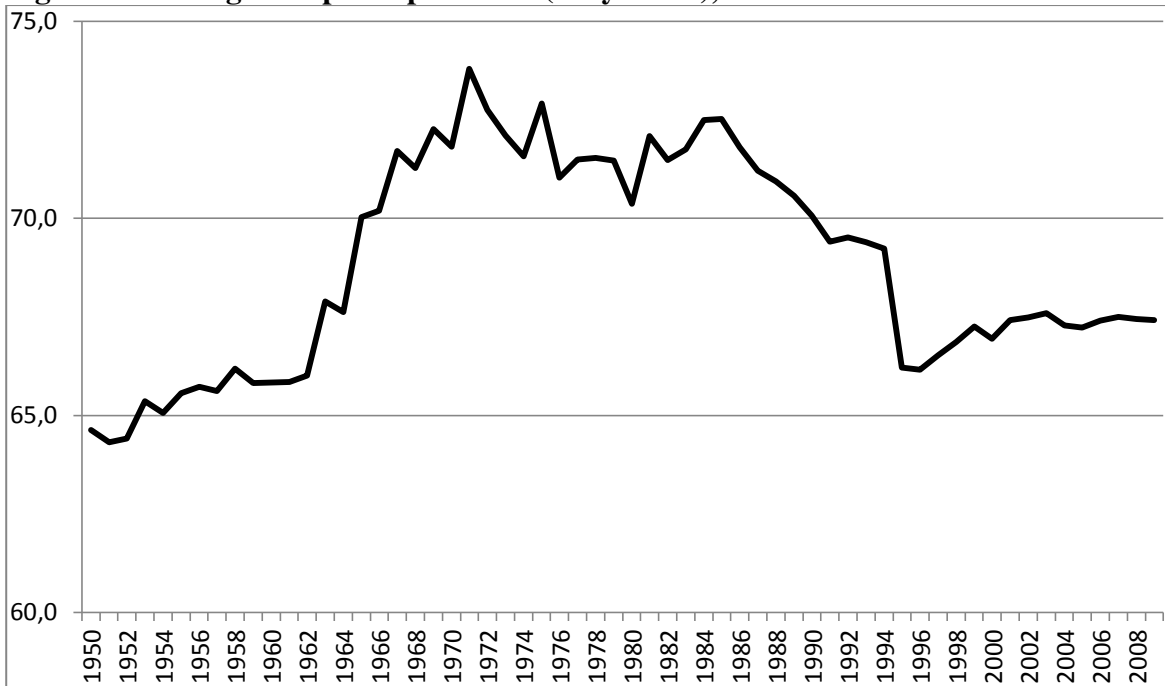
Source: Own elaboration on Tarquinio (1969), Forte *et al.* (1978), ISTAT (1996), Fondazione Agnelli (1998), Arachi *et al.* (2010), Staderini and Vadalà (2009) and Arachi *et al.* (2013).

Figure 6. Per capita revenues in macro-regions. Ratios actual/normal, 1971-2006 (Italy = 1)



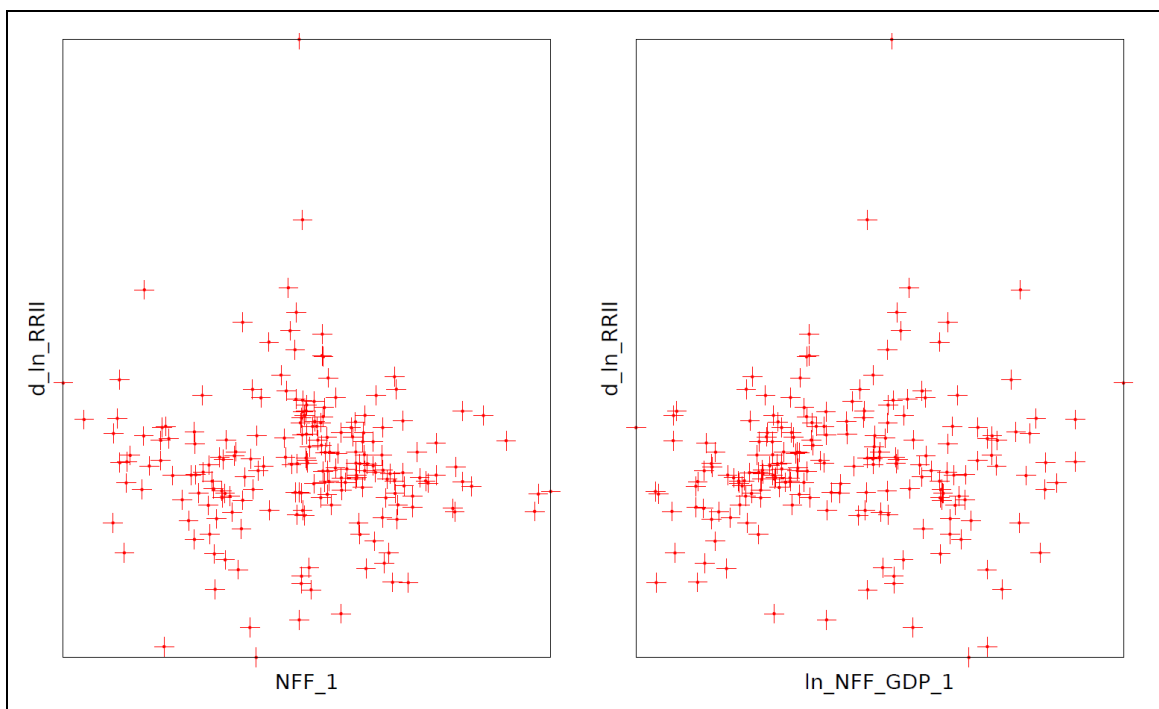
Source: Own elaboration on Tarquinio (1969), Forte *et al.* (1978), ISTAT (1996), Fondazione Agnelli (1998), Arachi *et al.* (2010), Staderini and Vadalà (2009) and Arachi *et al.* (2013).

Figure 7. Mezzogiorno per capita GDP (Italy = 100), 1951-2010.



Source: Own elaboration on Vecchi (2011)

Figure 8. NFFs and the North-South gap. Scatter plots.



Note: $d \ln_{RRII}$ = % change in RRII; NFF_1 = one period lagged values of NFF; $\ln_NFF_GDP_1$ = one period lagged values of NFF to GDP ratio.

DATA APPENDIX

Table A1. Regional public revenues, expenditures and net fiscal flows in Italy, 1951-1965, yearly averages, per capita values in 2010 Euros.

Regions	1951-1957			1958-1961			1962-1965		
	Revenues	Expenditures	NFFs	Revenues	Expenditures	NFFs	Revenues	Expenditures	NFFs
Piedmont	1297	1407	-110	1861	2001	-140	2528	2150	379
Aosta Valley	591	3000	-2410	641	3633	-2993	909	2763	-1853
Lombardy	1599	1236	363	2176	1767	408	2784	1752	1033
Trentino A. A.	706	1788	-1082	852	2029	-1177	1121	2138	-1017
Veneto	982	1597	-615	1307	2010	-703	1473	2049	-576
Friuli V. G.	331	1078	-747	913	1888	-974	1695	2110	-415
Liguria	2605	2264	341	3199	2763	436	3810	2881	929
Emilia Romagna	867	1741	-874	1200	2107	-907	1521	2043	-522
Tuscany	877	1710	-833	1140	2236	-1096	1416	2091	-675
Umbria	260	1178	-918	330	1554	-1225	435	1767	-1332
Marche	499	1682	-1183	685	1769	-1084	980	1662	-681
Lazio	2325	5160	-2835	3555	5379	-1824	3843	6283	-2439
Abruzzi-Molise	281	1614	-1333	363	2157	-1793	479	1759	-1280
Campania	615	1690	-1075	784	2149	-1364	1006	2023	-1017
Apulia	435	1450	-1015	508	1782	-1274	656	1717	-1061
Basilicata	115	2091	-1976	145	2825	-2681	187	2254	-2067
Calabria	186	1200	-1013	258	2192	-1934	312	2025	-1712
Sicily	231	1586	-1355	305	2156	-1850	377	1718	-1340
Sardinia	257	2477	-2220	322	3214	-2892	409	2497	-2087

Source: Own elaboration on Tarquinio (1969).

Notes: Original data (in current Liras values) were first transformed in current euro values and then converted in constant 2010 Euros using a national-wide GDP deflator. Regional revenues are constituted by cash inflows to Provincial Treasuries of the Ministry of Economy and Finance, i.e. taxes on personal income, business activities, production, consumption and customs; revenues from lotteries and public monopolies. Expenditures are calculated as the regional sum of the payments made by Provincial Treasuries of the Ministry of Economy and Finance. Data are also adjusted to take into account the payments settled by the Central Treasury of the Ministry of Economy and Finance and capital expenditures (for details, see the main text).

Table A2. Regional public revenues, expenditures and net fiscal flows in Italy, 1971-1973, yearly averages, per capita values in 2010 Euros.

Regions	Revenues			Expenditures				NFFs	
	Tax revenues (1)	Social security Contributions	Total (2)	Social Security payments	Exp. for collective goods (3)	Capital Exp. (4)	Total (5)	Total (2) – (5)	Net of Social Security (1) – (3) – (4)
Piedmont	2898	2064	4962	2286	828	549	3658	1303	1521
Aosta Valley	2748	2052	4800	2230	1235	1452	4918	-118	61
Lombardy	3109	2208	5317	2099	733	548	3381	1935	1828
TrentinoAlto Adige	2086	1512	3598	1609	1481	523	3614	-16	82
Veneto	2008	1399	3407	1800	983	487	3270	137	538
FriuliVenezia Giulia	2234	1703	3937	2321	1695	505	4520	-583	34
Liguria	3010	1980	4990	2443	1227	540	4211	779	1243
Emilia Romagna	2450	1614	4064	2294	946	577	3817	247	927
Tuscany	2340	1471	3811	2214	1140	539	3893	-82	661
Umbria	1867	1268	3136	2320	1068	703	4091	-955	96
Marche	1851	1131	2982	1825	1057	612	3495	-512	182
Lazio	3027	1652	4679	1809	1645	608	4062	617	774
Abruzzo	1438	816	2254	1736	1090	1129	3954	-1700	-781
Molise	1135	668	1803	1860	1162	936	3959	-2156	-963
Campania	1408	926	2334	1585	963	667	3215	-881	-222
Apulia	1311	944	2256	1649	1171	1001	3822	-1566	-861
Basilicata	1189	773	1962	1692	1065	1607	4364	-2402	-1483
Calabria	1003	750	1754	1543	1216	890	3649	-1895	-1103
Sicily	1390	986	2375	1642	1066	1060	3770	-1394	-736
Sardinia	1475	933	2408	1617	1520	1347	4482	-2074	-1392

Source: Own elaboration on Forte *et al.* (1978).

Notes: Original data (in current Liras values) were first transformed in current euro values and then converted in constant 2010 Euros using a national-wide GDP deflator.

Table A3. Regional public revenues, expenditures and net fiscal flows in Italy, 1983-1985, yearly averages, per capita values in 2010 Euros.

Regions	Revenues			Expenditures				NFFs	
	Tax revenues (1)	Social security contributions	Total (2)	Social security payments	Current Exp. (3)	Capital Exp. (4)	Total (5)	Total (2) – (5)	Net of Social security (1) – (3) – (4)
Piedmont	5354	3504	8857	4420	3229	775	8424	434	1350
Aosta Valley	6106	3287	9393	4780	4362	3936	13078	-3685	-2192
Lombardy	6191	3857	10048	3807	3196	751	7754	2294	2244
TrentinoAlto Adige	5114	3253	8367	3808	4193	2952	10953	-2586	-2031
Veneto	4806	3103	7909	3286	3393	801	7480	429	612
FriuliVenezia Giulia	5126	3449	8575	4448	3916	1374	9739	-1163	-164
Liguria	5344	3216	8561	4781	3887	1110	9779	-1218	347
Emilia Romagna	5655	3437	9092	4107	3651	952	8710	382	1052
Tuscany	5254	3253	8507	4140	3596	805	8542	-35	853
Umbria	4016	2892	6907	4014	3752	1086	8852	-1944	-822
Marche	4301	2972	7273	3680	3707	995	8381	-1108	-401
Lazio	5407	3350	8756	3760	3366	1508	8634	122	533
Abruzzo	3576	1603	5178	3385	3474	1537	8397	-3218	-1435
Molise	2824	1888	4712	3281	3498	2017	8796	-4083	-2691
Campania	2946	1902	4847	2935	3217	1258	7410	-2563	-1529
Apulia	2847	1875	4722	3007	3220	871	7099	-2377	-1244
Basilicata	2651	1768	4419	3167	3574	2755	9496	-5077	-3678
Calabria	2496	1552	4047	2940	3415	1285	7640	-3592	-2204
Sicily	2863	1718	4581	3134	3251	1179	7564	-2983	-1567
Sardinia	3126	2005	5131	3245	3556	1484	8286	-3154	-1914

Source: Own elaboration on ISTAT (1996).

Notes: Original data (in current Liras values) were first transformed in current euro values and then converted in constant 2010 Euros using a national-wide GDP deflator.

Table A4. Regional public revenues, expenditures and net fiscal flows in Italy, 1986-1989, yearly averages, per capita values in 2010 Euros.

Regions	Revenues			Expenditures				NFFs	
	Tax revenues (1)	Social security Contributions	Total (2)	Social Security Payments	Current Exp. (3)	Capital Exp. (4)	Total (5)	Total (2) – (5)	Net of Social security (1) – (3) – (4)
Piedmont	6142	3738	9880	4405	3470	816	8691	1189	1856
Aosta Valley	7278	3580	10857	5305	5060	4130	14496	-3638	-1912
Lombardy	7155	4120	11276	4107	3407	748	8262	3014	3000
TrentinoAlto Adige	5816	3475	9291	3957	4525	2396	10878	-1586	-1105
Veneto	5492	3347	8839	3563	3630	870	8063	776	992
FriuliVenezia Giulia	5677	3643	9320	4731	4179	1460	10370	-1050	38
Liguria	5777	3426	9203	5210	4037	920	10168	-965	820
Emilia Romagna	6389	3634	10023	4505	3854	880	9239	785	1655
Tuscany	5622	3344	8966	4460	3810	801	9072	-106	1011
Umbria	4552	3001	7553	4412	4049	1053	9514	-1961	-550
Marche	4813	3113	7926	4000	3981	967	8950	-1023	-135
Lazio	6074	3673	9747	3904	3514	1192	8611	1137	1368
Abruzzo	4014	2308	6323	3709	3633	1325	8668	-2345	-944
Molise	3235	2100	5335	3407	3770	1862	9039	-3704	-2397
Campania	3172	1965	5137	3085	3476	1419	7980	-2843	-1723
Apulia	3159	1980	5139	3240	3396	727	7364	-2225	-964
Basilicata	2880	1929	4809	3305	3855	2476	9636	-4826	-3451
Calabria	2683	1662	4345	3143	3626	1383	8151	-3807	-2326
Sicily	3141	1833	4975	3513	3624	1297	8433	-3459	-1780
Sardinia	3499	2179	5678	3402	3856	1361	8619	-2941	-1718

Source: Own elaboration on ISTAT (1996).

Notes: Original data (in current Liras values) were first transformed in current euro values and then converted in constant 2010 Euros using a national-wide GDP deflator.

Table A5. Regional public revenues, expenditures and net fiscal flows in Italy, 1990-1992, yearly averages, per capita values in 2010 Euros.

Regions	Revenues			Expenditures				NFFs	
	Tax revenues (1)	Social security Contributions	Total (2)	Social Security Payments	CurrentExp. (3)	Capital Exp. (4)	Total (5)	Total (2) – (5)	Net of Social security (1) – (3) – (4)
Piedmont	7057	4283	11341	4955	3873	864	9693	1648	2320
Aosta Valley	8607	3973	12579	5542	6218	3423	15183	-2604	-1034
Lombardy	8445	4578	13023	4683	3786	774	9243	3780	3885
TrentinoAlto Adige	6758	4047	10805	4651	5249	2758	12657	-1852	-1249
Veneto	6564	3859	10423	4110	4024	841	8975	1447	1699
FriuliVenezia Giulia	6860	4221	11081	5353	4577	1384	11313	-232	899
Liguria	6936	3836	10771	5934	4517	1082	11533	-762	1337
Emilia Romagna	7543	4124	11667	5185	4371	784	10340	1327	2388
Tuscany	6569	3771	10340	5004	4255	923	10182	158	1391
Umbria	5392	3401	8793	5003	4572	1043	10619	-1826	-223
Marche	5637	3496	9133	4542	4414	856	9812	-679	367
Lazio	7127	4188	11315	4461	3997	1488	9947	1369	1642
Abruzzo	4790	2719	7509	4247	4073	1221	9541	-2032	-504
Molise	3859	2440	6298	4021	4300	1715	10036	-3738	-2156
Campania	3719	2242	5962	3446	4008	1235	8690	-2728	-1524
Apulia	3723	2287	6010	3755	3737	707	8200	-2190	-721
Basilicata	3383	2148	5532	3687	4260	2188	10135	-4603	-3065
Calabria	3138	1866	5004	3757	4135	1327	9219	-4215	-2324
Sicily	3779	2211	5990	4097	4351	1271	9718	-3728	-1843
Sardinia	4225	2597	6822	3847	4456	1487	9791	-2969	-1718

Source: Own elaboration on ISTAT (1996).

Notes: Original data (in current Liras values) were first transformed in current euro values and then converted in constant 2010 Euros using a national-wide GDP deflator.

Table A6. Regional public revenues, expenditures and net fiscal flows in Italy, 1995-2010, yearly averages, per capita values in 2010 Euros.

Regions	1995			1996-2002	2004-2006			2007-2010
	Revenues	Expenditures	NFFs	NFFs	Revenues	Expenditures	NFFs	NFFs
Piedmont	11821	10915	906	2581	14187	12649	1539	1458
Aosta Valley	13031	18272	-5241	-4175	16887	20922	-4034	-708
Lombardy	13293	9410	3883	6014	16361	11196	5164	2585
Trentino A. A.	11723	15874	-4151	-776	13220	14655	-1435	-1158
Veneto	11350	9260	2090	3492	13137	10690	2446	764
Friuli V. G.	11272	13269	-1997	894	13957	13834	123	722
Liguria	11201	13957	-2756	-285	13050	14077	-1027	1703
Emilia Romagna	12676	11032	1644	3908	15122	12299	2824	2080
Tuscany	10895	10414	-519	1289	13458	12219	1239	693
Umbria	9248	11357	-3109	-980	11643	13346	-1702	34
Marche	9501	9570	-1069	661	11857	11451	406	-364
Lazio	13217	10935	1282	2768	15118	12346	2772	2586
Abruzzo	7817	10755	-2938	-957	9932	11248	-1316	-1234
Molise	6860	11767	-4907	-3037	8418	12522	-4104	-1987
Campania	5998	9632	-3634	-2368	7675	10340	-2665	-3174
Apulia	6473	9964	-3491	-2076	7692	10266	-2574	-2398
Basilicata	6326	11088	-4762	-3593	7840	12275	-4435	-2912
Calabria	5208	11752	-6544	-4228	7266	11844	-4578	-3479
Sicily	6188	11490	-5302	-3498	7902	11282	-3380	-3437
Sardinia	7044	11821	-4777	-3217	9504	12799	-3295	-2658

Source: Own elaboration on Fondazione Agnelli (1998) for 1995, Arachi *et al.* (2010) for 1996-2002, Staderini and Vadalà (2009) for 2004-2006 and Arachi *et al.* (2013) for 2007-2010.

Notes: Original data (in current Liras values) were first transformed in current Euro values and then converted in constant 2010 Euros using a national-wide GDP deflator. Since Fondazione Agnelli (1998) does not supply data on social security payments, these are supposed to be equal in per capita terms to the values of 1990-1992. Arachi *et al.* (2010) presents only data on net fiscal flows. The data in Arachi *et al.* (2013) regard only net fiscal flows as well; also, in this latter case data are adjusted so that the aggregate NFF is zero.

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