

REDISTRIBUTION THROUGH A "LEAKY BUCKET":
WHAT EXPLAINS THE LEAKAGES?

FABIO PADOVANO, GILBERTO TURATI

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Fabio Padovano

Gilberto Turati

*CREM-CNRS and Centre Condorcet
for Political Economy,
University of Rennes 1, France
and DIPES, Università Roma Tre, Italy*

*Department of Economics and Statistics
University of Torino, Italy*

ABSTRACT

This paper empirically examines to what extent political factors explain different performances in income redistribution in countries that vary in terms of size of the public sector, tax systems, political institutions and governance. In line with the theory, we use the difference in the *ex ante* and *ex post* Gini indices of income inequality as the measure of the degree of redistribution achieved. The estimates show that, holding the share of public spending on GDP constant, parliamentary systems and democracies achieve greater redistribution, while electoral district size, government cohesion, union influence and perceived corruption reduce redistribution. The disaggregation of spending items reveals that while transfers and interest payments do not influence redistribution, provision of public services, mainly health and education do, but the number of bureaucrats involved in such provisions has a negative impact. Within revenues, taxes on income redistribute more than other forms of levies.

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KEYWORDS: redistribution, political determinants, empirical analysis, *ex ante* and *ex post* Gini coefficients

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1. *Introduction*

Okun's (1975) famous "leaky bucket experiment" refers to the well established empirical regularity that, when government attempts to transfer income from rich to poor individuals "...money must be carried [...] in a leaky bucket. Some of it will simply disappear in transit, so the poor will not receive all the money that is taken from the rich" (Okun 1975, p. 91). Okun attributed these losses to the administrative costs of taxing and transferring, and to the disincentive effects, mainly in the labor supply of both the rich and the poor and in the supply of savings and investments in both physical and human capital. Throughout his analysis Okun assumed a well-meaning government, and did not consider any political factors among the causes why one dollar taken away from richer individuals results in less than one dollar increase in the income of the poorer recipients.

Given the large available evidence of self-interested politicians and the inefficiencies in government interventions, the assumption of a well-meaning government is however too difficult to accept. Adding to Okun, in this paper we argue that also political factors are responsible for leakages, and propose an empirical test to verify whether, and to what extent, the politics of redistributive programs are responsible for drilling holes in the "leaky bucket". Recent empirical analyses on the evolution of income inequalities in Western economies in the 1990s (Lefranc et al. 2008) provide ample indirect evidence that political equilibria do play a role in determining redistributive outcomes. Among the nine western democracies considered in their work (namely Belgium, France, Germany, Great Britain, Italy, the Netherlands, Norway, Sweden and the U.S.), Lefranc et al. (2008) show that Italy and the U.S. are the most unequal in terms both of outcomes and opportunities. This result is certainly striking because, given the relative size of the welfare states in the two countries, and the different degrees of progressivity of their tax systems, Italy should achieve a higher amount of redistribution than the U.S. Similar considerations could be made about France and the UK, two countries with similar redistributive performances but with quite different welfare states in terms of size and structure (mainly universalistic the French one, while more prone to mean testing that of Britain). Other studies, based on different methodologies and definitions of inequalities, reach similar results (Gottschalk and Smeeding, 1997; Roemer et al. 2003). All in all, the empirical literature suggests that the redistributive efficiency of modern welfare states varies considerably from country to country. If income inequalities and general economic conditions do not fully explain redistributive outcomes, something else must be at play.

On the other hand, empirical analyses of the political economy of income redistribution reserve even greater surprises. Public choice explanations of coercive redistribution (Romer, 1975; Meltzer and Richard 1981,1983), based on the median voter model,

generally predict have that the middle class plays a special role in redistributive policies. Recent empirical tests, however, based on the Luxembourg Income Survey dataset, do not support the “median voter hypothesis”. First Milanovic (2000), then Scervini (2011) found not only that the gains from redistribution for the middle class are negligible, but also that the link between income and redistribution is lower than for any other class of income. Finally, the amount of redistribution targeted to the middle class is lower in more asymmetric societies, a result that strongly contrasts with the logic of the median voter theorem.

If voters’ preferences for redistribution do not explain the amount of resources that government devote to the reduction of inequalities, it is to the influence of the supply side of the political market, namely to political institutions, governance systems, influence of lobbies, that the political economy analysis of redistribution must focus on. It is precisely this task that we endeavor to perform in this paper.

The rest of the paper is organized as follows. Section 2 reviews the literature and section 3 explains our choice of the indicators of income redistribution that constitute the dependent variables of our analysis. In section 4 we discuss the empirical strategy and the estimates. Section 5 concludes.

2. In search of the determinants of redistribution: a brief review

While a number of studies has been devoted to the analysis of the dynamics of earnings and income inequality (e.g., Gottshalk and Smeeding, 1997), with scholars’ interest being renewed by the recent polarization observed in top incomes especially in Anglo-Saxon countries (e.g., Atkinson et al., 2011), much less work can be found on the issue of the determinants of *redistribution* of income by the government, as a way to reduce the observed inequalities in market incomes. Indeed, to take Okun’s argument seriously, one first needs a comprehensive measure of income redistribution for a number of countries and of years, which is not an easy task. That is why most of the contributions that study income redistribution by the government typically focus on one country or a selected group of countries, and on a specific policy or a specific transfer program (e.g., Danziger et al., 1981, for an old review).

The most typical measure of redistribution is the difference between a proxy for income distribution *before* any government intervention (typically, the market income) and the same proxy *after* government policies have been implemented (which can consider cash transfers, different types of taxes, and in-kind transfers). The main proxies for (re-)distribution used in the literature are the incidence of poverty, the share of aggregate

income received by the bottom quintile of household units, and the Gini coefficient. Take for instance the Gini coefficient: most of the available datasets allow the computation of the *ex-post* Gini on disposable income only. In order to obtain the *ex-ante* Gini on market income, one needs to rely on microsimulation models, which require a profound knowledge of tax and spending rules for each country in each year.

The most comprehensive efforts in this direction have been made by the Luxembourg Income Study (LIS), a cross-national data center which collects information on the distribution of income and wealth in about 40 upper- and middle-income countries. Unsurprisingly, the few papers comparing the cross-country variability of the extent of redistribution are based on these data. For instance, Mahler and Jesuit (2006) first show the large differences in terms of fiscal redistribution, defined as the difference between Gini *ex ante* and *ex post*, among 13 developed countries: averages across waves of data suggest that Belgium, Sweden and the Netherlands are all countries where the Gini goes down by more than 0.20 points (from an original level of more than 0.40), while the performance of Switzerland, USA and Canada is around -0.10 points (beginning from the same starting point). Similar conclusions emerge when alternative measures of redistribution are considered, such as measures of poverty. The authors then propose an exploratory analysis of the sources of the observed variance in the degree of redistribution across countries. They propose three main explanations: the first, based on power resources theory, allows to recognize welfare states and redistribution as the results of conflicts between class-related interest groups. Mahler and Jesuit (2006) proxy these conflicts with the partisan orientation of the government and the voter turnout. A second explanation, based on a 'structuralist' approach, emphasizes the importance of broad demographic and economic variables in influencing redistribution. Proxies here are the share of the elderly and the unemployment rate. Thirdly, labor market institutions may play an important role as determinants of redistribution; proxies for these institutions are a measure of the degree of "corporatism" in institutional arrangements and the unionization rate. Regression analysis considering the difference in the *ex ante* and *ex post* Gini shows that only coefficients for voter turnout, the unemployment rate and the degree of "corporatism" are statistically significant, and they all increase redistribution.

Differently from Mahler and Jesuit (2006), who take into account a broader set of determinants, Tanninen and Tuomala (2001) focus on how redistribution is affected by *ex ante* inequality. In particular, considering a sample of 12 OECD countries included in the LIS archive, the authors examine whether the degree of redistribution is affected by the "inherent inequality" in market income. Regression estimates show that this seems to be the case: an increase in the Gini coefficient on market incomes will increase the degree of

redistribution¹. The authors also evaluate two additional control variables: the share of government employment out of total employment and the dependency ratio (including both the young and the elderly). Only the first of these controls is significantly associated with an increase in redistribution. These results appear to be robust to an alternative definition of market income including pensions, that can be considered as deferred wages.

Along the study by Tanninen and Tuomala (2001), Scervini (2011) proposes a test of the “redistribution” hypothesis (i.e., the idea that more inequality in market incomes leads to more redistribution) versus the “median voter” hypothesis, (i.e., the idea that median voter preferences will affect the degree of redistribution). Using LIS data, regression estimates provide support to the “redistribution” hypothesis against the “median voter” theory. First, consistently with Tanninen and Tuomala (2001), there appears to be a positive relationship between inequality and redistribution. Second, confirming results originally provided also by Milanovic (2000), the “median voter” does not seem to affect redistribution, as the middle class appear to obtain fiscal gains which are lower than those accruing to poorer individuals. Both results hold controlling for a number of economic and political variables already considered in the work by Mahler and Jesuit (2006), such as per capita income, GDP growth, the unemployment rate, the political orientation of government, a dummy for democracy and presidential systems, and a measure of political fragmentation. Almost none of these variables seem to affect redistribution in a statistically significant way. The only exceptions are the positive coefficient for the proportional representation and the negative coefficient for the presidential systems. Scervini (2011) suggests that proportional representation increases the number of parties and their bargaining power to protect the interests of minorities. But it is not clear why protection of minorities should *always* be related to more redistribution. In the remainder of the paper we take a more comprehensive approach, trying to understand how political variables affect the degree of redistribution across countries using LIS data.

3. *Measuring redistribution*

Following part of the previous literature, such as Mahler and Jesuit (2006), here we measure redistribution as the *absolute* difference between *ex ante* and *ex post* Gini

¹ This result is in contrast with De Mello and Tiongson (2003), who however focus on “redistributive transfers” to assess whether more unequal societies redistribute more. This suggests that transfers *per se* do not need to be redistributive, and the whole array of redistributive devices available to governments must be considered when trying to assess redistribution.

coefficients². Data are taken from Scervini (2011), that make use of the LIS archive as in the tradition of these studies, and provides also the definition of *ex ante* and *ex post* income. In particular, *ex ante* (*market*) income is the sum of earnings from any source, including pensions, while *ex post* (*disposable*) income consider market income plus all social transfers minus all income taxes and pension contributions. This measure of redistribution presents two important limitations (e.g., Danziger et al., 1981). First, both indirect taxes and in-kind transfers are two categories of governments' tools excluded from this measure of redistribution; moreover there is evidence that both tools have redistributive effects (e.g., on different country sets, Mahler and Jesuit, 2006; Sonedda and Turati, 2005). A second weakness of measuring redistribution as the simple difference between the Gini indices concerns the definition of the counterfactual: what would have been the distribution of *ex ante* income in the absence of any government transfers and taxes? An accurate definition of the *ex ante* income would require to consider the full set of general equilibrium changes in relative prices and incomes if all governments' programs were removed. Hence, pre-transfers income would have been *less* unequally distributed, and our measure is probably an upper bound estimate of the degree of redistribution. Milanovic (2010) first advanced this critique to measuring redistribution as the simple difference in Gini indices. He argues that existing welfare regimes (and their generosity) do not emerge spontaneously, but are the result of the evolution of political processes within different nations. When people vote for a given regime, they take into account both the eligibility rules and the change in behaviors entailed by these rules. Finally, it is important to note that the measure of redistribution based on the difference between the Gini indices fits well also with Okun's idea of the leaky bucket: if one wants to understand what are the political factors responsible for drilling the holes in the bucket, one needs this very simple measure of redistribution, including also the disincentive effects implied by government policies.

The available evidence on the difference in the *ex ante* and *ex post* Gini (GINI_DIFF), that extends to 34 out of 37 countries currently included in the LIS database fairly confirms previous findings on the huge differences across states in income redistribution. Average values range from 0.004 in Mexico to 0.138 in Denmark. Within the European Union, countries that redistribute less are Italy and Luxembourg, with differences of 0.24 and 0.49 respectively; besides Denmark, among countries that redistribute more, we find another Nordic country, Finland, with a difference of 0.12, i.e., about six times the Italian performance.

² The alternative would have been to consider the *relative* difference between *ex ante* and *ex post* Gini, as in Scervini (2011). As discussed in Mahler and Jesuit (2006), however, if one consider redistribution over time, the absolute difference is more straightforward and it is not affected by trends in market income inequality.

Figure 1 about here

These large differences in countries that are rather similar with respect to public spending suggest that expenditure *per se* cannot be held the sole responsible and that other factors must be at play. This is apparent from the first scatter diagram in Figure 2, where we plot our measure of redistribution and government spending (in percentage of GDP). There is a mild positive relationship, confirmed by the positive correlation coefficient (Corr=0.33; p-value 0.010).

Figure 2 about here

The second and third scatter plot in Figure 2 chart the relationship between the degree of redistribution GINI_DIFF and per capita GDP (respectively in levels and as a rate of growth). Once more, a weak positive relation seems to emerge, confirmed by the correlation coefficients (for levels: Corr=0.30; p-value 0.0002; for rates of growth: Corr=0.2838; p-value 0.0130). Raw data then indicate there is no trade-off between efficiency and equity: countries that redistribute more present a higher level of per-capita GDP and a higher rate of growth as well. A large literature has analyzed the question of whether inequality is harmful for economic efficiency, especially income growth. For instance, Persson and Tabellini (1994) find a negative relationship between *ex ante* inequality and income growth on a group of nine countries. They explain it arguing that in more unequal societies voters will ask for more redistribution, which implies larger tax rates, which– in turn - undermine private incentives for labor and capital supply. Hence, more redistribution, induced by a higher degree of inequality, is associated to less growth and economic efficiency, confirming the standard equity-efficiency trade-off. Here, conversely, Figure 2 tells a slightly different story: more redistribution is (mildly) associated to more efficiency. One more time, this is probably because redistribution is not driven by inequality only, but is the outcome of several political and economic variables being at play, as we try to discuss in our empirical analysis below.

Figure 1 also reveals the variance in redistribution recorded *within* the same country, through different years. Take for instance Norway: GINI_DIFF was 0.19 in 1979; it goes down to 0.09 in 1991, and increased again to 0.12 in 2004. A somewhat similar trend is observed for Spain: the difference in the Gini indices was 0.14 in 1980, and went up over time to 0.03 in 2000. These examples also disclose that the panel is largely unbalanced, and holes in the time series of the data are a common feature to many countries. As the data span from 1967 to 2006, we will consider this issue by including specific controls for different years in our empirical specification.

4. The empirical analysis

4.1 The strategy

We tackle our empirical analysis of the evolution of the difference between the Gini *ex ante* and the Gini *ex post* in country i in year t (GINI_DIFF_{it}) by considering different groups of variables that the literature deems to be important. We look in particular at four set of determinants: first, we examine the impact of variables related to income and public spending; second, we consider the role played by public spending joint with political institutions; third, we take into account the effects of proxies for “rent seeking activities”; finally, we look at the composition of expenditures and of taxing programs. As we shall see, the size of the public sector (GOVEXP) always appears positively and significantly correlated with our measure of redistribution. Because of this fundamental role, it is the only variable that has always been included in all specifications examined in our analysis. All regressions feature decade dummies (TIME_DUMMY, referring to the 1970s, 1980s, 1990s and 2000s), to capture the evolving “ideological” attitudes towards redistribution throughout the 40 years that compose our time interval – more favorable during the 1970s, less so in the 1980s. The general model we test can then be written as:

$$[1] \quad \text{GINI_DIFF}_{it} = \alpha + \beta_1 \text{GOVEXP}_{it} + \sum_j \beta_j \mathbf{X}_{it} + \sum_k \beta_k \text{TIME_DUMMY}_t + \varepsilon_{it}$$

where \mathbf{X} is the vector of political and economic determinants briefly defined before and ε a stochastic disturbance featuring standard properties. Notice that standard errors are clustered by country for all our estimates.

Despite our efforts, also variables included in \mathbf{X} are not easy to find in order to be matched for all the years and the countries for which information on GINI_DIFF are available. Hence, to maximize the number of observations included in each model and the informativeness of our unbalanced panel, we embrace up to 33 countries of different size, levels of economic development, political and governance systems, and public sector size. Specifically, the countries included are: Australia, Austria, Belgium, Brazil, Canada, Czech Republic, Denmark, Estonia, Germany (including Federal Republic of Germany before the unification), Finland, France, Greece, Guatemala, Hungary, Ireland, Israel, Italy, Luxembourg, Mexico, the Netherlands, Norway, Poland, Republic of Korea, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Taiwan, the United Kingdom, the U.S. and Uruguay. Notice that the number of observations included in each model strictly depends on data availability only. Descriptive statistics for all the variables included in the analysis are in the Appendix Table 1.

4.2 The results

We begin our empirical analysis verifying two fundamental tenets of normative theories of income redistribution, namely that such redistribution should be higher the lower are the income levels of the country and the greater is the size of its public sector. The estimates reported in Table 1 show that per capita GDP does not appreciably affect the evolution of concentration of income through time (model I). On the other hand, a larger public sector (normalized by the size of the economy) is strongly correlated with greater income redistribution (model II). This result is confirmed when we test the role played by public expenditures together with per capita income growth, which, just like the levels, is not significant (model III). The inclusion of government expenditures, however, reduces the size of the sample from 97 to 35 observations.

Table 1 about here

In Table 2 we look at the core of our analysis, namely, the role played by political and institutional factors. The size of the public sector is almost always included (the only exception being model III), to ensure that the coefficients do identify the direct impact of the political and the institutional factors on income redistribution. Throughout the analysis, information about the political and institutional indicators is drawn from the *Database of Political Institutions 2010* (hereafter, DPI). We begin by considering whether parliamentary systems and/or left wing governments redistribute more than presidential ones and right wing governments, respectively (as in Mahler and Jesuit, 2006, or Scervini, 2011). Model I points out that parliamentary systems are positively correlated with redistribution, albeit the sign is marginally non significant (p -value=0.12), whereas left wing governments do not show any distinctive effect (model II). The more important role played by parliamentary institutions with respect to left wing ideology is confirmed by model III, from which the mediating role of government expenditures is removed: the variable PARLIAMENTARY emerges positive and significant at the 1% level, whereas LEFT_GOV is not. To gauge more information about these closely related phenomena, in model IV we interact LEFT_GOV with PARLIAMENTARY systems, and the size of the public sector with PARLIAMENTARY government, always controlling for the individual variables. The results suggest that left wing governments tend to redistribute more provided that the government system is parliamentary, whereas the fact of having a parliamentary system does not condition the redistributive effects of public spending, which keeps the usual positive individual correlation. Interestingly, in this specification left wing governments *per se* appear to redistribute less, possibly because part of their preferences for more redistribution is captured by their greater spending: the net effect of LEFT_GOV and LEFT_GOVxPARLIAMENTARY is positive ($0.42-0.21=0.21$). On the other

hand, the interaction between left wing governments and size of the public sector, considered in model V, does not have any appreciable impact on redistribution, while all other partial correlations remain unchanged.

Table 2 about here

The economic theory of legislation (McCormick and Tollison, 1981; Weingast and Marshall, 1988) has always considered the size of electoral districts to be an important driver of redistribution, especially of pork-barrel type. Larger districts push the elected representative to cater more encompassing interests and thus be less sensitive to demands of special interest groups. We proxy the size of the electoral district by means of the variable MDMH, that is, the weighted average of the number of representatives elected by each constituency size, or, for the countries for which such information is not available, the number of seats divided by the number of constituencies. Larger values of these variables imply a smaller district size and, if the hypothesis is validated, less redistribution of income, as pork barrel politics is likely in favor of high-income individuals. Holding constant the effects of public sector size, the estimates of model VI suggest that this variable is likely collinear with PARLIAMENTARY, to which it subtracts explanatory power; when the latter term is removed (model VII) MDMH shows the expected negative and highly significant sign. Interacting MDMH with PARLIAMENTARY again deprives the individual variables of any explanatory power, but the interaction term is negative and significant. This suggests that, although parliamentary systems potentially redistribute more than presidential ones, this effect is conditioned, and possibly reversed, when the size of the electoral district becomes small, thereby generating incentives for the pork-barrel type of redistribution. Conversely, more fragmented governments, measured by the Herfindahl index of the government majority in Parliament, appear to redistribute more (model IX, coefficient value 0.44, p-value 0.096), possibly because they represent a larger array of interests; this effect is, however, by and large obfuscated by the negative one of electoral district size and the positive one of parliamentary systems. Finally, we control for the effects of having a religious party in the government majority (usually the Christian Democrats) but detect no impact on redistribution (model X). More democratic countries, on the other hand, do redistribute more than dictatorial regimes, holding constant the effects of public sector size and of the size of the electoral districts (model XI). As the variable PARLIAMENTARY is highly collinear with DEMOCRACY (this index is drawn from the *Polity IV* database), in this specification we consider only the latter, not to reduce the number of observations. All in all, the consideration of these political and institutional variables raises our understanding of the phenomena that actually drive income redistribution: the adjusted R^2 raises from an average value of 0.31 for the models reported

in Table 1 to 0.52 for those of Table 2, with a considerable increase also of the overall precision of the estimates.

To the extent that they represent a diversion of resources for those who stay on the supply side of the political market, political rents of various sorts can represent as many holes in the leaky bucket of redistribution. The regression reported in Table 3 aim at uncovering this fact, using information drawn from the World Bank, ILO and Transparency International databases. Rents located in the labor markets are the most liable to affect income redistribution, insofar as trade unions have an interest to, and often the power of, directing revenues to subsidize their affiliates. In model I we look at long term unemployment as an indirect proxy for trade unions' influence, but find it to be weakly negatively correlated with redistribution (coefficient 0.0007, p-value=0.11). A better indicator of unions' influence appears to be the costs of firing hired personnel, measured by the number of weeks of pay that firms have to pay to the employees that they wish to lay off. Holding the size of the public sector constant, the variable FIRING_COSTS appears to have a negative impact on income redistribution (model II). The share of public sector employees over the total labor force appears, instead, to be positively correlated with the reduction of income inequalities (model III), possibly because of the wage compression and labor hoarding effects usually associated with public sector employment. The estimates of model IV reveal that this positive effect is mainly associated with the public employees that work in the general public administration; when considered alongside total public employment, neither the employees in public education (measured by the ratio of teachers over pupils in primary schools) nor the number of physicians working in public hospitals over the size of the population, appear to have any impact on income redistribution. Finally, countries where corruption and malfeasance in the public sector are perceived to be more widespread are also those where income inequalities are more resilient (model V). Although the number of observations available for the analyses reported in Table 3 is sometimes very limited, as it is often the case in the empirics of income redistribution, the explanatory power of the models is generally high (average $R^2=0,64$), as is the precision of the overall estimates (the F statistics is always significant at the 1% level).

Table 3 about here

The results obtained in model IV, when government employment has been disaggregated by type, point out that more can be learned about the factors affecting the evolution of income redistribution by looking at the composition of government expenditures and revenues. The results of these inquiries are reported in Table 4. Model I, where total government expenditures are considered alongside the share of public

spending on health care and education, shows that only total spending over GDP has a positive and statistically significant effect. Surprisingly, neither the share of expenditures represented by interest payments on the outstanding public debt (model II), nor the share of transfers in total expenditures (model III) appear to have any impact on income redistribution. When, however, the share of expenditures on health care and education is considered together with indicators of employment in those sectors (model IV), they appear to be positively correlated with reductions in income inequalities; in the case of education, this effect is also statistically significant (p-value=0.08). Employment in these sectors, on the other hand, turns out to be negatively correlated with redistribution, albeit not in a statistically significant way, suggesting that efficiency gains are possible in the administration of these programs. This pattern of results, and particularly the positive correlation between spending on education and redistribution, is confirmed when we include also the share of transfers in government expenditures among the covariates (model V). Finally, model VI jointly consider the effects of public expenditures and of the composition of revenues on income redistribution. The degree of redistribution increases as the share of total revenues that derives from personal income taxation (holding total expenditures constant) becomes larger. Quite interestingly, the effect of expenditures on redistribution is more than twice as large as that of taxation (0.0035 vs. 0.0016). With the usual caveat about the number of observations, the explanatory power of these models is again fairly high (average $R^2=0.68$), just like the values of the F statistics, whose p-values are always nil.

Table 4 about here

5. *Conclusions*

In this paper we have examined empirically to what extent political factors explain different performances in income redistribution in countries that vary in terms of size of the public sector, tax systems, political institutions and governance. In line with the original idea by Okun (1975), that redistribution from rich to poor is done using a leaky bucket, we use the difference between the *ex ante* and the *ex post* Gini indices of income inequality as the measure of the degree of redistribution achieved in different countries. Contrary to the simple approaches of both the “redistribution” theory and the “median voter” theory, our estimates provide support to the claim that political and institutional factors do affect the degree of redistribution. In particular, we show that - holding the share of public spending on GDP constant - parliamentary systems and democracies achieve greater redistribution, while electoral district size, government cohesion, union influence and corruption all reduce redistribution. The disaggregation of spending items

reveals that while transfers and interest payments do not influence redistribution, the provision of public services, mainly health and education do so; the number of bureaucrats involved in the provision of such services has however a negative impact. When government revenues are taken into consideration, taxes on income redistribute more than other forms of levies.

As a number of political institutions are at play in determining the differences in the degree of redistribution across countries, our results cast a number of doubts on cross-country studies analyzing the relationship between redistribution, inequality, and economic efficiency. In a policy perspective, to the extent that redistribution is positively affected by public spending, and political factors can help (as is the case of parliamentary systems) or counterbalance (as is the case of corruption) the impact of spending, simple policy recipes to enhance efficiency and/or equity applicable in all countries are unwarranted, and must be declined taking into account the peculiar institutions characterizing each country. A schoolbook example is the central tenet of market-oriented reforms to cut back welfare state spending in order to promote growth. In a country like Italy, where the level of corruption is high, cutting public spending can probably help increasing both the amount of redistribution that can be achieved, and economic growth. On the contrary, in a country like Norway, virtually unaffected by corruption, the same recipe would be probably detrimental to both redistribution and growth.

Finally, one must recognize that studies on income redistribution suffers from lack of data for cross-country analysis. Given the importance of the subject matter, it is surprising how our knowledge of the degree of redistribution achieved by different countries is so poor, and how very few governments around the world collect relevant information on this phenomenon. Additional efforts in the direction of making more information available in the future would be the most welcome.

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Figure 1. Income redistribution across countries

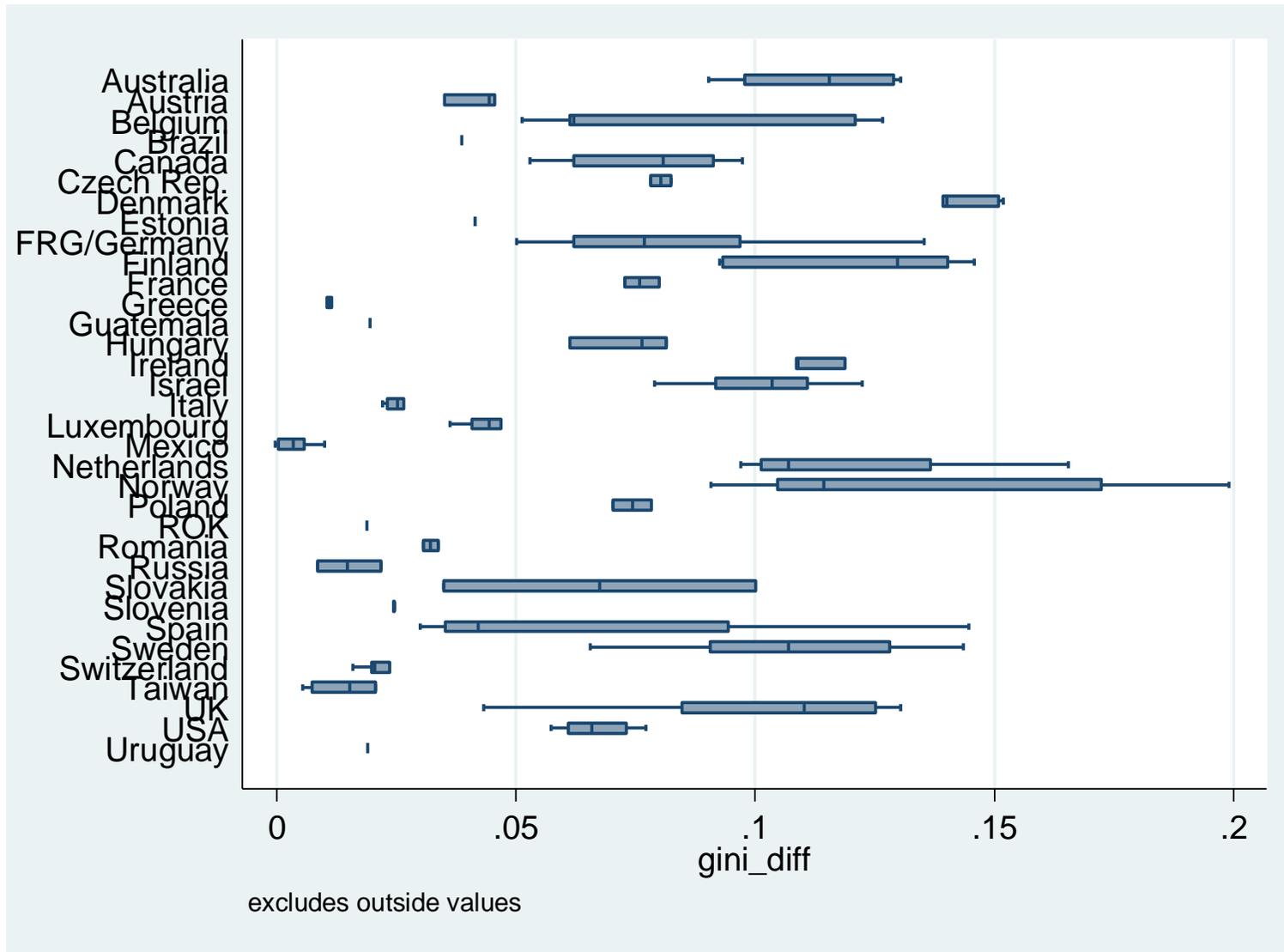


Figure 2. Income redistribution, government spending and per capita GDP (level and growth) across countries

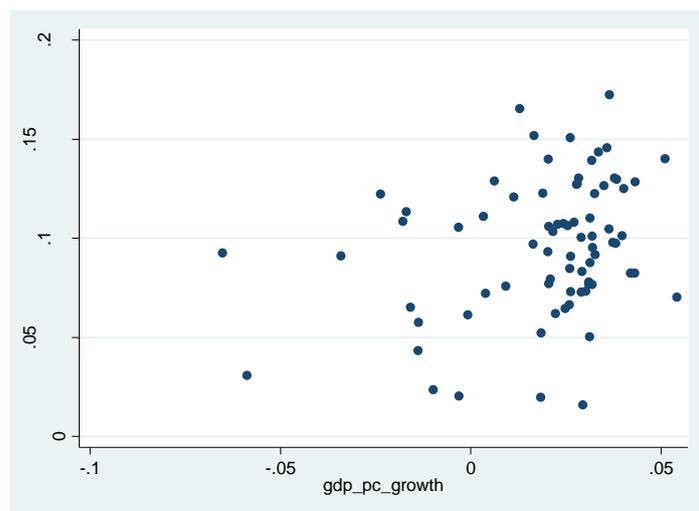
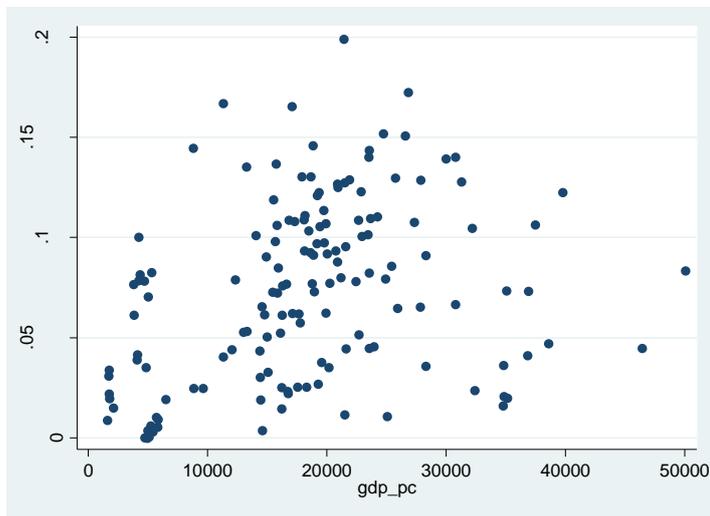
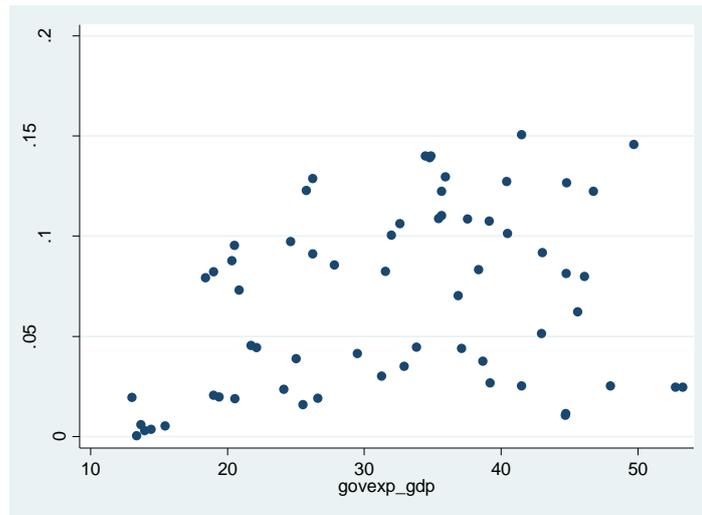


Table 1. Public spending and income

Dep. Variable: differences between Gini ex-ante and Gini ex-post

	I	II	III
GDP_pc	7.04 ⁻⁰⁷ (0.77)	2.06 ⁻⁰⁷ (0.28)	
GDP_pc_growth			0.197 0.68
GOVEXP_gdp		0.0028*** (3.28)	0.0024** (2.72)
Time dummies	yes	Yes	Yes
Obs.	97	35	32
Countries	23	18	15
R-squared	0.0764	0.4802	0.3905
F-test	2.02	8.44	4.52
prob F	0.1264	0.0012	0.0204

SE corrected for country clusters; lev. sign.: *** 1%, ** 5%, * 10%.

Table 2. Public spending and political institutions.
Dep. Variable: differences between Gini ex-ante and Gini ex-post

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
GOVEXP_gdp	0.0027*** (3.19)	0.0029*** (3.80)		0.0030*** (10.86)	0.0031*** (9.05)	0.0031** (2.87)	0.0034*** (3.47)	0.0031** (2.74)	0.0032*** (3.58)	0.0032*** (3.70)	0.0028** (2.68)
PARLIAMENTARY	0.029 (1.63)		0.049*** (3.00)	0.022 (0.45)	0.009 (0.16)	0.025 (1.27)		0.037 (1.61)	0.039** (2.12)		
LEFT_GOVT		0.012 (0.84)	0.007 (0.84)	-0.021** (-2.24)	0.018 (0.040)						
LEFT_GOVTxPARLIAMENTARY				0.042** (2.18)	0.043** (2.15)						
GOVEXP_GDPxPARLIAMENTARY				-0.0001 (-0.13)	0.0002 (0.17)						
GOVEXP_GDPxLEFT_GOVT					-0.001 (-0.87)						
MDMH						-0.0003 (-1.50)	-0.0004* (0.066)	0.00001 (0.05)	0.0002 (1.21)		
MDMHxPARLIAMENTARY								-0.5^{-03**} (-2.39)	-0.5^{-03**} (-2.83)	-0.3^{-03*} (-2.02)	-0.4^{-03**} (-2.18)
HERF_GOVT									0.044* (1.43)		
EXEC_REL										-0.006 (-0.48)	
DEMOCRACY											0.019* (1.77)
Time dummies	Yes	yes	yes	Yes	yes	yes	Yes	yes	yes	yes	yes
Obs.	35	35	104	35	35	35	35	35	35	35	33
Countries	18	18	24	18	18	18	18	18	18	18	16
R-squared	0.5331	0.4952	0.2697	0.5904	0.6070	0.5573	0.5193	0.5842	0.6664	0.5037	0.5369
F-test	15.78	9.62	3.65	541.98	59.97	12.26	10.41	10.77	10.19	9.02	29.64
prob F	0.0000	0.0006	0.0141	0.0000	0.0000	0.0001	0.0004	0.0001	0.0001	0.0004	0.0000

SE corrected for country clusters; lev. sign.: *** 1%, ** 5%, * 10%.

Table 3. Public spending and rent seeking
Dep. Variable: differences between Gini ex-ante and Gini ex-post

	I	II	III	IV	V
GOVEXP_GDP	0.0032*** (3.08)	0.0026** (3.06)	0.0019** (2.58)	0.0016*** (4.80)	0.0026*** (3.54)
LONG TERM UNEMPL	-0.0007 (-1.69)				
FIRING COSTS		-0.0005* (-1.88)			
GOVT_EMPL_SHARE			0.0030*** (4.31)	0.0030*** (3.94)	
CORRUPTION					-0.0082*** (-3.15)
PHYSICIANS				0.007 (0.98)	
PUP_TEACH_RATIO				0.001 (0.87)	
Time dummies	Yes	yes	yes	Yes	yes
Obs.	33	11	33	16	32
Countries	16	11	16	9	18
R-squared	0.4601	0.6082	0.6104	0.8925	0.6356
F-test	4.47	11.04	7.03	14.13	27.32
prob F	0.0197	0.0029	0.0036	0.0008	0.0000

SE corrected for country clusters; lev. sign.: *** 1%, ** 5%, * 10%.

Table 4. Public spending and the composition of spending and taxes
Dep. Variable: differences between Gini ex-ante and Gini ex-post

	I	II	III	IV	V	VI
GOVEXP_GDP	0.0041***	0.0044***	0.0043***	0.0057***	0.007***	0.0035***
	(3.21)	(3.02)	(3.65)	(3.99)	(5.01)	(7.39)
SHARE_HEALTH_EXP	0.002	0.005	0.005	0.002	0.002	
	(0.73)	(1.23)	(1.18)	(1.47)	(1.15)	
SHARE_EDU_EXP	0.138	0.036	0.029	0.41*	0.60**	
	(0.53)	(0.11)	(0.09)	(1.97)	(3.08)	
SHARE_PUB_DEBT_INT_EXP		0.002	0.002			
		(0.87)	(0.85)			
SHARE_TRANSFERS_EXP			-0.7 ⁻⁰⁴		0.7 ⁻⁰³	
			(-0.12)		(1.38)	
PHYSICIANS				-0.019	-0.016	
				(-1.50)	(-1.51)	
PUP_TEACH_RATIO				-0.001	0.0005	
				(-0.70)	(0.20)	
SHARE_PERS_INC_TAX						0.0016***
						(6.05)
Time dummies	Yes	yes	yes	Yes	yes	yes
Obs.	23	23	23	13	13	35
Countries	14	14	14	9	9	18
R-squared	0.4972	0.5328	0.5333	0.8929	0.9379	0.7670
F-test	21.68	14.36	12.29	16.92	40.01	52.89
prob F	0.0000	0.0001	0.0001	0.0004	0.0000	0.0000

SE corrected for country clusters; lev. sign.: *** 1%, ** 5%, * 10%.

Appendix Table 1. Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
GINI_DIFF	104	0.087	0.042	0.005	0.199
GDP_PC	97	20399.3	8716.6	1710.5	50063.5
GOVEXP_GDP	35	30.76	9.47	13.011	49.7
GDP_PC_GROWTH	76	0.019	0.022	-0.065	0.054
PARLIAMENTARY	104	0.778	0.0417	0	1
LEFT_GOVT	104	0.394	0.491	0	1
MDMH	102	42.61	151.54	0.9	888
HERF_GOVT	100	0.688	0.274	0.211	1
EXEC_REL	103	0.135	0.344	0	1
DEMOCRACY	96	9.4	1.78	0	10
LONG TERM UNEMPL	72	27.51	15.55	1.1	64.7
FIRING_COST	12	39.83	34.51	4	101
GOVT_EMPL_SHARE	65	21.34	7.77	10.69	50.22
CORRUPTION	46	-7.6	2.032	-10	-2.6
PHYSICIANS	91	2.37	0.71	0.9	3.91
PUP_TEACH_RATIO	29	16.73	4.89	9.93	30.95
SHARE_HEALTH_EXP	43	13.19	3.13	5.14	18.47
SHARE_EDU_EXP	23	0.204	0.056	0.12	0.30
SHARE_PUB_DEBT_INT_EXP	35	9.78	6.76	0.311	24.09
SHARE_PERS_INC_TAX	38	31.92	14.7	11.76	63.29