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Redistribution at the Local Level: The Case of Public Childcare in Italy*

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Abstract

We study the determinants of redistribution at the municipal level in the context of public childcare in Italy. Within a substantially homogeneous legislative framework, different municipalities autonomously define how participation fees vary with a compound indicator of income and wealth (ISEE), thus redistributing resources across households using the service. The nearly one hundred municipalities we take into account exhibit wide heterogeneity in redistributive attitudes. We find statistically significant correlations of these with a number of individual characteristics of policy-makers and municipalities, but not with those of the ex-ante distribution of income, which should be central according to both normative and positive theory. Since the price of public childcare is subsidized, resources are also redistributed from tax-payers to users. The evidence that we find is consistent with the hypothesis that this type of redistribution is a public good.

Keywords: redistribution; progressivity; childcare

JEL Classification codes: H23; H42; H71

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1 Introduction

Public finance theory identifies, among others, three main motivations for redistribution (Boadway and Keen, 2000). The first and most obvious one is *social justice*. In the prevailing welfarist approach each individual and each policy-maker can be conceived of as having a distinct social welfare function; such variability of preferences implies different optimal redistributive policies for different policy-makers. The second motivation originates from the *political economy* literature. One example is that of median voter considerations, which can lead self-interested politicians to undertake redistributive policies in order to maximize their chances of election when the income distribution is skewed (Meltzer and Richard, 1981). A third motivation has to do with *efficiency*: if the utility of one individual is positively affected by that of anyone else, then some redistribution may be not only equitable but also efficient.¹ This leads to the mitigation of the classical 'equity-efficiency' trade-off.

These three views altogether raise a number of issues calling for empirical analysis. For instance, can revealed social preferences be retrieved from actual redistributive policies? How relevant are strategic political economy considerations in framing policies? To what extent can altruism mitigate the equity-efficiency trade-off? Empirical analysis in this area faces a number of challenges. The requirement of having observations on the redistributive behaviour of a sufficiently large number of policy-makers may be fulfilled either cross-country or within-country. In the first case, overall redistribution must necessarily be the focus, because single tax-benefit programmes are unlikely to be sufficiently homogeneous across countries. This requires a comparison of ex-ante versus ex-post distributions of income or wealth. The estimate of the ex-ante distribution poses a number of problems due to the complexity of public sector intervention in modern economies and typically requires large and detailed micro-simulation models, which may be sensitive to the under-

¹Early contributions to this literature include Hochman and Rodgers (1969) and Thurow (1971).

lying assumptions. Important progress has been made in recent years by the Luxemburg Income Study (LIS) in providing data suitable for this type of analysis. Scervini (2012) uses these data to test the “redistribution hypothesis” versus the “median voter hypothesis”. The findings are consistent with the former, whereas the latter is rejected. Padovano and Turati (2012) try to go beyond those two classical hypotheses and show that political and institutional factors are key determinants of redistributive behaviour.

The complications of cross-country analyses might be overcome, in principle, by exploiting variability, if any, across local authorities within single countries allowing for some degree of decentralization. However, theoretical concerns about the efficiency of redistribution carried out by local authorities² are mirrored by the tendency to assign this function to the central level in federal systems. In comparison with cross-country analyses the greater legislative homogeneity could be an advantage. On the other hand, the fact that the scope of local redistribution is typically restricted implies that comparisons must be based on specific tax-benefit programmes.

The idea that redistribution carried out at the local level is inefficient was first challenged in Pauly (1973), where redistribution is treated as a local rather than a national public good. In this view, comparatively rich people only care about the welfare of comparatively poor people living within their jurisdiction. If this is the case, centralized redistribution may no longer be optimal. Epple and Platt (1998) study the role of redistributive preferences in a model with perfect mobility and voting within jurisdictions. They show that if individuals are allowed to differ not only in income but also in preferences towards redistribution, the equilibrium is no longer one with complete stratification, i.e. where a community consists of households with incomes in a single interval - something hard to observe in practice.

The scarcity of empirical studies investigating local level redistribution

²Possible inefficiencies of local redistribution seem to have been first discussed in Stigler (1957). See Cremer et al. (1996) for a survey of subsequent contributions.

reflects the tendency to assign this function to the central level. One of the best known exceptions is the early contribution by Orr (1976). The article presents an empirical test of the predictions of a political economy model where local redistribution is a public good, using U.S. data on the Aid to Families with Dependent Children. Among covariates with statistically significant effects there are per capita income (positive), the proportion of net gainers in the population (negative) and the absolute number of recipients (positive). In an empirical analysis on the determinants of sub-national tax progressivity in the U.S., Chernick (2005) finds that party control by Republicans is correlated with less progressivity, whereas there tends to be an offsetting effect towards pre-tax income inequality, meaning that policies are more progressive where inequality is greater. The empirical work by Ashworth et al. (2002) has a more specific focus on redistribution as a local public good (Pauly, 1973) and the related experimental literature on the role of the level of knowledge of beneficiaries (Orbell et al., 1988), communication (Ledyard, 1997), and identification (Bohnet and Frey, 1999) in determining individual willingness to transfer resources to other people. The idea is that more redistribution might be expected where distances, broadly speaking, are shorter. Ashworth et al. (2002) find evidence that individual willingness to redistribute is negatively correlated with the geographical size of the municipality, affecting both the number of recipients and the size of the benefit.

The present work studies redistribution related to the subsidization of public childcare for children less than 3 years old, and its variability across jurisdictions. In Italy, municipalities are responsible for the management of the service. In most cases both production and provision are public, but public provision of a privately produced service is also an option. The provision of the service entails two different forms of redistribution. The first is redistribution among users of the service, due to the dependency of individual fees on income and wealth. Moreover, since fees tend to be lower - sometimes substantially - than the market price, there is an implicit subsidy

implying redistribution from tax payers who do not use the service to users. Our data best fit the analysis of the first type of redistribution. However, we also try to use the data to get some insights on the redistribution from tax payers to beneficiaries of public childcare.

Although this environment refers to a very specific function of the local authority, it provides relevant information concerning attitudes towards redistribution for at least two reasons. First, it is one of the few functions managed at the local level implying some form of redistribution (ISTAT, 2013).³ Second, the amounts redistributed through this policy are not negligible. Unlike for most of the other publicly provided services, co-payment by beneficiaries may be substantial, getting in some cases close to the full fee in the private sector. The fee variability across households and municipalities may be large, ranging from nil to around 712 euros per month.

We gathered data to characterize the fee schedule of about one hundred among the main towns in Italy and obtained measures of progressivity and redistribution (among users) from them. Our data show wide variability for all the indicators. Differences across municipalities are much larger than one would expect if differences were only related to the economic characteristics of the municipality (such as its income distribution), suggesting that preferences of policy makers and citizens play a major role. This is confirmed by our econometric analysis, showing that statistically significant effects are mainly related to characteristics of municipalities other than the income distribution.

Our analysis of the determinants of redistribution from tax-payers to users of the service, which is related to the overall size of subsidization, allows us to test the hypothesis that this type of redistribution is a public good (Orr, 1976). We find statistically significant effects with a sign consistent with this hypothesis for the variables that are particular characteristic of the public good model.

³Also on the taxation side, the part of the personal income tax due to local authorities, unlike the national component, is generally based on flat tax rates.

The paper is organized as follows. After presenting methodology and data sources in Section 2 and Section 3, in Section 4 we investigate the characteristics of fee schedules adopted with respect to their redistributive properties, and explore possible relationships of their redistributive properties with the main characteristics of the municipalities. Section 5 summarizes the results and briefly discusses how they fit into the existing literature. An Appendix provides further details on the indicator used by municipalities to determine household fees.

2 Background and methods

In Italy, municipalities have large autonomy in the provision of primary care for children in the first three years of their life: they are free to decide level of provision,⁴ access rules and fee schedules. Most municipalities follow the principle of requiring higher fees from families who are comparatively better-off. Specifically, a compound indicator of income and wealth, *Indicatore della Situazione Economica Equivalente* (ISEE), is used as the basis to define the fee.⁵ As a result, local policy-makers are free to decide the size of redistribution across households with children attending crèches.

We collected data on fee schedules set by the main municipalities in Italy⁶ to study how local authorities redistribute resources across households using the service. To overcome the problem that schedules are defined over different ranges of ISEE in different municipalities, we standardize schedules by defining 36 ranges that we keep fixed for each municipality and assign to each observation and each standardized range the corresponding fee. Most municipalities allow for reduced rates for households with more than one child

⁴For a specific analysis of this aspect see Antonelli and Grembi (2011).

⁵The basis for the definition of ISEE is household income, which is then adjusted to account for household wealth and subsequently corrected through an equivalence scale. For a detailed description, see the Appendix.

⁶Municipalities classified as “Capoluoghi di Provincia” were selected.

attending crèches. For reasons of tractability, we only consider fees paid for full time attendance by a family with only one child.

Issues of competition and mobility are central in most of the literature on fiscal federalism. The criterion we used to select municipalities to include in the sample is such that they are very unlikely to be bordering. Together with the fact that we focus on one specific service, this leads us to believe that strategic interactions among authorities do not play an important role in our framework.

Redistributive policies are summarized by two different indicators, one of redistribution and one of progressivity. For each municipality j , the redistribution indicator (R_j) is computed as the total amount of resources redistributed from rich to poor as a result of adopting a non-flat fee policy, normalized by the size of the population aged less than three (P_j):

$$R_j = \frac{1}{2} \frac{\sum_{i=1}^{N_j} |f_j(y_i) - \bar{f}_j|}{P_j},$$

where N_j is the number of places available, $f_j(y_i)$ is the fee paid in j by household i whose ISEE is y_i , and \bar{f}_j is a hypothetical flat fee ensuring the same revenues as the actual fee schedule:

$$\bar{f}_j = \frac{\sum_{i=1}^{N_j} f_j(y_i)}{N_j}.$$

R_j can be interpreted as the average amount redistributed for one child. Progressivity is simply characterized through the Kakwani index:

$$K_j = 2(L_j^Y - L_j^F),$$

where L^Y is the Lorenz curve of the ISEE distribution and L^F the concentration curve of fees.⁷ Our progressivity indicator captures by how much the

⁷The calculation of the Kakwani index would also require knowledge of a maximum value of ISEE for each municipality corresponding to the 100% of the distribution. In this

schedules depart from proportionality to ISEE. It is worth noting that R_j depends on the number of places available N_j , whereas K_j does not. For this reason, in the interpretation of the results we will also refer to a measure of provision defined as:

$$C_j = N_j/P_j.$$

Both R_j and K_j depend on how different values of ISEE are distributed in the population of interest. In general, distributions may be expected to vary across municipalities. Therefore, in principle, the definition of the exact amount of resources redistributed would require to know for each municipality the distribution of ISEE of households using the service. This would allow to disentangle the role of the schedule characteristics from that of the underlying distribution of income in determining overall redistribution. However, ISEE distributions cannot be estimated at the municipality level, because data on ISEE statements received by each municipality are not available. A further complication is that households are free to decide whether to communicate their ISEE to the municipality or not. A missing communication implies that the maximum fee applies. Therefore, households who know that their fee will be the maximum anyway, will not take time to gather the necessary documents. As a consequence, ISEE statements received by the municipalities are likely to be biased toward poorer households. Therefore, we use the same estimated distribution of ISEE, based on national data for the population with children aged less than 3, for all municipalities. Although this is a potential limitation of our study, the data presented in Section 4 suggest that it is unlikely to prevent us from capturing the main features of redistributive behaviour at the local level.

Moving to redistribution from tax-payers to users, this is directly related to the level of subsidization. In particular, the size of redistribution equals the difference between total costs and total revenues from fees. In order

case, we set this value equal to the 95th percentile of the estimated distribution (58,750 euros).

to normalize for the size of the municipality, the measure that we use is the ratio between costs and revenues of the service, as recorded in municipalities' balance sheets.

3 Data source

Our analysis employs two different classes of data:

1. Data on the public childcare system;
2. Socio-economic, demographic and political characteristics.

The first class includes the key information concerning the characteristics of the fee schedule. For most municipalities this is made available on the web. Whenever this was not the case, it was obtained by directly contacting people responsible for the management of the service. Data on the number of places available in each municipality were taken from the database made available by the Italian Ministry of the Interior ("Certificati Consuntivi"), containing information from the balance sheets of all Italian municipalities.

As to the second set of data, the following sources were employed:

- Survey on Income and Living Conditions (cross-sectional UDB IT-SILC, 2008⁸), for the estimate of distribution of ISEE. We considered the sub-sample of households with children aged 0-2. For each household a value of the indicator was estimated by combining information from the dataset with the rules for the computation of ISEE.⁹
- Italian National Institute of Statistics (ISTAT and DemoIstat) for all demographic information;

⁸We use the last year because it is the last in which all real estate properties are subject to taxation (ICI). We use this information to estimate the value of real estate wealth, which is part of the computation of ISEE.

⁹More information is provided in the Appendix. Details on specific assumptions introduced will be provided by the authors upon request.

- National Association of Italian Municipalities ("Associazione Nazionale Comuni Italiani", ANCI) for political data, such as political party, age, gender and election date of the mayor. For those cases where elections took place in our reference year, the date of issue of the legislative act defining the fee schedule was checked to ensure the correct correspondence between fee schedule and political characteristics;
- Italian Ministry of Economy and Finance, for the distribution of pre-tax personal income.

The potential size of our database was of 117 municipalities. However, 16 had to be dropped due to the impossibility of retrieving all necessary information. Two more (Parma and Viterbo) were excluded because indicators different from ISEE were used as reference for the determination of the fee. The size of the final dataset is of 99 observations.

4 Results

4.1 Descriptive Statistics

Figure 1 shows the average fee for each of the 20 Italian regions, weighted by the number of places available in each municipality belonging to the Region. Despite the fact that all municipalities base fees on ISEE, the variability of schedules is striking. The presence of two outliers, Lazio on the left and Valle d'Aosta on the right, may be explained by the presence of a single municipality driving the average in these two cases: in Lazio, Rome (the capital of Italy) has very low fees and a very large weight due to the population size, whereas in Valle d'Aosta – the smallest Italian Region – there is only one municipality meeting our inclusion criteria, Aosta. Even ignoring these outliers, however, there is a 128% difference between the lowest average fee (Sardegna, 124 euros) and the highest (Friuli-Venezia Giulia, 283 euros).

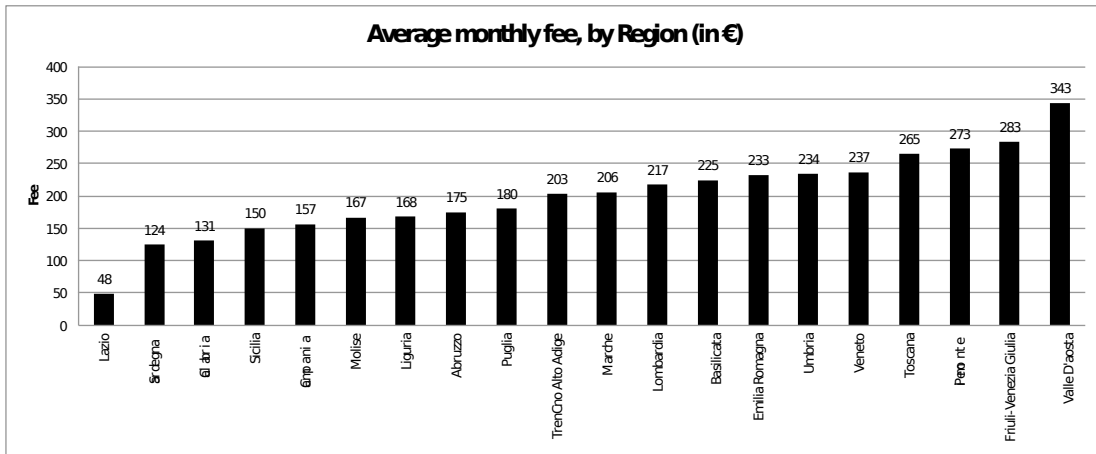


Figure 1: Average monthly fee by Region

By taking averages across municipalities in the same region, Figure 1 hides much of the full variability within the sample. Moreover, it does not provide any information on the characteristics of the schedule that is most relevant for the present study, namely the dependency of the fee on ISEE. Figure 2 shows schedules defined by each municipality within a sample of 4 Regions. Marche (top-left panel) is a particularly good example of how large variability may be even within a comparatively small Region (its area is less than 10,000 squared meters). From the figure we observe one municipality with a flat policy (Fermo), another one with an almost flat policy (Macerata), and four further municipalities exhibiting more redistributive policies, apparently without a common pattern.

Table 1 shows the descriptive statistics for the variables characterizing redistributive policies and other relevant variables.

As expected, there is positive correlation (0.602) between the two indicators we are mainly interested in, progressivity and redistribution. The variable on provision indicates the number of places available per resident

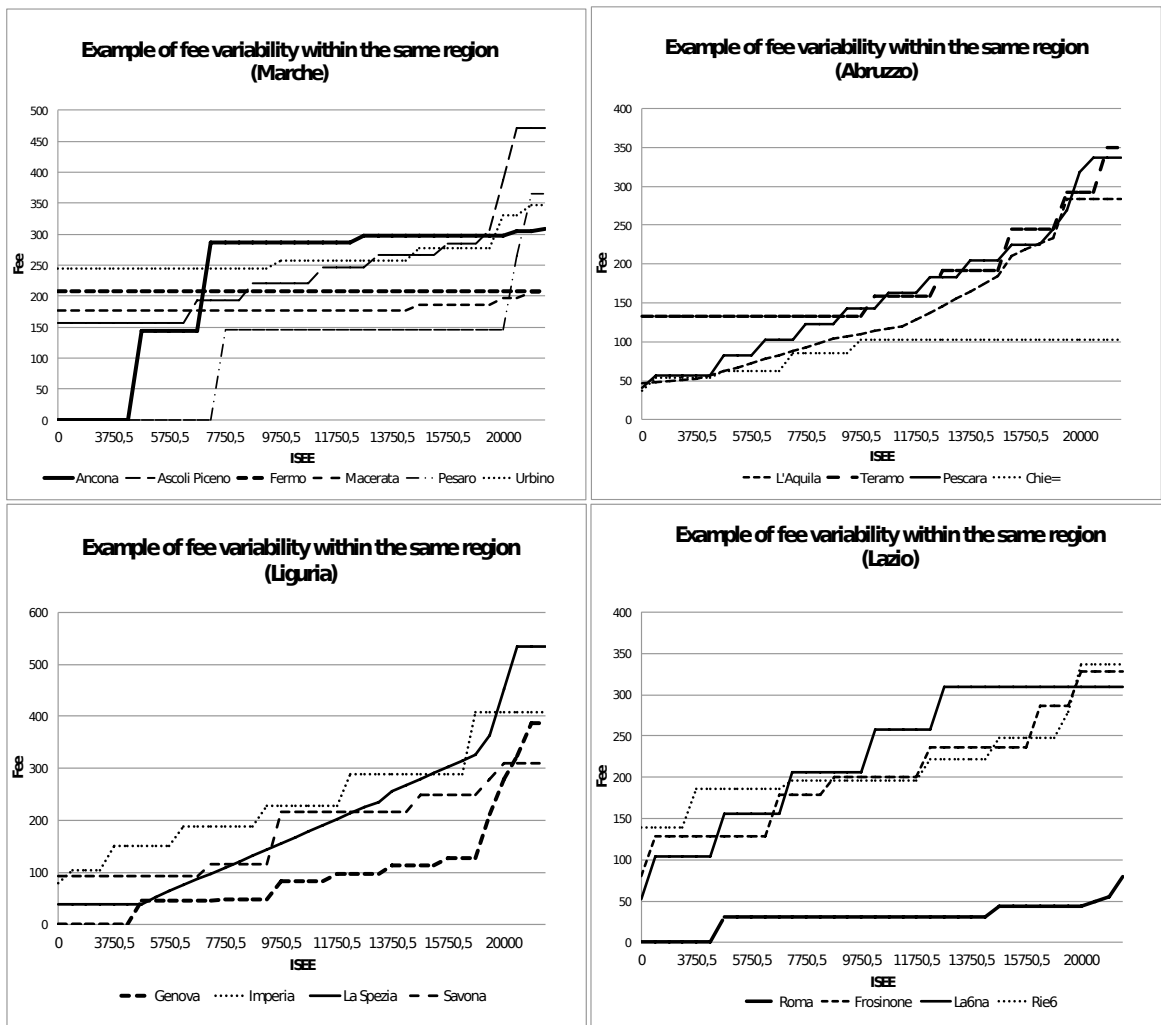


Figure 2: Variability within regions

Table 1: Descriptive statistics

	Mean	Std. Dev.	Minimum	Maximum
Dependent variables				
Progressivity	-1.000	0.414	-2.347	-0.101
Redistribution	1	0.897	0	4.332
Provision	0.114	0.060	0.01	0.33
Costs/revenues	7.84	9.644	0.5	75.124
Explanatory variables				
Income<7k / Income>60k	1.152	0.761	0.467	7.096
Mean income (k)	26.313	2.52	17.886	30.998
Mean/median income -1	0.402	0.041	0.283	0.488
Female employment rate (%)	47.791	12.778	21.493	64.357
Pop. aged 65+ (%)	22.022	2.844	13.172	28.203
Female mayor	0.203	0.404	0	1
Mayor aged 60+	0.301	0.461	0	1
Right-wing party	0.534	0.501	0	1
Less than 50k inhabitants	0.044	0.205	0	1
Centre-South	0.576	0.497	0	1
Available places (k)	3.945	5.058	0.018	13.284

Note: statistics are weighted by the size of the population in age 0-2.

child younger than 3. On average 11.4% of these children have access to public childcare, while only the maximum (33%) is close to the target set for 2010 by the Barcelona European Council of March 2002.

Consistent with the previously commented descriptive statistics, Table 1 confirms that the variance for the redistribution indicator is particularly large. It is also worth noting that the progressivity indicator is negative for all municipalities, meaning that fees grow less than proportionally with ISEE. The sign of this indicator, however, should not be overemphasized, given that ISEE is not a simple measure of income as those usually employed to calculate the Kakwani index, but a combination of income and wealth. Moreover, the sign may be also sensitive to the definition of the maximum value of ISEE, which we arbitrarily fixed at the level of the 95% percentile

of the national distribution of ISEE, given that it cannot be observed.¹⁰ However, neither circumstance should affect our comparative analysis of how progressivity and redistribution vary across municipalities.

Explanatory variables belong to three main groups. The first includes variables related to the distribution of pre-tax income, i.e. the main determinant of ISEE, for which information is available at municipality level. In particular, besides the mean, we consider two additional variables characterizing the central part of the distribution and the extremes. The first is the ratio of the mean to the median pre-tax income; the second ($\text{Income} < 7\text{k} / \text{Income} > 60\text{k}$), the ratio between the proportion of individuals whose pre-tax income is less than 7,000 euros and more than 60,000. The rationale for considering both measures is that on theoretical grounds they may be expected to play different roles: the central part of the distribution defines optimal decisions for self-interested politicians in a median-voter framework, whereas social justice motivated redistribution may be expected to be particularly sensitive to the proportion of poor individuals.¹¹

The second set of explanatory variables is related to the demand side, and includes a demographic indicator ("Pop. aged 65+") and female labour participation in the labour market.¹² The share of population aged 65 and more is meant to control for the potential role of informal care provided by grand-parents.

¹⁰Clearly, the selection problem due to option available to households not to deliver their ISEE statement and pay the maximum fee is particularly serious for the right-hand part of the distribution.

¹¹Although information on the distribution of pre-tax income is available at municipality level, it is not possible to retrieve the specific distribution for households with children aged 0-2 (as we do for the distribution of ISEE). Therefore, we are implicitly assuming that the distribution for this population is not substantially different from that of the general population, or that the differences between these distributions, if any, are reasonably similar across municipalities.

¹²For the year of interest this variable is not available at the municipality level, but only for the Province. Given that our selection criterion for municipalities leads to include the main one for each Province, the value of this variable is different, in general, for each observation.

A further set of variables includes additional characteristics, including those of politicians in charge, which may be related to redistributive preferences. Finally, the absolute number of available places (last row) may be relevant for the study of redistribution from tax-payers to users (Section 4.3).

In Section 2 the impossibility of retrieving the distribution of ISEE for users at the municipality level was mentioned as a potential limitation of our study. This because it makes it impossible to disentangle the role of preferences on redistribution by the policy-maker from that of the characteristics of the original distribution. Different policies might be optimal for policy-makers with identical preferences facing different distributions of income and wealth. We try to assess how serious this limitation is by looking at pre-tax income, for which information on the distribution for each municipality is available. Using once more regional aggregation for illustrative purposes, Figure 3 jointly shows the variability around the median regional value of the ratio of the mean income to the median income - a characteristic of the distribution - and of our measure of redistribution.

It is immediately apparent that the dispersion of the redistribution implied by the fee schedules is much larger than the dispersion of the ratio of mean to the median. Since pre-income is central in the definition of ISEE we expect something similar to hold for this combined measure of income and wealth. This evidence suggests that there is more than the pre-policy distribution of income behind the definition of redistributive policies. Therefore, the impossibility of retrieving a distribution of ISEE for users at the municipality level is unlikely to prevent us from exploring local redistributive attitudes through the study of fee schedules.

In the remaining part of this Section, we undertake an econometric exercise to investigate the role of other characteristics that are possibly related to the theoretical motivations for redistribution.

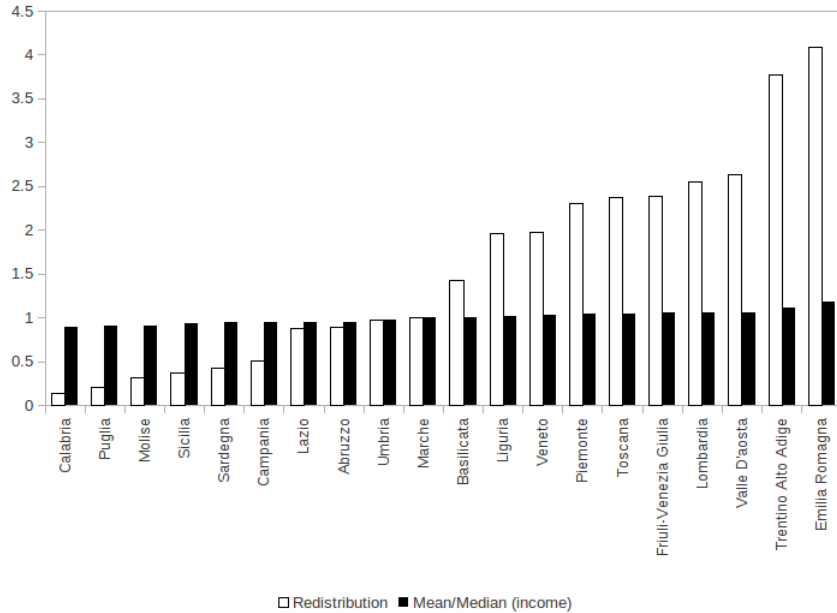


Figure 3: Regional indexes (average of municipalities belonging to the Region) of redistribution and ratio between mean and median pre-tax income; values are normalized to the median for both variables; Region are sorted from left to right according to the redistribution index.

4.2 Econometric Analysis

Table 2 shows the output of OLS regressions (weighted by the population size in age 0-2) of our variables of interest. While redistribution and progressivity directly characterize redistributive attitudes of local policy makers, the level of provision is helpful for the interpretation of the differences between them. As explained in Section 2, given the progressivity of the fee schedule, redistribution grows with the the number of available places. The specification equation is identical for the three dependent variables, with the exception that for the "provision" regression we include the percentage of population aged 65 and more to control for the potential role of informal care provided by grand-parents. In order to ease the comparison of the size of the impacts

for redistribution and progressivity the values of dependent variables have been normalized to their means.

We start with the effects of the income distribution. We find no statistically significant effect for the two variables characterizing the income distribution (rows 1 and 2), suggesting that, on average, policy makers do not react to more unequal ex-ante distributions with more redistributive policies. If redistribution were motivated by and defined according to *social justice* criteria we would expect a significant effect, especially for the variable measuring the ratio between the number of "poor" and "rich". Some other studies have found empirical evidence that the ex-ante distribution matters for the definition of redistributive policies both at the central (Tuomala and Tanninen, 2005) and the local level (Chernick, 2005). We would expect statistical significance for the other variable characterizing the distribution (mean / median income) if median-voter considerations played a role in the definition of redistributive policies. The fact that this is not the case is in line with most of the empirical literature testing this hypothesis (see for example Scervini (2012)).

Among demand-related variables, female participation to the labour market positively affects redistribution. As expected, this is not due to more progressivity, but to a higher level of provision. Moving down the table it can be seen that a number of characteristics of the municipality with no direct economic interpretation are correlated with the redistributive attitude. Female mayors tend to define more progressive schedules and to supply more of the service, which leads to more redistribution in their municipalities. This is in line with the existing empirical evidence, which shows that women tend to be more willing to redistribute both as individuals (see for example Guillaud (2013)) and when they act as policy makers (Geys and Revelli, 2011).

Table 2: Progressivity and redistribution

	(1)	(2)	(3)
	Progressivity (K)	Redistribution (R)	Provision (C)
Income<7k / Income>60k	-0.018 (0.052)	0.053 (0.096)	-0.006 (0.006)
Mean/median income -1	-0.833 (1.023)	1.399 (1.893)	0.068 (0.122)
Female employment rate (%)	0.001 (0.004)	0.023*** (0.007)	0.004*** (0.001)
Pop. aged 65+ (%)			-0.003 (0.002)
Female mayor	0.412*** (0.09)	0.397** (0.166)	0.026** (0.01)
Mayor aged 60+	0.108 (0.075)	0.01 (0.139)	0.004 (0.009)
Right-wing party	0.133** (0.066)	-0.171 (0.122)	-0.009 (0.008)
Less than 50k inhabitants	-0.448*** (0.15)	-0.103 (0.278)	-0.004 (0.017)
Centre-South	-0.358*** (0.088)	-0.875*** (0.163)	0.001 (0.01)
Constant	-0.642 (0.455)	-0.205 (0.842)	-0.037 (0.072)
Observations	99	99	99
R-squared	0.518	0.649	0.698

Note: weighted regressions, with weights given by the size of the population in age 0-2. Standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Another political characteristic with a statistically (weakly) significant effect is the political party in charge. Here we find that right-wing parties are associated with more progressive schedules. Although this is somewhat against common belief, it is not new in the empirical literature.¹³ The greater progressivity associated with right-wing party does not lead to more redistribution because on average the provision is less. The combination between progressivity and provision is such that the sign for redistribution is the

¹³For example, in some of their empirical specifications Padovano and Turati (2012) find that left-wing governments tend to expand public expenditure but redistribute less.

expected one, but the effect is not statistically significant.

We find less progressivity and redistribution in small municipalities. This is in contrast with the predictions from the literature that recognizes proximity as a positive determinant of the willingness to redistribute (Orbell et al., 1988; Ledyard, 1997; Bohnet and Frey, 1999; Ashworth et al., 2002).

Finally, Table 2 shows a strong geographical effect: we find significantly less redistribution in Centre-South Italy, and this is mainly due to more regressive fee-schedules. It is well known that female participation rates are higher in the North than in the rest of Italy. However, the geographical effect is significant after controlling for this, thus suggesting a difference in preferences toward redistribution.

4.3 Redistribution from tax-payers to users

So far we have focussed on the redistribution from better-off to worse-off households using the service, as determined by the characteristics of the fee schedule. Since fees tend to be lower than the market price as well as the per-user cost, public provision also redistributes resources from tax-payers to users of the service. The size of this redistribution is directly related to the difference between costs and revenues from fees. In this section we present the results of a regression of the ratio between total costs and total revenues - a measure of the subsidy - on a number of covariates potentially correlated with it. Due to unavailability of costs and revenues data for some municipalities our sample size is further reduced to 94 for this analysis. Since we are dealing with in-kind provision, a limitation of the present analysis is that costs may be higher because quality is higher, or because production is x-inefficient. At least in the case of quality, the fact that minimum quality standards are defined for several characteristics of the service, such as the maximum number of children per staff unit, should rule out excessive variability.

The results of the regression are reported in Table 3. In addition to some of the regressors that showed statistically significant effects in the previous

section, we include average income and two more variables that are specific to the hypothesis of local redistribution as a public good, which was originally tested by Orr (1976): the ratio between the number of recipients and the total population size and the absolute number of recipients. According to the theoretical model proposed by Orr, the expected sign for the corresponding coefficients is respectively negative and positive. In Table 3 both variables have the expected sign, and are statistically significant.

Table 3: Redistribution from tax-payers to users

	ln(costs/revenues)
Mean income (ln)	1.142 (1.188)
Available places / population	-96.558** (42.788)
Available places (ln)	0.220*** (0.068)
Female mayor	-0.23 (0.175)
Mayor aged 60+	-0.222 (0.153)
Right-wing party	0.157 (0.146)
Less than 50k inhabitants	0.03 (0.321)
Centre-South	0.532*** (0.168)
Constant	-11.388 -11.761
Observations	94
R-squared	0.489

Note: weighted regressions, with weights given by the size of the population in age 0-2. Standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Among the other covariates, the geographical location remains significant, indicating, on average, more subsidies in Center-South Italy. It should be

noted that this holds even controlling for average income. The sign of the latter variable is positive but not statistically significant.

5 Concluding Remarks

The paper aims to contribute to the empirical literature on the determinants of redistribution. The empirical analysis is motivated by the presence of alternative and possibly competing theoretical approaches, as well as by the evidence that individuals with different characteristics tend to show different propensities toward redistribution.

In this paper we exploit the autonomy that Italian municipalities have in the provision and organization of public childcare, especially with respect to the definition of fee schedules and the size of subsidization of the price. Even though the nearly one hundred municipalities we take into account follow the same legislative framework and are relatively close from a geographical standpoint, we observe wide heterogeneity in terms of attitudes to redistribution. The difference among fee schedules is striking, with some municipalities applying flat fees and others introducing large differences among households with different levels of resources. Average fees also show very large variability.

According to the theory, both normative and positive, the optimal size of redistribution crucially depends on the characteristics of the ex-ante distribution of income and wealth. We do not find evidence of a statistically significant effect of the characteristics of the income distribution that we consider on redistribution and progressivity. On the other hand, other characteristics of the policy maker (gender, political party) or the citizenship (geographical area, female employment rate) show a statistically significant effect, possibly suggesting that subjective preferences for redistribution matter more than structural characteristics of ex-ante distribution.

Given that the redistribution we study takes place at the local level, the framework also allows us to investigate some issues that are specific to this

level of government. We find that redistribution tends to be less in small cities, which is in contrast with the idea that proximity might be positively correlated with the willingness to redistribute and some empirical evidence on this (Ashworth et al., 2002).

On the other hand, our extension of the analysis to the redistribution from tax-payers to users seems to confirm some interesting predictions of the model proposed by Orr (1976). In particular, we find that the two variables that are specific to the public good nature of redistribution - the proportion of people receiving the benefit within the population and the absolute number of recipients - are statistically significant with the expected sign.

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Appendix: ISEE

The ISEE ("Indicatore della Situazione Economica Equivalente") is a compound indicator of income and wealth introduced in Italy in 1997. It is used by different government levels in order to assess the economic situation of citizens who apply for social benefits or subsidized care services.

The indicator is computed starting from a declaration (Unique Substitute Declaration) provided by applicant, who bears the full responsibility for its truthfulness. An ISEE certificate is issued on the basis of this declaration. The certificate is valid for one year and must be replaced by a new one in case that events implying a substantial change in the economic situation of the household occur.

The ISEE indicator takes into account income, plus a share of the asset value and the characteristics of the households. In general, the reference core consists of the registrant, the spouse and their children, as well as other people living with them, with some exceptions and special cases. The indicator is made up of the following two parts:

- the sum of all household yearly taxable incomes (net of housing rent expenditure, plus an average return on financial assets);
- the 20% of household wealth (with a 15,500 euro allowance for financial wealth and 51,650 euros allowance for the value of owner-occupied houses).

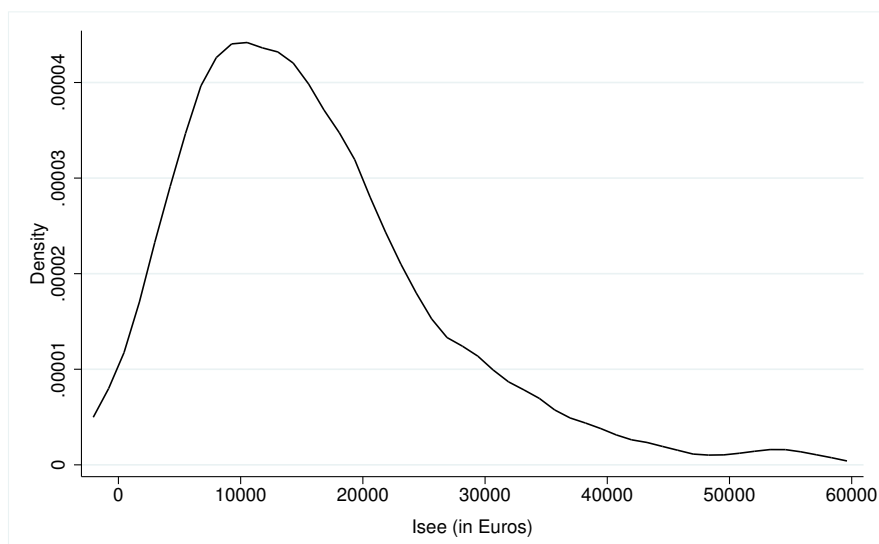


Figure 4: Distribution of ISEE for households with children 0-2.

The total amount is divided by an equivalence coefficient, which depends on the number of household members and some other characteristics. The coefficients are:

- 1 person: 1
- 2 people: 1.57
- 3 people: 2.04
- 4 people: 2.46
- 5 people: 2.85
- each extra person: + 0.35
- one-parent families with young children: +0.2
- each disabled person: +0.5
- both parents working and young children: +0.2

Figure 4 shows the estimated distribution of ISEE for the population with at least one child aged 0-2 that we use to calculate our progressivity and redistribution indicators.