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Social policies and income redistribution across Italian regions^{*}

Caterina Ferrario[†] and Alberto Zanardi[‡]

Abstract

This paper presents an analysis of income redistribution among the regions of Italy as a result of social policies implemented during the decade from 1996 to 2005. Methodologically, the paper builds on a recent strand of literature that has focused on estimating the redistributive effects of public intervention, which also includes some analyses of Italy. On this basis, this work develops an approach for estimating the redistributive effects of a specific area of public intervention: social policies. The paper is organised as follows: first, an adequate data set is built from existing data, which is then used to estimate total redistribution resulting from social policies. In addition, the total redistribution effected by the Italian public administration is broken down to show the contribution of each tier of government (central government, regional governments, local governments and social security institutions). Results from the estimates show that social policies have a significant redistributive impact, in particular when compared to total redistribution stemming from public policies. This redistributive effect is primarily due to programmes implemented by social security institutions and central government. Regional and local government policies contribute only marginally to total redistribution. Finally, a further analysis investigates the qualitative features of social policies that explain the estimated redistribution.

Keywords: Social policy, Redistribution, Intergovernmental relations, Regions

JEL classification: E62, H23, H50, H70, R10

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1. Introduction

The public budget may transfer resources among different areas of the same country through policies and programmes specifically designed for that purpose, such as interregional equalisation schemes. Redistribution may also be a by-product of actions in pursuit of other objectives, such as central government tax-financed social insurance systems (Persson and Tabellini, 1996), which generally target individuals rather than areas and redistribute on the basis of individual characteristics (income, age, state of health, and so forth) or place of residence (for instance, the state in a federal country).

Income redistribution through the public budget among different areas of the same country is of particular significance in countries with pronounced regional differences in terms of surface area, population structure or levels of economic activity. This is the case in Italy, where regions differ enormously in terms of geographic area, size of population, demographic structure and level of economic activity. Italy also displays a distinctive North-South disparity, as described in Table 1.

A recent body of literature has developed estimation methods to measure the extent of redistribution across regions brought about by the public budget. These were initially applied to federal states, such as the United States and Canada (Sala-i-Martin and Sachs, 1992; Von Hagen, 1992; Bayoumi and Masson, 1995), and later to EU member states, such as Germany, France, the UK, Italy and Sweden, with some works also drawing comparisons with the United States and Canada (Decressin, 2002; Italianer and Pisany-Ferry, 1992; Mélitz and Zumer, 2002; Obstfeld and Peri, 1998; Padovano, 2007). Among these works, those focusing on Italy found similar results: Decressin (2002) estimates that income redistribution among Italian regions in the period 1983-1992 was equal to 24.5% of GDP, while according to Arachi *et al.* (2008) it was 27.6% of GDP in the period 1996-2002. As well as estimating redistribution, Decressin (2002) also describes the contribution that different categories of revenue and expenditure (public consumption, investment, subsidies and welfare spending) make to total redistribution, while Arachi *et al.* (2008) single out the redistributive impact of each level of government (central government, regional government, local government and social security institutions) and distinguish between redistribution due to horizontal flows of resources (i.e. those effected by a given level of government across different regions) and that due to vertical flows (i.e. those among different tiers of government, which in Italy are significant due to the country's specific decentralised public finance system). However, both works neglect to analyse the redistributive impact of specific public policies.

This work aims to extend the existing results by focusing on the redistributive properties of individual policies. For this purpose, it will analyse the case of social policies, which are designed to redistribute income among citizens according to their individual characteristics.

As regards methodology, this work will apply the estimation technique introduced by Arachi *et al.* (2008), which makes it possible not only to capture the total redistribution effected by general government but also to isolate the contribution of each tier of government to the total. The empirical analysis will make use of data drawn from the Territorial Public Accounts

(TPA) produced by the Italian Ministry of the Economy,[§] which is available for the period 1996-2005. This data set contains separate data on public revenue and expenditure for each tier of Italian government (central, regional and local government and social security institutions). In addition, for each tier of government, the database distributes the revenue and expenditure flows among the 20 Italian regions according to a criterion close to the actual economic incidence. Revenue flows are regionalised according to where the resources were collected. Expenditure flows are imputed to the area where the means of production for the relevant public services and investments are located. These data may be used to analyse the redistributive impact of the public budget on a given area through *fiscal residua*, that is to say the difference between the expenditure and revenue of a given level of government in that area. Furthermore, these data make it possible to estimate both total redistribution by the public administration and the redistributive role of each level of government, as in Arachi *et al.* (2008).

The analysis of redistribution among different areas will be carried out at the regional level, and hence the point of reference will be the Italian regions. Section 2 describes the procedure used to construct the dataset used for the estimates, making use of data contained in the Territorial Public Accounts. Section 3 presents the estimation technique used to measure the redistribution among Italian regions as a result of social policies. This analysis will be carried out only for the 15 Ordinary Statute Regions (OSRs)^{**} in order to reduce distortions due to the different spending and financing agreements for the different tiers of government in the five Special Statute Regions (SSRs). The results of the estimates of income redistribution by the fiscal system are presented in Section 4 and the conclusions in Section 5.

[§] Ministero dell'Economia e delle Finanze, http://www.dps.mef.gov.it/cpt/banca_dati_home.asp, last accessed 30 april 2008.

^{**} Under the Constitution five of the 20 Italian regions were established as autonomous regions with special statutes. They enjoy broader spending powers than ordinary statute regions and accordingly receive larger financial transfers from central government.

Table 1. Italy: Regional Indicators (2005)

	Surface area (km ²)	Population	Population density per km ²	Population <16 years (%)	Population >64 years (%)	GDP (millions of euros)	Per capita GDP (millions of euros)	Per capita GDP (index)
<i>Ordinary Statute Regions</i>	226,751	49,497,043	218			1,237,605	25.0	1.03
Piedmont (a)	25,399	4,330,172	170	13.2	22.2	114,178	26.4	1.09
Lombardy (a)	23,857	9,393,092	394	14.4	19.1	296,282	31.5	1.30
Veneto (a)	18,364	4,699,950	256	14.7	18.9	131,336	27.9	1.15
Liguria (a)	5,416	1,592,309	294	11.7	26.5	39,759	25.0	1.03
Emilia Romagna (a)	22,123	4,151,369	188	13.0	22.6	122,121	29.4	1.21
Tuscany (b)	22,992	3,598,269	157	12.8	23.0	94,848	26.4	1.09
Marche (b)	9,694	1,518,780	157	13.9	22.4	36,806	24.2	1.00
Umbria (b)	8,456	858,938	102	13.3	23.3	19,711	22.9	0.95
Lazio (b)	17,203	5,269,972	306	14.9	18.8	155,436	29.5	1.22
Abruzzo (b)	10,794	1,299,272	120	14.5	21.1	25,552	19.7	0.81
Molise (c)	4,438	321,953	73	14.6	21.7	5,638	17.5	0.72
Campania (c)	13,595	5,788,986	426	19.1	15.1	89,697	15.5	0.64
Basilicata (c)	9,992	596,546	60	16.0	19.6	10,052	16.8	0.70
Puglia (c)	19,348	4,068,167	210	17.2	16.9	64,786	15.9	0.66
Calabria (c)	15,080	2,009,268	133	16.8	18.0	31,403	15.6	0.65
<i>Special Statute Regions</i>	74,524	8,965,332	120			178,237	19.9	0.82
Valle d'Aosta (a)	3,262	122,868	38	14.0	19.9	3,942	32.1	1.32
Trentino-Alto Adige (a)	13,619	974,613	72	17.2	17.4	29,591	30.4	1.25
Friuli-Venezia Giulia (a)	7,845	1,204,718	154	12.7	22.2	32,314	26.8	1.11
Sicily (c)	25,708	5,013,081	195	17.7	17.7	80,378	16.0	0.66
Sardinia (c)	24,090	1,650,052	68	14.1	17.1	32,013	19.4	0.80
<i>(a) Northern Italy</i>	119,885	26,469,091	221	13.9	20.7	769,523	29.1	1.20
<i>(b) Central Italy</i>	69,139	12,545,231	181	14.0	21.0	332,354	26.5	1.09
<i>(c) Southern Italy</i>	112,251	19,448,053	173	17.5	16.9	313,966	16.1	0.67
<i>Italy</i>	301,277	58,462,375	194	15.1	19.5	1,415,843	24.2	1.00

Source: Istat

2. The dataset

This paper proposes an evaluation of the degree of income redistribution among individual residents of different Italian regions brought about by social policies. For this purpose it is first necessary to construct an adequate dataset. As a starting point, the amount of resources that citizens living in each region receive or relinquish as a result of the implementation of social policies has to be estimated, and therefore the actual economic incidence of interpersonal transfers by the public sector for social policies has to be reconstructed.

Public accounts data, which are compiled on a financial-administrative basis, are not consistent with the purpose of this paper, as regards either revenue or expenditure. On the revenue side, resources are assigned to sub-national administrations according to criteria which do not necessarily reflect the actual regional distribution of the incidence of tax. Furthermore, the criteria for allocating expenditure are based on the location of payments, which may differ significantly from their actual economic incidence. Payments made in a particular area may also (and sometimes exclusively) benefit citizens living elsewhere. For instance, central government administrative expenditure for the National Social Policies Fund (*Fondo Nazionale per le Politiche Sociali*, FNPS) is located in a specific region (Lazio) but it benefits all Italian citizens, wherever they live.

Despite the fact that neither the distribution of the tax burden nor that of benefits from public expenditure can be derived directly from national accounts data, a proper regionalisation of public revenue and expenditure, on the basis of appropriate hypotheses, may make it possible to construct consistent data for the purpose of this paper. This is the case of the “Territorial Public Accounts” (TPA), a database constructed by the Italian Ministry of the Economy, which allocates the flows of public resources (revenue and expenditure, recorded on a cash basis) to the various regions. The TPA “regionalisation” criteria for public revenue and expenditure are consistent with the objective of assessing their actual economic incidence (for a more detailed analysis of the consistency of the database with the criteria of economic incidence, see Arachi *et al.* (2008), where, in particular, the regionalisation of social expenditure by the TPA is judged to be consistent with the criterion of economic incidence).

This database therefore makes it possible to identify, for each level of government, the areas that are net recipients of public resources and to assess the impact of social policies. The crux of such an analysis is the concept of an area’s *fiscal residuum*, that is to say the difference between public expenditure and public revenue in that area.

By using the TPA database we will have sufficient information to estimate, as in Arachi *et al.* (2008), first the redistribution achieved by the public administration as a whole, and then to separate the individual redistributive role of each level of government. Our approach is based on the hypothesis that the efficiency in the use of public resources and in the provision of public services is not significantly different across areas.

In contrast to Arachi *et al.* (2008), this paper focuses on the redistributive impact of a specific sphere of public action, namely social policies. We therefore needed data on revenue and expenditure for the social policies applied by each level of government and each area. As far as expenditure is concerned, such data are provided by the TPA, which details expenditure for

social policies by each level of government in each area, but the database is not sufficiently detailed on the revenue side: revenues are not broken down by function.

For each level of government and each area, the TPA distributes expenditure data according to function over 30 sectors of public activity. These sectors do not exactly replicate the sector classification of the public budget, rather they aim to reflect the different areas of public sector activity. Hence, they are mainly derived from the UN *Classification of the Functions of Government* (COFOG), which classifies public administration expenditure according to function (CPT, 2007, p. 78). Two of these 30 sectors are relevant for the purposes of this paper: “Social programmes” (“Interventi in campo sociale - assistenza e beneficenza”) and “Social security and wage support” (“Previdenza e integrazioni salariali”). These sectors coincide almost exactly with the COFOG first level classification “10 – Social protection” (CPT, 2007, p. 315). As detailed in the TPA guidebook (CPT, 2007, pp. 83-84), they comprise the following expenditure:

- *Social programmes* (“Interventi in campo sociale - assistenza e beneficenza”): all activities linked to the administration, coordination and implementation of social protection programmes that address problems due to hardship or economic insufficiency (sickness and disability, old age and survivors, family support, employment, public housing and social exclusion). They also include money transfers or transfers in kind to address these problems, provided they are financed through general taxation. Finally they include expenditure to finance retirement homes and other residences, to supply social services to individuals in their own home or in facilities designated for that purpose.
- *Social security and wage support* (“Previdenza e integrazioni salariali”): all activities linked to the administration, coordination and implementation of social protection programmes (sickness and invalidity, old age and survivors, family support, employment, public housing and social exclusion). They also include money transfers or transfers in kind to address these conditions, provided they are financed through social contributions.

Unfortunately, the TPA do not conform perfectly to this classification in every instance, as they are constructed on the basis of public budgets, which in turn are compiled according to criteria that differ in some respects. In this regard the TPA guidebook warns of a significant discrepancy which is relevant to our analysis: some expenditure that should be recorded under “social programmes” is instead listed under “social protection and wage support”, and vice versa (CPT, 2007, pp. 285 and 293).

This warnings justifies the decision taken here (and described in greater detail in the annex) to reconstruct transfers for social policies by referring to both “social programmes” and, albeit only to a limited extent, “social protection and wage support”.

Table 2 lists the levels of government that are active in the two sectors and their contribution to total expenditure (net of interest payments).

Table 2. Percentage contribution to total public expenditure by the different tiers of government that are active in either of the two sectors “Social programmes” and “Social security and wage support”.

	Social programmes	Social security and wage support
Social security	56.4%	96.7%
Central government	21.2%	3.3%
Local government	17.6%	-
Regions	2.3%	-
Consortia and associations of which local governments are members	0.6%	-
Alpine municipalities	0.6%	-
Provinces	0.6%	-
Bodies owned by local government	0.4%	-
Firms and bodies in which local governments are shareholders	0.2%	-

Source: CPT, 2007, pp. 285 and 293.

The amount of expenditure for social policies by each level of government, and by general government as a whole, was derived from the TPA tables on the basis of consolidated expenditure by each level of government (for each region individually; the national total is the sum of the regional data), by referring only to expenditure on the function “Social policies”. In keeping with Decressin (2002) and Arachi *et al.* (2008), total expenditure was considered net of interest payments, which were excluded owing to the limited reliability of the criteria used for allocating them regionally.

While expenditure on social policies by each level of government in each area can be derived from the TPA database, this source cannot be used so immediately for revenue collected to finance such policies. A specific procedure was therefore devised and implemented in order to derive the social policy revenue levied by each level of government in each area. As described more fully in the following paragraph, the procedure relied extensively on available expenditure data.

2.1. Reconstructing public revenue for social policies

The specific procedure that was devised in order to reconstruct public revenue raised to finance social policies by each level of government in each region took as its point of departure the available data on expenditure and transfers (see Table 3 for a summary). On that basis, the “needs” for social policies at each level of government in each area were reconstructed. Under the balanced budget hypothesis, the amount of revenue to finance social policies was set equal to the estimated “needs”. Two different procedures were devised to reconstruct first the needs and then the revenue: one was applied to supra-regional bodies (central government, social security institutions) and the other to sub-national ones (regions and local governments), as summarised in Table 3.

The needs of supra-regional bodies were initially estimated for the entire country by setting them equal to total expenditure for social policies and adding net transfers to other levels of

government for those purposes (i.e. transfers to other levels of government net of transfers received from other levels of government for social policies).

Under the balanced budget hypothesis, total revenue for social policies should equal the needs calculated in this way. Once total revenue had been calculated, it was apportioned to the different regions in proportion to the regional distribution of total revenue. If total revenue for social policies in the country as a whole is a percentage x of total revenue, then the resources collected in each region to finance social policies are a percentage x of total revenue in that region. In addition, in order to better reflect the actual central government financing rules, an additional hypothesis has been adopted, namely that social policies by this level of government are exclusively financed through general taxation. Consequently, for this level of government the distribution of revenue for social policies was calculated solely on the basis of the regional distribution of revenue from general taxation.

The opposite procedure was adopted to obtain data on revenue for social policies in each region for each one of the sub-national levels of government (regional and local). Under the usual balanced budget hypothesis, the procedure set out from the assumption that in each area sub-national governments collect an amount of resources that exactly matches their needs for social policies. In turn, the needs of each level of government in a given area are equal to total expenditure in that area plus net transfers.^{††} The total revenue of regional (or local) government for social policies in the country as a whole was then calculated as the sum of revenues in all the regions.^{‡‡}

Finally, in each area, as well as in the country as a whole, general government revenue for social policies equals the sum of all levels of government revenue for social policies in that specific area. This procedure is summarised in Table 3, and the TPA data used to reconstruct the needs for social policies (and hence revenue) are described in detail in the annex.

Table 4 summarises, for Ordinary Statute Regions only, the distribution of revenue for social policies reconstructed using the procedure described above. It also shows the share of revenue deriving from “vertical” transfers, in other words transfers between different levels of government, which in Italy make up a significant percentage of general government resources. From the data reported in Table 4, it can be seen that the same holds true for social policies: transfers amount to a significant percentage of total revenue for all levels of government, except central government. This is particularly so for regional governments and social security institutions, despite the fiscal decentralisation that has taken place in Italian public administration in the last fifteen years.

^{††} In a few cases the regional or local government need in a given area was negative. This was a consequence of the construction rules adopted (i.e. in some areas inward transfers are higher than expenditure plus outward transfers). These negative values were interpreted as an indication that in those areas the sub-national governments had no need for social policies. Therefore the corresponding revenue was set to zero.

^{‡‡} It is worth noting that in each region the fiscal residuum of regional and local government for social policies is equal to net transfers as a consequence of the construction criteria adopted. This point will be explained more fully below.

Table 3. Criteria used to reconstruct revenue for social policies by each level of government (and by general government) for each region and for Italy as a whole

<i>Region</i>	<i>General government (GG)</i>	<i>Central government (CG)</i>	<i>Regional government (RG)</i>	<i>Local government (LG)</i>	<i>Social security institutions (SSI)</i>
1	CG+RG+LG+SSI	x% own tax revenue	Expenditure for social policies +net transfers	Expenditure for social policies +net transfers	y% revenue
2	CG+RG+LG+SSI	x% own tax revenue	Expenditure for social policies +net transfers	Expenditure for social policies +net transfers	y% revenue
3	CG+RG+LG+SSI	x% own tax revenue	Expenditure for social policies +net transfers	Expenditure for social policies +net transfers	y% revenue
...
Italy	CG+RG+LG+SSI	Revenue for social policies = transfers from other tiers of government for social policies – transfers to other levels of government for social policies + expenditure for social policies = x% own revenue	Revenue for social policies = in each area	Revenue for social policies = in each area	Revenue for social policies = transfers from other tiers of government for social policies – transfers to other levels of government for social policies + expenditure for social policies = y% revenue

Note: net transfers = transfers for social policies to other levels of government – transfers from other levels of government for social policies.

Table 4 also shows the financing role of central government in the Italian system of inter-governmental transfers. Approximately two thirds of central government revenue is earmarked to finance other levels of government, and these transfers amount to a significant percentage of the total revenue of recipient levels of governments. Furthermore, the data reported in that table reveal a characteristic feature of social policies: transfers received by local governments come mainly from regional governments. The structure of inter-governmental transfers for social policies therefore has two layers: first, central government provides resources to regional governments and social security institutions, and secondly, regional governments transfer resources to local governments in their area. This structure clearly reflects the Constitutional provisions on regional autonomy and inter-governmental relationships as regards social policies. A more detailed analysis of the data in Table 4 shows, however, that resources transferred by regional governments to local governments account for only a small percentage of regional governments' total revenue. In a comparative perspective, therefore, local governments come second only to central government in their need to rely on their own revenue to finance social policies. However, central government plays mainly a financing role for other levels of government, while local governments are primarily providers of services.

Table 4. Financing of social policies by levels of government (OSRs, % GDP, 2005)

	Own revenue (excluding transfers) (a)	Transfers from			Total transfers (b)	Deficit	Total revenue (a+b)	Total expenditure (own expenditure + outward transfers)
	(1)	(2)	(3)	(4)				
Central government (1)	0.483%	- 0.000%	0.001%	0.015%	0.017%	0.000%	0.500%	0.500%
Regional governments (2)	0.053%	0.037%	- 0.001%	0.000%	0.038%	0.000%	0.091%	0.091%
Local governments (3)	0.377%	0.000%	0.057%	- 0.000%	0.057%	0.000%	0.434%	0.434%
Social security institutions(4)	1.101%	0.305%	0.000%	0.000%	-	0.305%	1.406%	1.406%
General government	2.014%	0.342%	0.057%	0.002%	0.015%	0.417%	2.431%	2.431%

Source : Own calculations based on TPA data.

3. Methodology

The variables to be considered in order to estimate the redistributive impact of public measures among citizens living in different regions of the same country are the level of economic activity in each area before and after public intervention (Decressin, 2002). Here we follow the methodology proposed by Decressin (2002) and also applied to Italy by Arachi *et al.* (2008): the level of economic activity before public intervention is measured by per capita GDP (indicated with the letter X), the level of economic activity after public intervention (Y) is given by per capita GDP increased by a *fiscal residuum*, which is a measure of public intervention. *Fiscal residua* for a given area are the difference between per capita revenue and expenditure for social policies in that area.

Following the approach proposed by Bayoumi and Masson (1995), as later developed by Mélitz and Zumer (1998, 2002) and also applied by Decressin (2002), a synthetic measure of regional redistribution as a result of public intervention is given by an OLS estimate of the following equation:

$$\bar{y}_i = \alpha_2 + \beta \bar{x}_i + \eta_i \quad (1)$$

where the index i ($=1, \dots, 15$) refers to the region; η is the error term and β is the relevant parameter to measure the degree of redistribution.

In equation 1, overscored variables denote averages over time (in our case, over the years 1996-2005). In addition, equation 1 is written in low case variables, which indicate normalised variables: all variables have been divided by nationwide values to control for shocks that are common to all regions and may be absorbed via the national budget, i.e.:

$$y_{it} = \frac{Y_{it}}{Y_{Rt}} \quad \text{e} \quad x_{it} = \frac{X_{it}}{X_{Rt}} \quad (2)$$

where:

$t=1996, \dots, 2005$ is the time index; R indicates the average value over the 15 OSRs; X_{it} , X_{Rt} are respectively per capita GDP in region i and year t and average per capita GDP in the 15 OSRs in year t ; Y_{it} , Y_{Rt} are respectively per capita GDP plus the *fiscal residua* in region i and year t and average per capita GDP plus the *fiscal residua* in the 15 OSRs in year t (that is to say respectively X_{it} and X_{Rt} plus the *fiscal residuum*).

The amount of redistribution is given by $1 - \beta$. If $\beta = 0.9$, then a region with per capita GDP 1 euro higher than the average ends up with disposable resources 90 cents higher than the average, implying a redistribution of $\beta\%$ of per capita GDP. Conversely, a region with per capita GDP 1 euro lower than the average ends up with disposable resources 90 cents lower than the average. The impact of public intervention is therefore a redistribution of 10% of GDP.

Section 4 presents the results of estimating equation 1 over the 15 OSRs. The degree to which social policies generate redistribution over these regions is calculated on the basis of the estimated coefficient β .

4. Analysis of redistribution

4.1. Analysis of fiscal residua

According to the methodology described above, in order to estimate the degree of redistribution effected by each level of government the *fiscal residua* first have to be calculated. For each level of government and for each area, *fiscal residua* are given by the difference between total public expenditure (net of interest payments and transfers to other levels of government) and total revenue (net of transfers from other levels of government). Table 5 reports the values in euro of per capita average *fiscal residua* over the years 1996-2005 for each area (excluding SSRs). These were constructed on the basis of the TPA according to the procedure described in Section 2. Average per capita *fiscal residua* indicate that general government as an aggregate had a primary surplus (i.e. net of interest payments) averaging approximately 300 euro per capita over the ten years. This surplus is amplified slightly by the choice, described above, to set the revenue of regions/levels of governments to zero if they are negative by construction (see footnote 3). Furthermore, by construction, the general government budget for social policies is balanced (i.e. total revenue for all regions equals total expenditure). Hence the primary surplus reported in Table 5 results from the decision to analyse only the 15 Ordinary Statute Regions instead of all Italian regions. This surplus is a clue to the particular situation of OSRs and to the financial relationship between OSRs and SSRs: in aggregate, there is a redistributive flow from OSRs to SSRs.

The overall general government surplus across the 15 OSRs is the result of the considerable central government surplus (about 600 euro per capita) combined with the deficits of the social security institutions (about 320 euro per capita), while regional and local government deficits are negligible and partly due to the decision to set negative revenue to zero. This pattern of residua highlights the key feature of the Italian system of intergovernmental

relations: despite the decentralisation that has taken place in the last decade, most public revenue is collected by central government and then allocated to the other tiers via different systems of intergovernmental transfers, as shown in Table 4 above.

Table 5. OSRs: Fiscal residua by level of government (average per capita values 1996-2005), in 2005 euro

	GDP	General government	Central government	Regional government	Local government	Social security institutions
Piedmont	26,544	-1,868	-1,118	-50	71	-771
Lombardy	29,735	-2,841	-1,508	47	14	-1,395
Veneto	26,782	-1,599	-915	-96	103	-692
Liguria	25,039	284	-614	-121	266	753
Emilia Romagna	29,029	-1,493	-1,011	-9	79	-551
Tuscany	25,331	-165	-612	-46	134	358
Umbria	22,435	2,036	70	10	19	1,937
Marche	23,269	463	-291	-182	263	673
Lazio	25,742	303	-420	-180	263	640
Abruzzo	19,867	2,310	268	-49	136	1,955
Molise	18,274	1,484	130	-109	209	1,254
Campania	14,883	1,906	101	4	65	1,736
Puglia	15,283	1,667	119	1	22	1,526
Basilicata	16,452	2,017	225	-41	174	1,658
Calabria	14,491	3,324	741	23	59	2,501
<i>Average OSRs</i>	<i>23,785</i>	<i>-321</i>	<i>-616</i>	<i>-38</i>	<i>98</i>	<i>234</i>

Fiscal residuum = expenditure net of transfers to other levels of government - revenue net of transfers from other levels of government.

Expenditure is net of interest payments.

Source : Own calculations based on TPA (Ministry of the Economy) and Istat, Territorial Accounts.

It is worth remembering that the fiscal residuum is positive in areas that are net beneficiaries of flows of resources from the rest of the economy (public expenditure in those areas is higher than revenue collected from citizens living there) and negative in areas that transfer part of their resources to finance expenses elsewhere. By comparing residua in different regions, a preliminary picture emerges of the main patterns of inter-regional fiscal flows in Italy. First, there is substantial redistribution from wealthier to poorer regions (i.e. from those with per capita GDP above the national average to those with per capita GDP below it), except for the regions Lazio and Liguria. Despite having above-average per capita GDP, these regions have a positive per capita fiscal residuum, albeit significantly lower than all other positive fiscal residua. This redistributive pattern is primarily due to the actions of central government and social security institutions. The residua of regional and local governments do not display a clear redistributive pattern.

In more detail, central government effects a clear redistribution from areas with above-average per capita GDP (negative fiscal residua) to those with below-average per capita GDP (positive residua). The odd behaviour of Liguria and Lazio is primarily due to the actions of local government and social security institutions: these levels of government display strong positive residua in both regions.

4.2. Analysis of the redistributive impact

Column 1 of Table 6 reports the degree of inter-regional redistribution as a result of social policies measured by an OLS estimate of equation (1) across the 15 OSRs. This redistribution can be compared with total redistribution by general government across the 15 OSRs, reported in column 2. In both cases our dataset enables us to isolate the contribution of each tier of government to the total redistribution effected by general government by repeating the regressions and adding the fiscal residuum of a new tier of government to the dependent variable at each iteration. At each stage of this process, the redistribution effected by the last added level of government is given by the difference between the estimated parameter $(1-\beta)$ and the same parameter estimated in the previous regression. The parameter $(1-\beta)$ estimated in the last regression (the dependent variable is per capita GDP plus the fiscal residua of all levels of government) gives the total redistribution by general government, and is equal to the sum of the redistributive impacts of all levels of government (central, regional and local government and social security institutions).

The estimate for inter-regional redistribution resulting from social policies implemented by general government is 2.64% of GDP (row 5, column 1), while expenditure on social policies is about 4% of total public expenditure. In addition, redistribution by social policies is approximately 7% of total redistribution achieved by all public sector programmes, which amounts to 36.6% of GDP (row 5, column 2).

By analysing Table 6 row by row, it is possible to derive the contributions of the various tiers of government to total redistribution, both for social policies alone and for all public sector programmes. The first row reports the value of the estimated coefficient when the dependent variable is per capita GDP plus the central government fiscal residuum. This coefficient, then, is a measure of the redistribution effected by this level of government alone. In the second row the regional government fiscal residuum is added to the dependent variable. The difference between the coefficients in the two rows measures the redistributive effect of regional government programmes. Adding in the fiscal residua of the other tiers one by one, we can measure the redistribution effected by local government and social security.

Table 6. OSRs: Redistribution as a percentage of GDP (1996-2005)

	Redistribution through social policies	Redistribution by all public programmes
Estimation method	OLS	OLS
Exogenous variable	GDP	GDP
Number of observations	15	15
Coefficient	$(1-\beta) \times 100$	$(1-\beta) \times 100$
	1	2
Redistribution (% of GDP):		
1) Central government	0.74%	21.3%
2) Regional government	0.01%	6.6%
3) Local government	0.03%	4.0%
4) Social security institutions	1.86%	4.8%
5) General government	2.64%	36.6%

Note : Expenditure does not include interest payments.

Source: Own calculations based on Territorial Public Accounts, Ministry of the Economy.

Table 6 shows that all levels of government make a positive contribution to income redistribution: the estimated value of $1-\beta$ is positive for each level. Most redistribution stems from the action of social security institutions, which redistribute 1.86% of GDP, followed by central government, which redistributes 0.74%. The contribution of local and regional government is minor: 0.03% and 0.01% respectively. The sum of the redistributive impacts of each level of government gives the value of total redistribution by the public sector, which amounts to 2.64%.

A comparison of these results with those for all public programmes (Table 6, column 2) shows that the order of importance of the contribution to total redistribution by the various levels of government is different in two respects. First, the redistributive impact of central government (21.3% of GDP) is larger than that of all other levels of government (and specifically that of social security institutions, which redistribute only 4.8% of GDP; their primacy in social policy is due to the special role they play in the implementation of such policies). Secondly, the order of importance of local and regional governments is reversed: regional government redistributes more than local government (6.6% of GDP compared with 4% by local government).

4.3. *Decomposition of the redistributive impact of social policies*

The interregional redistributive impact of social policies is small compared to that of all public sector programmes, amounting to 7 per cent of total redistribution. However this does not necessarily imply that social policies have a low redistributive power. It may rather result from the limited financial dimension of social policies compared to all public programmes (4 per cent of total public expenditure). In order to investigate the interregional redistributive properties of social policies, it is useful to resort to a different measure of redistribution, by adapting the Reynolds-Smolensky index for redistribution originally developed for taxes only. As shown in equation 3, the Reynolds-Smolensky type index of net redistribution can be defined as twice the area between the concentration curve for regional GDP after public intervention and the Lorenz curve for regional GDP before public intervention:

$$RS = 2 \int_0^1 [L_{GDP+RES}(x) - L_{GDP}(x)] dx \quad (3)$$

where, as usual, net public intervention in each region is measured through the fiscal residua (RES).

Table 7 (column 3) reports the values of the Reynolds-Smolensky index calculated both for social policies and for all public programmes distinctively for each level of government and for general government. A comparison with table 6 shows that the Reynolds-Smolensky index is consistent with the conclusions drawn from the analysis of the regression results. First, interregional redistribution by social policies measured through the Reynolds-Smolensky index accounts for about 7 per cent of total redistribution, consistently with the results from the estimation of equation 1. Further, the contribution of each tier of government to total

redistribution remains largely unaffected when we pass from the regressions to the Reynolds-Smolensky index analysis.

Table 7. Redistributive impact decomposition

	Redistribution 1996-2005 (% GDP)	Reynolds- Smolensky Index	Total average per capita residua/GDP	Kakwani Index	Progressivity
Social Policies	2.64%	0.0042	0.0022	-1.9730	progressive
<i>Central government</i>	0.74%	0.0011	-0.0017	0.6866	progressive
<i>Regional governments</i>	0.01%	0.0000005	-0.0002	0.0021	progressive
<i>Local governments</i>	0.03%	0.00006	0.0006	-0.1149	progressive
<i>Social Security Institutions</i>	1.86%	0.0030	0.0035	-0.8772	progressive
All public programmes	36.6%	0.0550	-0.0084	6.4842	progressive
<i>Central government</i>	21.3%	0.0312	-0.1357	0.1990	progressive
<i>Regional governments</i>	6.6%	0.0094	0.0425	-0.2304	progressive
<i>Local governments</i>	4.0%	0.0067	0.0284	-0.2413	progressive
<i>Social Security Institutions</i>	4.8%	0.0103	0.0564	-0.1931	progressive

Source : Own calculations based on TPA data.

A useful decomposition of the Reynolds-Smolensky index, proved by Kakwani (1977) for taxes and readily extendible to the net fiscal system (see Lambert 2001), shows that the redistributive effect of policies results from the combination of a measure of their incidence (i.e. departure from a balanced budget) and their departure from proportionality. In particular:

$$RS = \frac{RES}{1 - RES} \cdot KAK \quad (4)$$

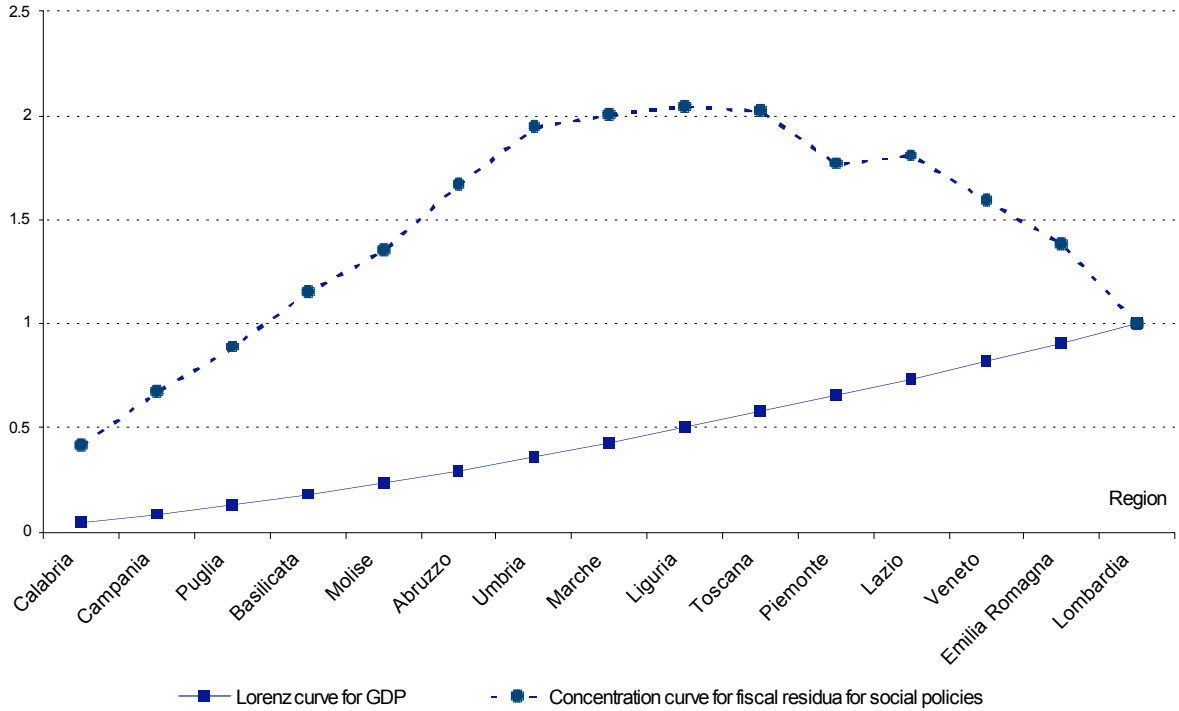
where the Reynolds-Smolensky index is equal to the product of a measure of policies incidence (that is: -average fiscal residuum/(1+ average fiscal residuum)) and an index of policies deviation from proportionality (KAK). The specification of this latter index is based on that introduced by Kakwani (1977) for taxes and is defined as:

$$KAK = 2 \int_0^1 [L_{GDP}(x) - L_{RES}(x)] dx \quad (5)$$

The Kakwani index measures policies progressivity as twice the area between the Lorenz curve for regional GDP before public intervention and the concentration curve for taxes and/or benefits affecting regional GDP (in our case the concentration curve for fiscal residua). For taxes only, a positive (negative) Kakwani index implies progressivity (regressivity). The reverse holds in the case of benefits. Conversely when the net fiscal system is analysed (in this case through fiscal residua) the implications of the Kakwani index for policies progressivity can be drawn only after considering also the sign of average fiscal residua. The fiscal system is regressive when the Kakwani index and average fiscal residuum have the same sign (both positive or both negative). On the contrary when the Kakwani index and the average fiscal residuum are different in sign (one is positive and the other negative) the fiscal system is progressive.

Figure 1 illustrates how the Kakwani index for social policies by the general government is derived: it plots both the Lorenz curve for GDP before public intervention and the concentration curve for social policies fiscal residua. According to equation 5, twice the area between the two curves measures social policies progressivity/regressivity.

Figure 1. Construction of the Kakwani index: Lorenz curve for GDP and concentration curve for fiscal residua for social policies



The decomposition of the Reynolds-Smolensky index described in equation 4 allows a more thorough investigation of the interregional redistributive properties of public policies. As pointed out before, the redistributive impact of social policies is relatively low (2.64 per cent of GDP, contributing 7 per cent to total redistribution through public policies) and this is disclosed also by their very low Reynolds-Smolensky index. Nonetheless results reported in column 4 and 5 of Table 7 show that social policies are always progressive: for each level of government, as well as for general government, the Kakwani index and the average fiscal residuum have always different signs. In addition column 5 (row 2 and 7) shows that, although the Kakwani index for social policies by general government is lower than that for all public programmes (in absolute values, 1.97 opposed to 6.48), the ratio between the two is approximately one third, significantly higher than the ratio between the two Reynolds-Smolensky indexes (approximately 1/13). This suggests that social policies have a relatively high progressivity power.

Table 7 reports also the Kakwani index for social policies and for all public programmes distinctively for each level of government. Remembering that most of the redistribution through social policies is produced by central government and social security institutions, it is

interesting to note that in the field of social policies the actions of these levels of government are significantly more progressive than their total budget. The Kakwani index for social policies by central government and social security institutions is respectively three and four times that for overall actions by these levels of government.

5. Social policies and redistribution

The results presented in the previous paragraph show that social policies of central government, together with those of social security institutions, have a significant redistributive impact. These policies cover a multitude of programmes, which, as described in Section 2, may involve monetary transfers or transfers in kind, financed through general taxation. They aim to provide support when economic resources are insufficient or in case of need (sickness and disability, old age and survivors, family support, employment, public housing and social exclusion), as well as financing retirement homes and providing social services to citizens either at home or in facilities designated for that purpose.

Under the ISTAT classification, the item “assistance” includes all social policies not connected to citizens’ health and which do not require the prior payment of contributions. Public support in these areas is not necessarily subject to means-testing, even if the general purpose is to supplement inadequate income (Ministero del Lavoro e delle Politiche Sociali, 2005, p. 13).

Over the period of analysis (1996-2005) expenditure on social policies was relatively constant, and most of it (on average more than 60%) related to support for old age pensioners and survivors (Ministero del Lavoro e delle Politiche Sociali, 2005a, p. 15). Programmes for these purposes include social pensions and other money transfers for social reasons, subsidies, services for the elderly (retirement homes, facilities for old people, old people’s homes, services delivered at people’s homes), supplements to pensions (old age pensions, early retirement pensions and survivors’ pensions) and war pensions to survivors (Ministero del Lavoro e delle Politiche Sociali, 2005, p. 15). These programmes are mainly financed through the central government budget and by a specific fund of the INPS (National Social Security Institute). This fund, called GIAS (Gestione degli Interventi Assistenziali e di Sostegno alle Gestioni Previdenziali) was created in 1989 (Law 88/1989, Article 37) and is financed by central government transfers. The territorial distribution of programmes operated by central government and social security institutions, either monetary or in kind, is shaped by the different structure of the population across different areas, primarily in terms of income and age structure. Regions with a per capita GDP below the national average (basically the Southern regions, see Table 1) are generally those with a higher percentage of the population in relative poverty (ISTAT, 2004a). As a result, in these regions there is a higher concentration of non-contributive programmes to support old age pensioners and survivors. The redistribution effected by the social policies of central government and social security institutions is therefore partially due to these regional differences in population structure.

In addition, central government programmes are not confined to those that support old age pensioners and survivors. There are also several other programmes, but their financial weight is significantly lower, so that their contribution to total redistribution is very limited. It is worth noting, however, that the criteria for access to these programmes also refer to socio-economic and demographic indicators which are unevenly distributed across the country and in particular cause a higher concentration of demand or conditions of need in the Southern regions.

This is in particular the case for programmes providing family support, where relative poverty is the eligibility criterion. In addition, there are other income support programmes whose distribution is significantly affected by employment rates, which in turn are well below the national average in the regions with low per capita GDP (ISTAT, 2004b).

Another issue is that of central government programmes to support disabled, blind and deaf-mute persons, which may supplement their disability pension, monthly payments and contributions provided by the INPS “Civil Disability” fund. The territorial distribution of such central government programmes should reflect the territorial distribution of beneficiaries of INPS programmes, who are concentrated in the Southern regions. As reported in Table 7, in 2003 there were generally more recipients of disability pensions, invalidity pensions and contributions to disability and monthly payments in the Southern regions.

Table 8. Italy: Beneficiaries of programmes - standardised retirement rate (2003)

	Per capita GDP (thousands of euros)	Pensioni di invalidità civile (Civil disability pensions)	Indennità di accompagn. per invalidità civile (Civil disability attendance allowances)	Pensioni di inabilità e assegni ordinari di invalidità (Incapacity pensions and ordinary invalidity allowances)	Pensioni o assegni sociali (Social pensions or allowances)	Trattamenti pensionistici integrati al minimo (Supplement - ary pensions)
<i>Ordinary Statute Regions</i>	25.0					
Piedmont	26.4	10	21	30	34	74
Lombardy	31.5	10	22	19	41	65
Veneto	27.9	10	22	21	44	79
Liguria	25.0	14	23	31	52	68
Emilia Romagna	29.4	10	23	34	34	75
Tuscany	26.4	12	23	35	54	73
Marche	24.2	13	26	62	49	101
Umbria	22.9	15	35	55	67	91
Lazio	29.5	14	25	40	84	68
Abruzzo	19.7	19	31	64	85	107
Molise	17.5	17	22	79	55	129
Campania	15.5	23	34	57	118	88
Basilicata	16.8	19	28	83	73	114
Puglia	15.9	20	28	53	92	74
Calabria	15.6	22	37	70	97	96
<i>Special Statute Regions</i>	19.9					
Valle d'Aosta	32.1	8	21	58	38	77
Trentino-Alto Adige	30.4	15	16	28	37	89
Friuli-Venezia Giulia	26.8	9	22	32	44	75
Sicily	16.0	22	29	53	136	82
Sardinia	19.4	25	34	70	89	89
<i>Italy</i>	24.2	15	26	38	67	78

Source: Ministero del Lavoro e delle Politiche Sociali, 2005

6. Conclusions

Recent empirical works focused on the redistributive impact of the public budget on citizens living in different regions of the same country. Some also analysed the case of Italy, a country with sharp territorial disparities, where the effectiveness of the budget in achieving income redistribution is therefore of particular importance. However, they focused on the overall action of the public sector, and did not analyse the redistributive properties of individual policies.

This paper proposes and applies a methodology to extend the existing analyses of the Italian case to the study of the redistributive impact of individual public policies. Specifically, we focus on the construction of an adequate dataset for that purpose and apply the proposed methodology to social policies. Given the significant economic and demographic disparities among Italian regions, these policies are of special importance from the perspective of redistribution.

The analysis of income redistribution among Italian regions effected by social policies during the decade from 1996 to 2005 shows that action by general government had a clear redistributive impact equal to 2.64% of GDP. The various tiers of government contributed to this outcome to differing degrees: most of the redistributive effects are due to the action of social security institutions and central government, which redistribute respectively 1.86% and 0.74% of GDP, while local and regional governments play a minor role, redistributing only 0.03% and 0.01% of GDP respectively.

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Annex

In accordance with the methodology described in Section 2, in order to construct the revenue that finances social policies at each level of government, the “needs” of each level of government (and in each region for local and regional governments) need to be measured. For this purpose, total expenditure and both inward and outward transfers need to be calculated, for which we use the data contained in the Territorial Public Accounts (TPA). Distinctively for each territory, this database includes two tables for each level of government: one table records consolidated expense on general government (net of transfers to other tiers of government), the other records non-consolidated expense (including transfers to other tiers of government). In addition, on the expenditure side, data are disaggregated not only by territory and level of government, but also by function. Therefore social *expense* is easy to gather from the TPA consolidated expenditure tables: they are recorded under the column “social programmes”, where the relevant item for our purposes is total expenditure net of interest payments.

Similarly, *outward transfers* are derived from non-consolidated expenditure tables, where transfers to other levels of government are recorded distinctively for each recipient tier of government. For instance, for each territory, transfers from central government to regional and local governments are gathered from the table “non-consolidated national government”, considering respectively the items transfers to regional administration bodies and to local administration bodies.

A different case is that of social security institutions, which are not separately listed among the recipient bodies, but are included in the aggregate “other bodies of the central administration”. However, a comparison with the revenue tables revealed that, as regards social policies, transfers to other bodies of the central administration nearly match transfers to social security institutions. Therefore, transfers to social security institutions for social policies are derived from non-consolidated tables, under the function “social programmes”, item “other bodies of the central administration”.

Information on *outward transfers* for social policies by each level of government and by general government was derived from the non-consolidated expenditure tables for each level of government and for each region. The total for all regions is obtained by totalling the regional values. Initially, only the column “social programmes” in these tables was considered. However, a comparison with data on the National Fund for Social Policies (FNPS) for 2004, provided by the Italian Ministry for social policies, unveiled that the above described procedure significantly underestimates transfers from the central government to the regional government. These were significantly lower than the transfers from central government to regional governments through the FNPS. An additional check showed that transfers for social policies are partially recorded by the TPA under “social security and wage support”. For all levels of government except social security institutions, the transfers recorded under “social security and wage support” relate almost entirely to social policies. For all levels of government except social security institutions, outward transfers are derived by summing the items recorded under “social programmes” and “social security and wage

support”. The total nearly matches the FNPS for central government transfers to the regions. For social security institutions, transfers are derived by considering only “social security and wage support”.

Table A1 is the matrix of flows and summarises this procedure: each row refers to a financing level of government, while recipients are listed in columns. For instance, the first row shows the source of data used to obtain central government’s transfers to each of the other tiers of governments: transfers to regional and local governments are obtained from the functions “social programmes” and “social security and wage support”, while transfers to social security institutions are derived from the function “social programmes” only.

Table A1. Matrix of flows: data sources for transfers from each level of government to the others.

Financing level of government	Recipient level of government			
	CG (central government)	RG (regional government)	LG (local government)	SSI (social security institutions)
CG	-	Social programmes Social security and wage support	Social programmes Social security and wage support	Social programmes
RG	Social programmes Social security and wage support	-	Social programmes Social security and wage support	Social programmes
LG	Social programmes Social security and wage support	Social programmes Social security and wage support	-	Social programmes
SSI	Social programmes	Social programmes	Social programmes	-

Conversely, *inward transfers* are not immediately derivable from TPA tables, because revenues are not disaggregated by function. Inward transfers are reconstructed from expenditure data, by using the reverse procedure from that for outward transfers. Outward transfers are allocated to the financing level, so that consistency is ensured and total inward transfers of a given level of government are equal by construction to total outward transfers from other bodies to that level of government.