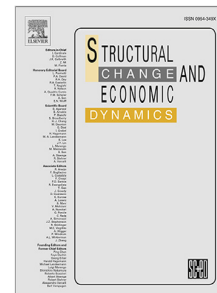


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Fiscal decentralization and income (re)distribution in OECD countries' regions*

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Abstract

Cross-country income inequality has declined in the last decades, but this trend has been paralleled by an increase in within-countries inequality. At the same time, many governments have implemented fiscal decentralization policies, devolving increasing decision-making powers on fiscal matters to sub-national levels of government. In this paper, we provide empirical evidence on the relationship between fiscal decentralization and intra-regional income redistribution, based on regional level data on inequality and local government revenues for 183 regions of 14 OECD countries. Our results show that within region income redistribution is negatively associated with fiscal decentralization, especially when it takes the form of revenue decentralization.

JEL classifications: H2, H7, R5

Keywords: Fiscal Decentralization; Inequality; OECD Regions

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HIGHLIGHTS

We analyze the nexus between fiscal decentralization and intra-regional income redistribution.

We use data for 183 regions of 14 OECD countries.

Within region income redistribution is negatively associated with fiscal decentralization

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Abstract

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1 Introduction

While cross-country income inequality has declined in the last decades, there is ample evidence of a parallel increase in within-countries inequality (Arestis et al., 2011; Goodhart, 2017; Liberati, 2015). At the same time, many governments have implemented fiscal decentralization policies, devolving increasing decision-making powers on expenditures and revenues to sub-national governments (Filippetti and Sacchi, 2016; Garman et al., 2001; Hooge et al., 2010). Since the increase in within-countries income inequality has been identified by many as a key driver of populist backlash taking place around the world (Della Porta et al., 2022; Inglehart and Norris, 2016; Kriesi, 1999; Piketty et al., 2018), it is important to understand if there is any link between the two phenomena.

From a theoretical perspective, the literature on the effects of fiscal decentralization on inequality has provided mixed answers. While a first generation of contributions (Musgrave, 1959; Oates, 1972; Stigler, 1998) has argued that devolution to sub-central levels of government of tax and expenditure authorities reduces intra-regional income inequality and increases inter-regional inequality, a more recent strand of literature has emphasized that decentralization favors smaller government size – from both the expenditure and the revenue side – and higher interpersonal inequality, which eventually results in higher within region income inequality (Roine et al., 2009). In particular, a smaller government intervention in the redistribution of resources by taxes and social transfers has been widely recognised to be one of the main factors in explaining the increase in inequality of income (Atkinson et al., 2011; Brandolini and Smeeding, 2009; Causa and Hermansen, 2017). This second perspective is also consistent with the view that the increase in income inequality is due to the surge in capital share, i.e., profits v.s. wages (Coveri and Pianta, 2022; Piketty, 2014), as an effect of globalisation, skill-biased technological change (Acemoglu, 2002) and market deregulation, that have weakened labour market institutions and reduced governments size (Crouch, 2019; Franzini and Pianta, 2015).

Given the opposed predictions of theoretical models, the answer on the impact of decentralization on income distribution needs to be assessed empirically. To this purpose, we conduct an analysis of the relationship between fiscal decentralization and intra-regional income redistribution, based on regional level data on inequality and government revenues and expenditures for 183 regions of 14 OECD countries.¹

Our work builds on Tselios et al. (2012), but with three relevant differences. First, while they analyze the impact of fiscal decentralization on income inequality, we focus instead on income redistribution. That is, we are interested in assessing if the degree of fiscal decentralization plays a role in the policy objective of reducing intra-regional differences in before-tax income distribution (i.e., differences within each region). In this regard, it is worth recalling that fiscal decentralization, and related government policies, may affect income inequality through two main channels: (i) changing market incentives; and (ii) favouring redistribution (Doerrenberg and Peichl, 2014). While the first channel mainly impacts market inequality, i.e., pre-government intervention inequality (before tax and subsidies), the second channel affects disposable income inequality, i.e., post-government intervention inequality (D’Agostino et al., 2020).

¹OECD regions are worthy of attention as they have been shown a high heterogeneity in standard living, decentralization, and income inequality (Dopke et al., 2017; Peiró-Palomino, 2019).

Second, we distinguish the redistributive effect of taxation on market income from that related to the provision of non-market income, for example through public pensions.² To address this issue, we adopt two alternative measures of income redistribution: (i) the difference between the Gini index calculated on market income and the Gini index calculated on disposable income (after tax and cash benefits); and (ii) the difference between the Gini index calculated on gross income (before tax but after cash benefits), as suggested by Galbraith et al. (2014), and the Gini index calculated on disposable income.

Third, different from Tselios et al. (2012), we focus on two different measures of fiscal decentralization. One is a comprehensive qualitative measure of fiscal authority at the regional level, developed by Marks et al. (2008) and used in several studies on the effect of decentralization on macroeconomic variables, such as economic growth (Filippetti and Sacchi, 2016) and fiscal stability (Lago-Peñas et al., 2020). The other is a quantitative measure of fiscal decentralization, based on the share of local revenues over total government revenues.

Our results show that income redistribution within regions is negatively associated with both the institutional measure of fiscal autonomy and the quantitative measure of revenue decentralization. This finding is confirmed also controlling for spending decentralization, that instead appears to have a positive association with income redistribution. Interestingly, and quite reassuringly, our results are confirmed using both measures of income redistribution described above.

The rest of the paper is organized as follows. Section 2 sets the framework of our analysis, reviewing the literature that helps contextualizing our contribution, and discussing our research questions. Section 3 presents the data, the empirical model, and some preliminary evidence based on summary statistics. Section 4 discusses the results. Section 5 concludes.

2 The frame of our analysis

From a theoretical perspective, the literature on the effects of fiscal decentralization on inequality can be broadly classified into the two main strands of first- and second-generation theories of fiscal federalism (Oates, 2005; Weingast, 2014). According to the first-generation theories (Musgrave, 1959; Oates, 1972; Stigler, 1998), devolution to sub-central levels of government of tax and expenditure authorities reduces intra-regional income inequality, increasing inter-region inequality. From an intra-regional perspective, if the central government acts as a benevolent agent who faces heterogeneous preferences and has the objective of increasing residents' welfare, a decentralized structure can exploit its information advantages and its flexibility to provide public goods and services which are better targeted to citizens' needs and preferences. However, from an inter-regional perspective, sub-national governments are less efficient than central governments in implementing redistribution policies because their preferences may give raise to regional polarization. If low-income taxpayers prefer to move to jurisdictions with generous local redistribution policies (e.g., universal provision of public services financed with progressive taxation) and high-income taxpayers prefer instead to move away from such jurisdictions, absent national redistribution policies, an equilibrium with low intra-regional income inequality and high inter-regional income inequality is likely to emerge. In other words, individuals can

²We thank the editor, James Galbraith, for drawing our attention to this crucial aspect.

“vote with their feet” and sort themselves into homogeneous communities where their preferences are maximized and their differentiation is minimized (Tiebout, 1956). However, this view has been challenged for at least two reasons. First, with imperfect inter-regional mobility and majority voting, decentralization of redistribution policies may lead to Pareto improvements (Pauly, 1973). Second, if fiscal decentralization leads to a sufficiently high per-capita income to overcome the inverse U turn described by Kyriacou et al. (2017), this may favor a reduction in income inequality via a “Kuznetz effect” (Ezcurra and Rodríguez-Pose, 2013a).

Second-generation theories of fiscal federalism take instead a public choice perspective, by assuming the presence of selfish public officials who maximize their private utility. Of course, this is a very different approach with respect to the assumption that the government acts as a benevolent policy-maker (Martínez-Vázquez et al., 2017). According to this strand of literature, decentralization allows to better control for an excessive expansion of the public sector (Weingast, 1995, 2009), limiting government size and fostering competition among more efficient private sector activities (Tanzi, 2002; Wilson, 1998; Zodrow et al., 1986). Clearly, this implies that smaller governments – from both the expenditure and the revenue side – are associated with higher inequality (Roine et al., 2009). In addition, the literature on political competition (Grossman and Helpman, 1996) shows that if local policy makers are more easily captured by local interest groups, they may choose taxation so as to favour them, thus increasing local inequality.

From these perspectives, a number of papers have studied the relationship between fiscal decentralization and country-level inequality, focusing on different countries and time periods and using different measures of fiscal decentralization. Remarkably, most contributions focus on the same dependent variable, that is the country-level Gini index on income, either before or after taxation. Studying a sample of 37 developed and developing countries across three decades (1970 – 1990), Neyapti (2006) finds a negative relationship between revenue decentralization – interacted with measures of the quality of public sector governance – and income inequality. She interprets the results as evidence of “inefficient and/or unequitable revenue collection decisions due to under-utilization of the revenue potential of [locally] politically powerful groups” (p. 410). Sepulveda and Martínez-Vázquez (2011) study instead the relationship between public expenditure decentralization, government size, and country-level income distribution, focusing on 56 developed and developing countries between 1971 and 2000. They find that public expenditure decentralization worsens income distribution when general governments are small, but it improves it when the general government reaches a sufficiently large size. They interpret this result as showing that when general government size is small, a higher degree of expenditure decentralization withdraws resources that would otherwise be used for redistribution policies, while the opposite is true for sufficiently large government size. Sacchi and Salotti (2014), studying a wider range of decentralization measures for a sample of 23 OECD countries, provides only partial support to the results of Sepulveda and Martínez-Vázquez (2011), showing that tax decentralization has a negative effect on the country-level income inequality, while public expenditure decentralization has no significant impact.

Analyses of the relationship between public sector decentralization and intra-regional income inequality are less common, possibly because of more limited data availability.³ Two notable

³It should be mentioned that some studies have instead investigated the relationship between inter-regional inequality and decentralization (Ezcurra and Rodríguez-Pose, 2013b; ?), as well as the link between decentral-

exceptions are the papers by [Morelli et al. \(2007\)](#) and by [Tselios et al. \(2012\)](#). The former studies the impact of devolution using household level data for Scotland and Wales, concluding that the effect on income inequality is insignificant, while it is weak and temporary on social inclusion. [Tselios et al. \(2012\)](#) – whose paper is the closest to our analysis – study the relationship between fiscal and political decentralization, regional economic development, and intra-regional income inequality on a sample of 13 European countries between 1995 and 2000. Different from other studies mentioned above, they use the Theil index as the main measure of income inequality, although they show that their results are confirmed using the Gini index. They measure fiscal decentralization on both the expenditure side, through the share of local public expenditures over general government expenditure, and on the revenues side, through the share of local tax revenues over general tax revenues. Their main result is that decentralization reduces intra-regional income inequality, the more so the lower the level of per-capita income in the region.

Building on the available evidence, our analysis takes six original steps forward. First, we study how tax decentralization affects the change in within-region income inequality after government intervention. In other words, we do not focus on the level of within-region income inequality, but on within-region income redistribution.⁴ We focus on redistribution because it is the part of income distribution that can be directly imputed to the government activity ([Persson and Tabellini, 1996](#)).

Second, as already mentioned in the Introduction, we use two different measures of income redistribution, which differ in the role of non-market income, that is represented mainly by pension transfers. International organizations – for example the OECD, which provides the data that we use in our empirical analysis – typically publish measures of income distribution based on market income (before tax and cash benefits) and disposable income (after tax and cash benefits). However, as pointed out by [Galbraith et al. \(2014\)](#), high inequalities in market income may be due to the existence of households that have no market income and live out of substantial public transfers, such as public pensions. This is for example evident for Denmark, and more in general for other Northern European countries. In countries with less generous public pension systems, elderly couples and single adults may instead be unable to form independent households based on market income, and end up sharing with other parents. To account for this issue, [Galbraith et al. \(2014\)](#) proposes to compute income redistribution starting from the concept of “gross income”, i.e., income before tax but after cash government transfers. In our analysis, we thus adopt both definitions of income redistribution: from market (i.e. before tax and cash transfers) to disposable income, and from gross income (i.e. before tax, but including government transfers like public pensions) to disposable income.

Third, we control for the level of within-region gross income inequality as measured by the market or gross Gini index, so that we take into account the possible effect of initial inequality on the regional governments’ propensity to enact redistribution policies.

Fourth, we adopt two complementary approaches to measure fiscal decentralization: (i) a measure of fiscal autonomy proposed within the wide range of regional authority indices (RAI), developed in the field of political science (see, in particular [Hooge et al., 2016](#)); and (ii) a

ization and regional convergence ([Van Rompuy, 2021](#)).

⁴It is worth emphasizing that the share of taxation determined at the local level – whose average in our sample is 27 per cent – has no direct relationship with the degree of income redistribution, which depends instead on how local taxation is distributed across the population.

quantitative measure of decentralization, that is the share of revenues decided at the regional level.

Fifth, we adopt a two stage approach to identify the impact that fiscal decentralization has on income redistribution by allowing for a larger share of revenues to be decided at the regional level, controlling for another quantitative measure of fiscal autonomy, that is the share of decentralized public expenditures. To this purpose, we follow the intuition of [Kashyap et al. \(2002\)](#) and run a two stage regression of income redistribution on the value of regional revenues that is predicted, in the first stage, by fiscal autonomy. Based on the results of this two-steps procedure, we can assess to which extent the institutional setting affects income redistribution through revenue decentralization.

Finally, we investigate the role of the structure of local tax revenues breaking them down into five main components: local personal income taxation, local corporate income taxation, local indirect taxation, local property taxation, and a residual group including other local taxes.

Although there is no consensus on whether revenues or expenditures are better measures of fiscal decentralisation, our analysis focuses mainly on revenue decentralization. Our choice is in line with the literature that argues that decentralization of taxation is a better proxy for the attitude of local governments to distributional issues ([Sacchi and Salotti, 2014](#)). This is because local tax policies have a stronger impact on household's disposable incomes than, for example, local expenditure-based policies such as social benefits ([Arze del Granado et al., 2005](#); [Sacchi and Salotti, 2014](#)).

3 Data and empirical model

3.1 Data

The OECD Regional income distribution dataset presents data on Gini indices calculated at regional level based on market income, from which we build our first measure of within region income redistribution.

As pointed out by [Galbraith \(2009\)](#), this measure of income inequality is higher in countries with stronger unions, more uniform wage distributions, and a more generous welfare state (including pensions), such as Scandinavian counties (and northern European countries more in general) and Canada. To account for this issue, we conduct our analysis also using an alternative measure of income inequality, namely the Gini index on gross income, calculated following the methodology suggested by [Galbraith et al. \(2014\)](#). Since this index is available only at the country level, to overcome this problem we estimate the regional Gini index on gross income assuming that the percentage difference is uniform across regions of the same country. Although this may seem a strong assumption, We have verified that the results are confirmed also using different methodologies to estimate the Gini index on gross income at the regional level.⁵

⁵In particular, we have verified that the results are broadly unchanged also using measures of regional-level Gini on gross income estimated obtained from different regression based models accounting for differences at the regional level in the share of elderly and in per capita income. This is not surprising since the main policies likely to affect the difference between Gini on market income and Gini on gross income are national (or federal)

Formally, we denote: (i) with $Gini_before_{rc}$ the Gini index computed on market income distribution of region r in country c , drawn from OECD Regions and Cities database; (ii) with $Gini_before_c$ the country-level Gini index computed on market income distribution, drawn from OECD Social protection and well-being database; and (iii) with $Gini_gross_c$ the country-level Gini index computed on gross income distribution drawn from UTIP database.⁶ Based on these information, we compute the Gini index on gross income distribution of region r in country c as:

$$Gini_gross_{rc} = Gini_before_{rc} \times \frac{Gini_gross_c}{Gini_before_c} \quad (1)$$

Regions are defined as the first administrative tier of sub-national government, so called Territorial Level 2 (TL2) in the OECD classification. Data are fully comparable across countries and regions.⁷ As argued by Bartolini et al. (2016), the TL2 regional level constitutes a division of the national territory that is appropriate to examine internal geographical differences.⁸ In our analysis, we include information on 183 regions of 14 countries, referring in most cases to 2013 (the few exceptions are due to data availability).⁹ The number of regions in each country reflects the size of the country and its administrative organization, ranging from 3 in Belgium to 51 in the United States.

Data on government revenues (and expenditures), both at general and sub-national level, are also provided by the OECD, in the Government at a Glance dataset, and are derived mainly from the OECD National Accounts, harmonized according to the new standards of the System of National Accounts (SNA) 2008, complemented by data from Eurostat, IMF and national statistical institutes.¹⁰ Due to data limitations, and following the prevalent approach in the literature (Sacchi and Salotti, 2014), revenues (and expenditures) at the level of any sub-national entity (i.e., state, region, province, county, municipality) are aggregated into a single group, and defined as “local” revenues and expenditures.

Following Neyapti (2006) and Tselios et al. (2012), we measure fiscal decentralization with the incidence of sub-national public revenues, defined as the value of total sub-national government revenues, net of grants from other levels of government, as a share of consolidated general government revenues, net of intergovernmental grants. In some specifications, we also control for decentralization on the expenditure side. Following Sepulveda and Martinez-Vazquez (2011) and Tselios et al. (2012), we use the incidence of local government spending, defined as the

policies (e.g., public pensions). In the specific case of public pensions, a possibly relevant source of differentiation of the impact of national policies at the regional level is the uneven distribution of retirees across regions, that nonetheless is already controlled for in our estimates by the inclusion of the regional-level dependency ratio. Other policies are less likely to have an impact that is significantly heterogeneous across regions.

⁶Data are available at <https://utip.gov.utexas.edu/datasets.html>; see Galbraith and Kum (2005) and Galbraith et al. (2014) for a discussion of the main characteristics of the UTIP database.

⁷Data are available at <https://stats.oecd.org/index.aspx?queryid=58616>.

⁸Since for some countries including Norway (5 landsdeler), Switzerland (7 large regions) and to some extent the UK the TL2 regions correspond to statistical regions, we have verified that our results hold excluding these countries from our sample.

⁹The following countries and years are included in the sample: Austria (AUT, 2013), Belgium (BEL, 2013), Canada (CAN, 2013), Czech Republic (CZE, 2013), Denmark (DNK, 2013), Germany (DEU, 2013), Italy (ITA, 2013), Japan (JPN, 2009), Norway (NOR, 2014), Spain (ESP, 2013), Sweden (SWE, 2014), Switzerland (CHE, 2010), United Kingdom (GBR, 2011), United States (USA, 2014).

¹⁰Data are available at <https://stats.oecd.org/Index.aspx?DataSetCode=SNGF>.

sub-national government expenditures as a share of general government expenditures.

Finally, we employ a component of the Regional Authority Index (RAI) developed by Marks et al. (2008) and used in several studies on the effect of decentralization on different variables (Filippetti and Sacchi, 2016; Lago-Peñas et al., 2020).¹¹ The RAI is a composite indicator that encompasses two dimensions of regional government autonomy and influence ability: *self-rule*, and *shared-rule*. Each one of the two dimensions is measured with reference to several institutional aspects. We choose to focus on *self-rule*, which refers specifically to the ability of the regional government to exercise authority over those who live in its territory, and refers to five aspects of public intervention: institutional depth, policy scope, fiscal autonomy, and representation.¹² Although several of these aspects may potentially affect income re-distribution, we decide to focus on the one that is more likely to have a direct impact, that is fiscal autonomy. This index measures the extent to which a regional government can independently tax its population.¹³ The highest value is assigned to those regional governments that are allowed to set the base and the rate of at least one major tax: personal income, corporate income, value added, or sales tax, while the lowest corresponds to the case in which tax rates and tax bases of regional taxes are independently set by the central government.¹⁴

Additional characteristics at the country and regional levels included in the empirical analysis (e.g., per capita GDP, dependency ratio) are also provided by the OECD.

Table 1 presents the summary statistics of the main variables used in the empirical analysis. The average value of the intra-regional Gini index on market income (before both tax and cash transfers) is 0.481, ranging from 0.370 in Eastern Switzerland to 0.594 in the Brussels Capital Region.¹⁵ Its coefficient of variation is 0.092. The Gini index on gross household income shows an average value of 0.385, about 0.10 points lower than that calculated on market income, and it ranges from 0.288 in Czech Republic's Central Bohemian Region to 0.519 in Japan's Hokkaido region, with a coefficient of variation of 0.106. Gini after tax and cash transfers is on average 0.314, and ranges from 0.227 in Northern Norway to 0.459 in Washington's District of Columbia, with a coefficient of variation of 0.162. The difference between the intra-regional Gini indices calculated on market and disposable household income is on average 0.167, with a coefficient of variation of 0.276, and ranges from 0.080 in Canada's Alberta to 0.273 in the German region of Saxony-Anhalt. The difference between the intra-regional Gini indices on gross and disposable household income is on average 0.071 and its coefficient of variation is 0.550. Interestingly, GDP per-capita calculated at the regional level has a coefficient of variation of 0.372. Fiscal autonomy has an average value of 3.555 in the range 0.076-5.139.

Table 2 presents data at the country level, showing that fiscal autonomy displays the lowest

¹¹See Hooge et al. (2010) for an extensive and in depth analysis of the RAI's framework.

¹²For details about the definition of each single aspect see Marks et al. (2008).

¹³The RAI index at the regional level varies between 0 and 4. However, the country score, that is the one we use, can go beyond 4, due to aggregation procedures. More information on deriving country scores is provided in the Codebook RAI-Country RAI v. 3 (pages 2-3).

¹⁴As a robustness check, we also control for the impact of local autonomy, using the Local Autonomy Index (LAI) developed by (Ladner et al., 2021). The index is based on whether a local government unit: (1) has a clearly defined territory, (2) executes a certain amount of self-government, (3) has authoritative power over its citizens and (4) has directly elected decision-makers and/or municipal assemblies.

¹⁵In our sample, the number of regions within a country is very heterogeneous, ranging from 3 in Belgium to 51 in the US (in a total of 183; see Table 2). For this reason, in unreported regressions we have verified that our results hold also excluding US from the sample.

value in Denmark (0.076) and the highest value (5.139) in the United States. Local spending ranges from 0.220 in the United Kingdom to 0.775 in Canada. The share of local taxation ranges from 1.3 per cent in Czech Republic to almost 50 per cent in Canada, with an average value of 25.4 per cent. Interestingly, personal income tax revenues are on average about 10 per cent of total tax revenues (ranging from 0 in Czech Republic and United Kingdom, to 35.8 per cent in Sweden), local property and local indirect taxes represent on average a share above 6 per cent. In particular, local property taxation ranges from nearly 0 in Austria to 11.9 per cent in Canada, a value similar to that of local indirect taxation, which nonetheless ranges from 0 in Denmark, Sweden and the United Kingdom to over 14 per cent in Canada). Corporate taxation represents on average only 1.3 per cent of total tax revenues (from 0 in many countries to 5.1 per cent in Switzerland).

Not surprisingly, aggregate government spending and taxation over GDP also shows high variability across countries.

Tables 3–5 present the country-level averages of the value of the Gini indices calculated at the regional level on market, gross and disposable income. Interestingly, within country variation is not negligible, confirming the importance of studying the impact of public sector decentralization watching not only at the dispersion in average income across regions of a given country (i.e., calculating the Gini coefficients based on region averages), but also within regions. The within-country coefficient of variations of the Gini indices on market income range from 0.026 in Denmark (0.084 for the index on disposable income) to 0.132 in Belgium (0.208).

The difference between the Gini on market income and that on disposable income, one of our dependent variables, reported in Table 6, ranges from 0.118 in the United States to 0.233 in Belgium. The alternative dependent variable – i.e., the difference between the intra-regional Gini index on gross household income and the Gini on disposable income – shows values ranging between 0.012 in the United States to 0.141 in Norway, as reported in Table 7.

Table 8 presents the values of pairwise correlations among the main variables used in the empirical analysis. The Gini index on market income and the Gini index on disposable income are positively correlated with fiscal autonomy. The reduction in Gini on disposable income is negatively correlated with its level on market income, with the index of fiscal autonomy and with the incidence of sub-national public revenues. Interestingly, it is also negatively correlated with the incidence of local government spending, which nonetheless is strongly positively correlated with local taxation.

Figure 1 presents a scatter-plot of the average percentage difference of the Gini on market and disposable income and the index of regional fiscal autonomy described above. The negative slope of the regression line, that is statistically significant at the 5 per cent level, confirms the preliminary evidence of the pairwise correlations. The companion scatter plot of the average difference of the Gini on gross and disposable income and the index of regional fiscal autonomy (Figure 2) confirms a negative relationship (although it is statistically insignificant). However, while these results provide an interesting picture of the relationship between fiscal decentralization and the change in the inequality of income distribution before and after taxation, the evidence is based on country-level aggregated measures and does not consider the regional heterogeneity in income, general taxation, general public spending, and demographic aspects. To better understand these links, in the following Section we will conduct a more

refined econometric analysis.

3.2 Empirical model

Our first empirical model estimates the impact of tax decentralization on within-region income redistribution adopting the following specification:

$$\Delta Gini_{rc} = \alpha + \beta_1 Gini_{rc} + \beta_2 Tax_decentralization_c + \beta_3 Z_c + \beta_4 X_{rc} + \epsilon_{rc} \quad (2)$$

where $\Delta Gini_{rc}$ stands for one of the two different measures of income redistribution that we discussed above: the region-level difference between the Gini on market income and on disposable income, and the region-level difference between the Gini on gross income – estimated using UTIP data and the methodology described in equation 1 – and on disposable income. For both the measures, the difference is positive almost by construction, as nearly any government favors a reduction in market inequality by means of taxation and cash transfers (see Table 6). Therefore, in both cases, a higher level of $\Delta Gini_{rc}$ indicates a higher redistribution. $Gini_{rc}$ controls for the region-level inequality either on market or gross income, depending on the measure adopted for the dependent variable. $Tax_decentralization_c$ is the index of fiscal autonomy, taken from the RAI (Hooge et al., 2016), or the share of revenues decided at the regional level. X_{rc} is a set of control variables at the region-level (i.e., GDP per-capita and elderly dependency), and Z_c is a set of control variables at the country-level (i.e., aggregate government spending over GDP, and total taxation, also over GDP). In most specifications, we also control whether the estimated effect of tax decentralization is robust to controlling for the impact of local government spending.

For each measure of redistribution, we estimate three sets of regressions, based on three different proxies of tax decentralization ($Tax_decentralization_c$): the first set includes the fiscal autonomy index; the second set uses the share of revenues decided at the regional level; the last set of regressions is a two-stages specification, where the first stage equation regresses the share of regional revenues on fiscal autonomy, and the second stage equation uses the fitted values of the shares of regional revenues obtained in the first stage as an explanatory variable in the original regression equation (2). As argued above, adapting the intuition of Kashyap et al. (2002), this allows to measure the amount of decentralization of revenues that is due to the fact that the institutional setting allows for stronger fiscal autonomy. While we are unwilling to consider our approach as a rigorous instrumental variables strategy, we note that the value of share of revenues to be decided at the regional level that is predicted by a first stage regression on the index of fiscal autonomy is the orthogonal projection of the former on the latter. As such, it measures the amount of decentralization of revenues that is due to the fact that the institutional setting allows for stronger fiscal autonomy.

Having estimated the relationship between local redistribution and aggregate tax decentralization, we investigate if different types of taxation have a different impact on local income redistribution. To this aim, we include the shares of total tax revenues represented by: local personal income taxation (*Local_personal*), local corporate income taxation (*Local_corporate*), local indirect taxation (*Local_indirect*), local property taxation (*Local_property*), and other lo-

cal taxation (*Local_other*).¹⁶ We thus estimate the following specification for both our measures of income redistribution:

$$\begin{aligned} \Delta Gini_{rc} &= \alpha + \beta_1 Gini_{rc} + \beta_2 Local_personal_c + \beta_3 Local_corporate_c + \\ &+ \beta_4 Local_indirect_personal_c + \beta_5 Local_property_c + \beta_6 Local_other_c \\ &+ \beta_7 Z_c + \beta_8 X_{rc} + \epsilon_{rc} \end{aligned} \quad (3)$$

All estimates are conducted on the same sample of 183 observations from 14 countries.¹⁷ To control for the likely within-country correlation of the error term, we cluster standard errors at the country-level. The R-square in our richer specifications is above 80 per cent, confirming that large part of the regional redistribution is explained by our explanatory variables.

4 Results

4.1 Tax decentralization and local income redistribution

The first set of regressions, presented in Tables 9 and 10, shows that fiscal autonomy is negatively and significantly associated with both measures of income redistribution that we adopted. Negative and significant coefficients are estimated by each specification of the model: the parsimonious version which only controls for inequality of market or gross income (column 1), and those which include an increasing set of additional covariates (columns 2, 3, and 4). In line with the preliminary evidences in Figure 1, Table 9 reveals that income redistribution in each region is negatively and robustly associated with the extent to which a regional government can independently tax its population.¹⁸ Regarding the remaining covariates, the redistribution and the initial Gini index, on both market income or gross income, is positively and significantly associated with redistribution in all specifications. As expected, income redistribution through fiscal policy is stronger in those regions showing higher initial market inequalities. GDP per capita is negatively and significantly associated with redistribution, while total taxation over

¹⁶Referring to the OECD Global revenue statistics database classification, *Local_personal* includes Taxes on income, profits and capital gains of individuals (OECD code 1100); *Local_corporate* includes Taxes on income, profits and capital gains of corporates (OECD code 1200); *Local_indirect* includes Taxes on goods and services (OECD code 5000); *Local_property* includes Taxes on property (OECD code 4000); *Local_other* is a residual variable including Social contribution, Payroll taxes and Other taxes (OECD codes 2000, 3000, and 6000 respectively). It is worth noting that the residual variable is quantitatively relevant just for three countries included in our sample, namely Austria, Canada, and Italy. As for the first two countries (especially for Austria), state level social contribution are particularly high. As for Italy, a quantitatively relevant regional tax (Regional tax on productive activities - IRAP) is classified by OECD in the other taxes category.

¹⁷OECD data on Gini calculated on market and disposable income are also available for the four regions of the Slovak Republic. However, since country level information on Gini calculated on gross income is not available for Slovakia, we chose to remove the country and present results on comparable data sets. Including the Slovak Republic has no relevant effect in the analysis of redistribution from Gini on market to Gini in disposable income.

¹⁸In unreported regressions, available from the authors upon request, we have verified that local autonomy, measured by the Local Autonomy Index (LAI; Ladner et al. (2021)), has no significant additional impact on income redistribution, while its inclusion among the regressors leaves the other coefficients, including that of RAI, broadly unchanged.

GDP is positively, but in most cases not significantly associated with redistribution. Finally, consistent with the evidence that pensions account for the bulk of total cash transfers in OECD (Journard et al., 2012) and pension systems can explain a large part of redistribution (Krieger and Traub, 2008), the share of elderly population is positively associated with stronger redistribution. Interestingly, this share is also positively associated to redistribution from gross to disposable income, despite the fact that gross income already accounts for cash transfers.

Results from the second set of regressions are reported in Tables 11 and 12. Also in this case, there are no major differences between the results watching at market vs. disposable income and at gross vs. disposable income. The key explanatory variables, i.e., the share of local revenues over general government revenues, has a negative and statistically significant coefficient (except in one specification). A higher decentralization of revenues is associated with lower income redistribution. Although local expenditures are strongly correlated with local revenues (the two indices of local fiscal decentralization have a correlation of 0.869 in our sample; see Table 8), in column 2 of both Tables we include it as an additional control. Reassuringly, the coefficient of local revenues remains negative and statistically significant in all but one specifications, and in particular controlling for the incidence of aggregate public spending and taxation over GDP (column 3), per-capita income at the regional level (column 4) and elderly dependence at the regional level (column 5). Spending decentralization is associated with a stronger redistribution in income, while revenue decentralization is associated with less redistribution, and the latter coefficient is statistically significant in half of the specifications (notably, more often in redistributing from gross to disposable income). Regarding the other controls, Tables 11 and 12 confirm a positive and statistically significant partial correlation of inequality before taxes and transfers with redistribution in all specifications. Furthermore, Table 11 shows that the coefficient of public expenditures over GDP is negative and not statistically significant and that of total taxation over GDP is positive and not statistically significant (columns 3-5). Contrary to what happens at the local level, we thus find that general government public spending reduces and taxation increases within-region redistribution, even though the coefficients are not significant. **Indeed, the statistically insignificant coefficient of general government public spending suggests that it cannot offset the effect of decentralization on redistribution, despite the fact that public expenditures can help redistribution, for example through social programs such as income support, healthcare, education, and infrastructure development (Zouhar et al., 2021).**

The results of columns 4 and 5 also show that higher income regions have smaller redistribution, as the coefficient associated to income per-capita is negative and statistically significant, while the opposite is true for those with a high degree of elderly dependence, confirming previous results shown in Table 9.

Results of the third set of regressions, the two-stages specification, are reported in Table 13.¹⁹ The main evidence provided by the baseline strategy in Table 11 are confirmed by the two-stages regression in Column 1. The regional redistribution of income is negatively associated with revenue decentralization while it is positively associated with spending decentralization. Remarkably, the coefficient estimated with the two-steps procedure is about twice as large as

¹⁹For the sake of brevity, for these and the following regressions we present only the results based on redistribution from market to disposable income. Similar results, available on request, are obtained using the alternative measure based on gross income.

that estimated with the one-step regression of local revenues on income re-distribution. The part of revenue decentralization that is explained by differences in the institutional setting has therefore a stronger partial correlation with intra-regional income redistribution than the part that is due to other factors.

Regarding the remaining explanatory variables, results in Table 13 also confirm that the total public expenditures over GDP is insignificant and that the regional income has a negative and significant association with regional redistribution. A positive and significant association with redistribution is instead confirmed for the market inequality. The positive association between the degree of elderly dependence and redistribution is significant. The first stage regression (column 2) shows a positive and statistically significant association with the fiscal autonomy on revenue decentralization.

The findings presented in Tables 9, 10, and the first stage regression in Table 13 are based on the RAI, a qualitative measure of decentralization. However, recent research has shown that this indicator does not adequately capture the quality of fiscal decentralization, because it does not consider the amount of resources available. In fact, even a very high degree of institutional decentralization would be ineffective, if the available resources were insufficient. To address this problem, Rodriguez-Pose and Vidal-Bover (2022) introduced the concept of "unfunded mandates" as a measure of decentralization quality, which accounts for political decentralization adjusted for per capita public expenditure by subnational governments. According to Rodriguez-Pose and Vidal-Bover (2022), decentralization with low resources does not promote economic growth. Unfortunately, the data used by Rodriguez-Pose and Vidal-Bover (2022) are not publicly available. For this reason, to examine whether the relationship between fiscal decentralization and redistribution is influenced by the amount of resources available, we have divided our sample based on the median value of per capita public expenditure by local governments, under the hypothesis that decentralization is more effective where local public expenditure is more generous. The results, reported in Table 14, confirm the negative association between revenue decentralization and redistribution, regardless of whether the local expenditure per capita is above or below the median level. Reassuringly, the positive association between spending decentralization and redistribution is only observed when per capita expenditure is above the median level, confirming the view that the availability of resources is a crucial ingredient for expenditure decentralization to have an impact on redistribution Rodriguez-Pose and Vidal-Bover (2022).

Table 15 reports results of the regression shown in Table 11, splitting the sample on the median of Gini on market income. The association with revenues decentralization is negative for both sub-samples, but it is higher in magnitude for regions with higher before-tax inequality. Indeed, the coefficient associated to local taxation is -0.204 for regions below the sample median (column 2) and -0.527 for regions above the median (Column 1), suggesting that local revenues reduce redistribution more strongly in more unequal regions. The relationship with the share of subnational government spending is positive in both subsamples, although differences are in this case less stark: the estimated coefficient is indeed larger in regions where market inequalities are above the sample median (0.306 , Column 1), than below the sample median (0.125 , Column 2).

Overall, the results show that revenue decentralization is negatively associated with local redistribution, and the effect is stronger in regions with higher market inequality.

In our view, two main mechanisms drive this result. First, to avoid income segmentation across regions, governments typically decentralize to sub-national tiers those kinds of taxes characterized by a low redistributive impact, such as indirect taxes. Second, consistent with some predictions of the second-generation theories of federalism (Weingast, 1995, 2009), since decentralization is generally associated with smaller government intervention, it will also be associated with lower taxation, which is one of the main tools by which income redistribution is normally implemented. Since in our empirical framework we control for government size by including among the explanatory variables also aggregate government spending and total taxation over GDP, the results suggest that when the objective of reducing government size is achieved through decentralization, this reduces redistribution even more. From a broader perspective, our results seem to contradict the view that local governments are more effective in improving income (re)distribution due to their informational advantage on the needs of residents (Bahl et al., 2002).

The positive relationship between spending decentralization and redistribution can be partially explained by the arguments introduced by the first generation theories: transfer of powers and responsibilities to lower tiers of government allows for a better match between citizens needs and public policies, producing welfare improvements (Oates, 1972; Tiebout, 1956). Furthermore, our findings align with the observations presented in Rodriguez-Pose and Vidal-Bover (2022), showing that the magnitude of the effect of spending decentralisation increases when local governments possess sufficient resources for expenditure. Further insights into the mechanisms leading to a positive correlation between spending decentralization and redistribution can be found in the literature examining the relationship between decentralization and cohesion policies (Mauro et al., 2023). It has been shown that regionalization leads to a shift in fund utilization, away from investments in infrastructure and productive activities and towards tax subsidies supporting consumption and income (d'Adda and de Blasio, 2017). While policies focused on creating vital physical infrastructure and large industrial plants can have a great potential for promoting convergence (Giannola et al., 2016), they are indeed less effective than tax subsidies in fostering intra-regional income (re)distribution.

From the empirical perspective, our results are partially in line with Neyapti (2006) and Sacchi and Salotti (2014), which show negative association between revenue decentralization and income inequality. On the contrary, our results partially contradict Tselios et al. (2012), who find that greater fiscal decentralization (both spending and revenue) is associated with lower income inequality. The different results likely depend on the three main dissimilarities in our empirical strategy: (i) the choice of the difference between inequality before and after taxation and transfers instead of the level of inequality as the dependent variable; (ii) the choice of the Gini coefficient instead of the Theil index as measure of inequality; (iii) the focus on 15 OECD countries instead of the European Union only.

4.2 Local tax structure and local income redistribution

The results of the regressions exploring the relationship between local redistribution and the structure of local tax revenues are shown in Tables 16. Overall, they confirm that the negative association between local redistribution and revenue decentralization is not sensitive to the

specific structure assumed by tax decentralization. Except for local corporate income taxation, all tax items are negatively related to the within-region income redistribution. With respect to personal income and property taxation, these results are consistent with the view that decentralizing taxes that have a direct redistributive effect is associated to lower local income redistribution.²⁰

According to the last column of Table 16, a 1 per cent increase in the share of personal income taxation over total taxation that is administered at the local level is associated with a drop in the regional Gini index of 0.002 points. Following this metric, the largest impact is that of other local taxes, whose decentralization is associated with a lower Gini index of 0.006 percentage points, and of corporate income taxation, that instead is associated with a 0.006 higher Gini.

While in principles these measures are correct, in practice they need to be compared with the actual share of local incidence for each type of taxation. In fact, Table 2 shows that local personal income tax revenues are on average almost 10 per cent of total tax revenues (ranging from 0 to 35.8 per cent), local property and local indirect taxes each represent on average a share above 6 per cent (from 0 to 15 per cent), while local corporate taxation represents only 1.3 per cent (from 0 to 5 per cent) of total tax revenues. To account for these differences, we have calculated the impact of a change from the 25th to the 75th percentile values of the distribution across the countries in our sample of the revenues from local taxation for each one of the items described above. This gives a complementary perspective on the effect of different types of taxation on local income redistribution. The largest impact is in this case that of personal income taxation: a change in the share of local revenues from the value at the 25th (less than 1 per cent) to that to the 75th percentile (nearly 15 per cent) is associated to a drop of 3.2 percentage points of the Gini index. Corporate taxation confirms its rather sizeable impact, as the interquartile change from 0 to 3.4 per cent is associated to an increase of the Gini index of 2.1 percentage points. Indirect taxation and property taxation are associated comparable drops in the Gini index: respectively, 1.8 percentage points (after a change from 1.4 per cent to 6.9 per cent) and 1.6 percentage points (after a change from just above 0 to 5.6 per cent).

These results provide additional support to the view that the decentralization of tax items such as personal income taxation and property taxation – which in principles have a more direct impact on households' disposable income – is associated with a smaller redistributive effect. On the contrary, the decentralization of corporate taxation, that in principles has no direct effect on households' disposable income, has a positive impact on local income distribution.

5 Conclusions

This paper investigates the association between fiscal decentralization and intra-regional redistribution, emphasizing the different role of expenditure and revenue decentralization. From a data perspective, we exploit inequality and fiscal data for 183 regions in 14 OECD countries. We adopt two measures of redistribution: the difference between inequality on market income and disposable income, and the difference between inequality on gross income (including pensions and other government transfers) and disposable income. For both measures, results show

²⁰See Liberati (2011) for a review on tax assignment across different tiers of government.

that the regional redistribution is negatively associated with revenue decentralization. Our empirical evidence is robust to changes in the model specifications, including controlling for expenditure decentralization.

The negative relationship between revenue decentralization and redistribution within regions is confirmed when the structure of decentralized taxes is taken into account. With the only exception of corporate taxation, a higher share of local tax management is associated with lower redistribution. This provides support to the view that, with respect to its redistributive purposes, taxation is better managed at the level of central governments.

From a policy perspective, these results provide indirect support the view that calls for some caution in tax decentralization policies, especially for those tax items that have a direct impact on disposable income, such as income and property taxation. With respect to expenditures, they suggest that local public spending can partially act as a countervailing factor in favor of income redistribution, but only to the extent that enough public resources per capita are made available to be spent at the local level. Overall, our results call for caution in assigning to the sub-central government tiers the responsibility of relevant redistributive policies.

One of the main limitations of this study is that of being based on cross-section data. In this regard, further analysis is required to understand if and how changes in decentralization may affect the evolution of income redistribution within regions. This is an important issue because both decentralization and redistribution are dynamic processes. From an empirical perspective, a more comprehensive analysis would require panel data, which are only partially available across the indicators used in the present analysis. We leave the task of extending our analysis to panel data for future research.

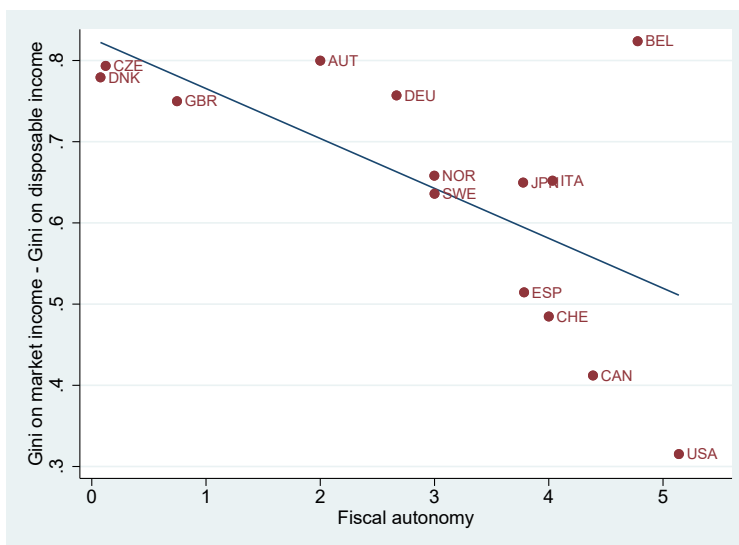


Figure 1: Difference between Gini on market and disposable income and index of regional fiscal autonomy

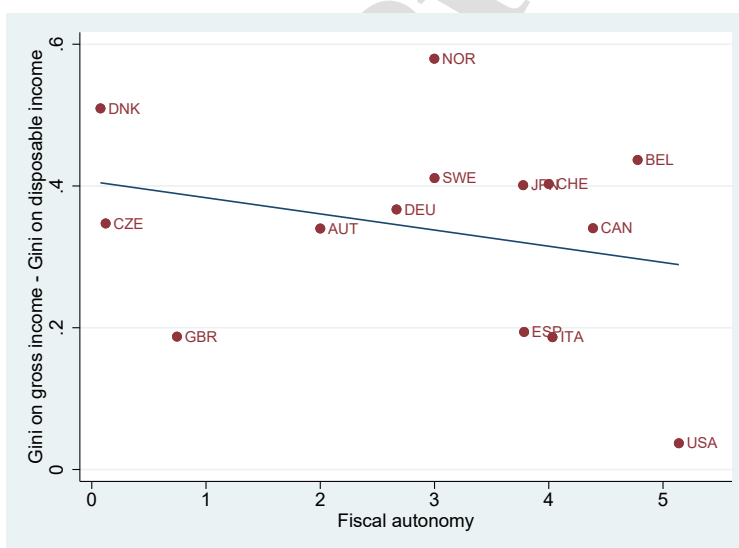


Figure 2: Difference between Gini on gross and disposable income and index of regional fiscal autonomy

Table 1: Aggregate descriptive statistics

	Gini disposable	Gini market	Gini gross	Change in Gini (market-disposable)	Change in Gini (gross-disposable)	Fiscal autonomy	Local spending	Local taxation	Public spending (% over GDP)	Total taxation (% over GDP)	GDP pc (regional)	Dependency ratio
mean	0.314	0.481	0.385	0.167	0.071	3.555	0.436	0.254	44.014	33.497	44688.86	0.178
p50	0.306	0.479	0.385	0.170	0.067	4.000	0.473	0.275	44.944	33.12	41789	0.172
std. Dev.	0.051	0.044	0.041	0.046	0.039	1.543	0.134	0.128	5.696	7.046	16604.25	0.036
coef. var.	0.162	0.092	0.106	0.276	0.550	0.434	0.307	0.503	0.129	0.21	0.372	0.200
min.	0.227	0.37	0.288	0.08	-0.002	0.076	0.220	0.013	32.983	25.92	22704	.095
max.	0.459	0.594	0.519	0.273	0.192	5.139	0.775	0.498	56.116	45.89	182823	0.277
No. obs.	183	183	183	183	183	183	183	183	183	183	183	183

	Local personal income taxes	Local corporate income taxes	Local property taxes	Local indirect taxes	Other local taxes
mean	0.098	0.013	0.063	0.070	0.010
p50	0.077	0.004	0.067	0.056	0.000
std. dev.	0.083	0.016	0.041	0.057	0.017
coef. var.	0.847	1.176	0.646	0.817	1.716
min.	0.000	0.000	0.005	0.000	0.000
max.	.358	.051	.119	.148	.045
No. obs.	183	183	183	183	183

Table 2: Country level descriptive statistics

	Fiscal autonomy	Local spending	Local taxation	Gov. spending % over GDP	Total taxation % over GDP	GDP pc (regional)	Elderly dep. (regional)	year	No. regions
Austria	2.000	0.352	0.047	51.648	42.630	48,814	0.181	2013	9
Belgium	4.778	0.472	0.102	56.116	45.040	52,512	0.163	2013	3
Canada	4.387	0.775	0.498	40.770	31.130	44,230	0.158	2013	10
CzechRepublic	0.000	0.242	0.013	42.143	33.710	31,356	0.168	2013	8
Denmark	0.076	0.624	0.272	55.820	45.890	43,660	0.183	2013	5
Germany	2.667	0.473	0.306	44.944	36.950	41,208	0.216	2013	13
Italy	4.033	0.280	0.161	50.952	43.830	36,467	0.216	2013	21
Japan	3.776	0.382	0.275	40.724	25.970	35,526	0.238	2009	10
Norway	2.998	0.365	0.139	46.251	38.750	45,354	0.164	2014	7
Spain	3.784	0.453	0.240	45.832	33.120	31,927	0.176	2013	19
Sweden	3.000	0.494	0.367	50.703	42.380	44,543	0.204	2014	8
Switzerland	4.000	0.639	0.400	32.983	26.590	62,349	0.171	2010	7
UnitedKingdom	0.746	0.220	0.049	45.756	32.720	36,836	0.166	2011	12
UnitedStates	5.139	0.477	0.341	38.350	25.920	55,962	0.148	2014	51
Total	3.555	0.436	0.254	44.014	33.497	44,689	0.178		183

	Local personal income taxes	Local corporate income taxes	Local property taxes	Local indirect taxes	Other local taxes
Austria	0.007	0.001	0.005	0.005	0.029
Belgium	0.016	0.000	0.067	0.018	0.000
Canada	0.146	0.041	0.119	0.148	0.045
CzechRepublic	0.000	0.000	0.007	0.006	0.000
Denmark	0.236	0.000	0.030	0.000	0.006
Germany	0.148	0.035	0.024	0.100	0.000
Italy	0.038	0.003	0.026	0.049	0.045
Japan	0.099	0.041	0.082	0.051	0.003
Norway	0.122	0.000	0.016	0.001	0.000
Spain	0.110	0.004	0.069	0.056	0.000
Sweden	0.358	0.000	0.009	0.000	0.000
Switzerland	0.255	0.051	0.063	0.017	0.013
UnitedKingdom	0.000	0.000	0.049	0.000	0.000
UnitedStates	0.077	0.012	0.110	0.140	0.000
Total	0.098	0.013	0.063	0.070	0.010

Table 3: Country level averages of within-region Gini calculated on market income

Country	Mean	Median	St. dev.	Coeff. var.	Min.	Max.	No. obs.
Austria	0.487	0.479	0.036	0.074	0.443	0.570	9
Belgium	0.522	0.514	0.069	0.132	0.457	0.594	3
Canada	0.430	0.432	0.018	0.042	0.400	0.459	10
CzechRepublic	0.457	0.454	0.030	0.065	0.415	0.509	8
Denmark	0.436	0.432	0.011	0.026	0.427	0.455	5
Germany	0.489	0.482	0.031	0.064	0.449	0.544	13
Italy	0.496	0.490	0.039	0.078	0.408	0.568	21
Japan	0.489	0.473	0.041	0.083	0.445	0.578	10
Norway	0.409	0.409	0.015	0.037	0.391	0.433	7
Spain	0.492	0.487	0.027	0.055	0.431	0.549	19
Sweden	0.432	0.426	0.018	0.042	0.413	0.467	8
Switzerland	0.418	0.413	0.033	0.079	0.370	0.459	7
UnitedKingdom	0.532	0.535	0.022	0.042	0.494	0.582	12
UnitedStates	0.495	0.495	0.035	0.071	0.424	0.560	51
Total	0.481	0.479	0.044	0.092	0.370	0.594	183

Table 4: Country level averages of within-region Gini calculated on gross income

Country	Mean	Median	St. dev.	Coeff. var.	Min.	Max.	No. obs.
Austria	0.363	0.357	0.027	0.074	0.330	0.425	9
Belgium	0.454	0.448	0.060	0.132	0.398	0.517	3
Canada	0.378	0.380	0.016	0.042	0.352	0.404	10
CzechRepublic	0.316	0.314	0.020	0.065	0.288	0.353	8
Denmark	0.336	0.333	0.009	0.026	0.329	0.351	5
Germany	0.391	0.386	0.025	0.064	0.360	0.436	13
Italy	0.361	0.356	0.028	0.078	0.297	0.413	21
Japan	0.439	0.424	0.037	0.083	0.399	0.519	10
Norway	0.339	0.338	0.012	0.037	0.324	0.358	7
Spain	0.403	0.399	0.022	0.055	0.353	0.450	19
Sweden	0.336	0.331	0.014	0.042	0.321	0.363	8
Switzerland	0.351	0.347	0.028	0.079	0.311	0.385	7
UnitedKingdom	0.396	0.398	0.017	0.042	0.368	0.433	12
UnitedStates	0.408	0.408	0.029	0.071	0.350	0.462	51
Total	0.385	0.385	0.041	0.106	0.288	0.519	183

Table 5: Country level averages of within-region Gini calculated on disposable income

Country	Mean	Median	St. dev.	Coeff. var.	Min.	Max.	No. obs.
Austria	0.272	0.268	0.031	0.115	0.229	0.337	9
Belgium	0.289	0.261	0.060	0.208	0.248	0.358	3
Canada	0.305	0.305	0.016	0.052	0.285	0.331	10
CzechRepublic	0.256	0.249	0.020	0.079	0.237	0.300	8
Denmark	0.246	0.237	0.021	0.084	0.234	0.283	5
Germany	0.279	0.280	0.020	0.070	0.236	0.317	13
Italy	0.301	0.302	0.031	0.101	0.245	0.369	21
Japan	0.296	0.297	0.018	0.062	0.271	0.327	10
Norway	0.248	0.243	0.024	0.095	0.227	0.295	7
Spain	0.326	0.317	0.030	0.092	0.287	0.414	19
Sweden	0.266	0.260	0.026	0.097	0.233	0.314	8
Switzerland	0.283	0.280	0.026	0.091	0.256	0.319	7
UnitedKingdom	0.306	0.293	0.031	0.101	0.282	0.386	12
UnitedStates	0.376	0.376	0.026	0.070	0.320	0.459	51
Total	0.314	0.306	0.051	0.162	0.227	0.459	183

Table 6: Country level averages of within region redistribution (Gini on market income – Gini on disposable income)

Country	Mean	Median	St. dev.	Coeff. var.	Min.	Max.	No. obs.
Austria	0.215	0.216	0.024	0.113	0.181	0.260	9
Belgium	0.233	0.236	0.022	0.095	0.209	0.253	3
Canada	0.125	0.123	0.025	0.202	0.080	0.155	10
CzechRepublic	0.201	0.203	0.030	0.148	0.158	0.243	8
Denmark	0.190	0.195	0.012	0.063	0.172	0.202	5
Germany	0.209	0.215	0.038	0.183	0.157	0.273	13
Italy	0.195	0.200	0.022	0.113	0.135	0.226	21
Japan	0.193	0.188	0.026	0.134	0.170	0.251	10
Norway	0.161	0.158	0.019	0.116	0.138	0.188	7
Spain	0.165	0.174	0.029	0.173	0.107	0.205	19
Sweden	0.167	0.174	0.015	0.093	0.136	0.180	8
Switzerland	0.135	0.128	0.031	0.233	0.112	0.203	7
UnitedKingdom	0.226	0.231	0.028	0.125	0.174	0.265	12
UnitedStates	0.118	0.118	0.020	0.168	0.083	0.168	51
Total	0.167	0.170	0.046	0.276	0.080	0.273	183

Table 7: Country level averages of within region redistribution (Gini on gross income – Gini on disposable income)

Country	Mean	Median	St. dev.	Coeff. var.	Min.	Max.	No. obs.
Austria	0.089	0.093	0.031	0.355	0.024	0.132	9
Belgium	0.115	0.143	0.060	0.521	0.046	0.156	3
Canada	0.103	0.103	0.016	0.153	0.077	0.123	10
CzechRepublic	0.087	0.094	0.020	0.231	0.043	0.106	8
Denmark	0.124	0.133	0.021	0.168	0.087	0.136	5
Germany	0.101	0.100	0.020	0.195	0.063	0.144	13
Italy	0.053	0.052	0.031	0.577	-0.015	0.109	21
Japan	0.117	0.117	0.018	0.156	0.087	0.143	10
Norway	0.141	0.146	0.024	0.168	0.094	0.162	7
Spain	0.060	0.070	0.030	0.498	-0.027	0.100	19
Sweden	0.106	0.112	0.026	0.242	0.058	0.139	8
Switzerland	0.111	0.114	0.026	0.231	0.075	0.138	7
UnitedKingdom	0.054	0.068	0.031	0.566	-0.026	0.078	12
UnitedStates	0.012	0.013	0.026	2.165	-0.070	0.069	51
Total	0.066	0.072	0.049	0.734	-0.070	0.162	183

Table 8: Country level pairwise correlations

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Gini on disposable income (regional)	0.541																
2 Gini on market income (regional)	0.659	0.787															
3 Gini on gross income	-0.587	0.363	0.027														
4 Gini market - Gini disposable (regional)	-0.615	0.119	0.187	0.796													
5 Gini gross - Gini disposable (regional)	0.643	0.074	0.430	-0.641	-0.389												
6 Fiscal autonomy (national)	0.147	-0.376	0.096	-0.525	-0.091	0.411											
7 Local spending (national)	0.372	-0.246	0.226	-0.649	-0.249	0.653	0.869										
8 Local taxation (national)	-0.517	0.042	-0.294	0.613	0.367	-0.483	-0.371	-0.553									
9 Public expenditure over GDP (national)	-0.611	-0.098	-0.462	0.582	0.313	-0.479	-0.308	-0.497	0.944								
10 Total taxation over GDP (national)	-0.224	-0.479	-0.206	-0.213	0.077	0.059	0.629	0.620	-0.032	0.063							
11 Local personal income taxes (national)	0.010	-0.202	0.215	-0.206	0.211	0.282	0.588	0.636	-0.566	-0.453	0.345						
12 Local corporate income taxes (national)	0.729	0.134	0.552	-0.679	-0.374	0.727	0.524	0.666	-0.727	-0.826	-0.059	0.361					
13 Local property taxes (national)	0.698	0.135	0.435	-0.642	-0.456	0.757	0.494	0.702	-0.627	-0.637	-0.069	0.372	0.824				
14 Local indirect taxes (national)	-0.197	-0.092	-0.265	0.130	-0.020	0.080	0.012	-0.044	0.356	0.480	-0.162	0.072	-0.190	-0.049			
15 Other local taxes (national)	0.391	-0.104	0.047	-0.533	-0.462	0.313	0.274	0.297	-0.316	-0.270	0.102	0.138	0.302	0.295	-0.105		
16 GDP per capita (regional)	-0.540	-0.002	-0.095	0.596	0.606	-0.214	-0.251	-0.171	0.407	0.428	0.129	0.143	-0.474	-0.352	0.263	-0.425	
17 Elderly dependency ratio (regional)																	

Table 9: Tax autonomy and within-region redistribution from market to disposable income

	(1)	(2)	(3)	(4)
Gini on market income (regional)	0.429*** (0.082)	0.471*** (0.073)	0.412*** (0.076)	0.421*** (0.067)
Fiscal autonomy (national)	-0.020*** (0.005)	-0.015*** (0.002)	-0.012*** (0.002)	-0.013*** (0.002)
Public expenditure over GDP (national)		-0.001 (0.003)	-0.002 (0.003)	-0.001 (0.002)
Total taxation over GDP (national)		0.003 (0.002)	0.003 (0.002)	0.002* (0.001)
GDP per-capita (regional)			-0.042*** (0.011)	-0.024*** (0.007)
Elderly dependency ratio (regional)				0.440*** (0.068)
Observations	183	183	183	183
Adjusted R^2	0.576	0.693	0.759	0.843

Notes: This table reports the results of OLS estimation on the difference between Gini on gross income (before tax and cash benefits) and Gini on disposable income (after tax and cash benefits). Standard errors, reported in parentheses are clustered at country-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Tax autonomy and within-region redistribution from gross to disposable income

	(1)	(2)	(3)	(4)
Gini on gross income (regional)	0.415** (0.176)	0.570*** (0.136)	0.511*** (0.150)	0.457*** (0.131)
Fiscal autonomy (national)	-0.015** (0.006)	-0.012*** (0.004)	-0.010** (0.004)	-0.010** (0.003)
Public expenditure over GDP (national)		-0.002 (0.003)	-0.002 (0.004)	-0.001 (0.003)
Total taxation over GDP (national)		0.003 (0.003)	0.003 (0.003)	0.002 (0.002)
GDP per-capita (regional)			-0.035** (0.016)	-0.015 (0.011)
Elderly dependency ratio (regional)				0.514*** (0.126)
Observations	183	183	183	183
Adjusted R^2	0.298	0.379	0.441	0.598

Notes: This table reports the results of OLS estimation on the difference between Gini on gross income (before tax but after cash benefits) and Gini on disposable income (after tax and cash benefits). Standard errors, reported in parentheses are clustered at country-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Tax decentralization and within-region redistribution from market to disposable income

	(1)	(2)	(3)	(4)	(5)
Gini on market income (regional)	0.226*	0.287**	0.377***	0.337***	0.384***
	(0.120)	(0.105)	(0.112)	(0.110)	(0.084)
Local taxation (national)	-0.214***	-0.315**	-0.190**	-0.180**	-0.309***
	(0.065)	(0.125)	(0.083)	(0.075)	(0.060)
Local spending (national)		0.118	0.065	0.080	0.191***
		(0.089)	(0.074)	(0.065)	(0.049)
Public expenditure over GDP (national)			-0.001	-0.002	-0.002
			(0.004)	(0.003)	(0.002)
Total taxation over GDP (national)			0.004	0.004	0.002
			(0.003)	(0.003)	(0.002)
GDP per-capita (regional)				-0.051***	-0.028***
				(0.013)	(0.007)
Elderly dependency ratio (regional)					0.598***
					(0.080)
Observations	183	183	183	183	183
Adjusted R^2	0.460	0.482	0.597	0.700	0.833

Notes: This table reports the results of OLS estimation on the difference between Gini on gross income (before tax but after cash benefits) and Gini on disposable income (after tax and cash benefits). Standard errors, reported in parentheses are clustered at country-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 12: Tax decentralization and within-region redistribution from gross to disposable Income

	(1)	(2)	(3)	(4)	(5)
Gini on gross income (regional)	0.245	0.310	0.435***	0.391**	0.348**
	(0.195)	(0.176)	(0.139)	(0.149)	(0.119)
Local taxation (national)	-0.094	-0.269**	-0.185*	-0.174*	-0.322***
	(0.060)	(0.124)	(0.093)	(0.089)	(0.071)
Local spending (national)		0.188*	0.148	0.167*	0.289***
		(0.093)	(0.087)	(0.082)	(0.060)
Public expenditure over GDP (national)			-0.000	-0.001	-0.000
			(0.004)	(0.004)	(0.002)
Total taxation over GDP (national)			0.002	0.002	-0.000
			(0.004)	(0.004)	(0.002)
GDP per-capita (regional)				-0.049***	-0.022**
				(0.016)	(0.008)
Elderly dependency ratio (regional)					0.729***
					(0.123)
Observations	183	183	183	183	183
Adjusted R^2	0.115	0.209	0.287	0.417	0.694

Notes: This table reports the results of OLS estimation on the difference between Gini on gross income (before tax but after cash benefits) and Gini on disposable income (after tax and cash benefits). Standard errors, reported in parentheses are clustered at country-level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 13: Tax decentralization and within-region redistribution from market to disposable income; 2SLS

	(1)	(2)
	Second stage	First-stage regression: local taxation
Local taxation (national)	-0.560*** (0.118)	
Gini on market income (regional)	0.440*** (0.099)	0.028 (0.146)
Local spending (national)	0.384*** (0.081)	0.682*** (0.052)
Public expenditure over GDP (national)	-0.003 (0.002)	-0.004 (0.005)
Total taxation over GDP (national)	0.002 (0.002)	-0.001 (0.003)
GDP per-capita (regional)	-0.020** (0.009)	0.008 (0.021)
Elderly dependency ratio (regional)	0.775*** (0.128)	0.598*** (0.185)
Fiscal autonomy (national)		0.024*** (0.006)
Observations	183	183
Adjusted R^2	0.756	0.894

Notes: This table reports the results of 2-SLS estimation on the difference between Gini on market income and Gini on disposable income (after tax and cash benefits). Local taxation is instrumented using fiscal autonomy. Standard errors, reported in parentheses are clustered at country-level. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: Tax decentralization and within-region redistribution from market to disposable income; sample split on percapita public expenditure spent by local government

	(1)	(2)
	Above median	Below median
Gini on market income (regional)	0.457*** (0.080)	0.395** (0.101)
Local taxation (national)	-0.205*** (0.034)	-0.331*** (0.044)
Local spending (national)	0.119*** (0.031)	0.048 (0.045)
Public expenditure over GDP (national)	-0.006*** (0.001)	0.004 (0.002)
Total taxation over GDP (national)	0.007*** (0.001)	-0.003** (0.001)
GDP per-capita (regional)	-0.031*** (0.006)	-0.032** (0.008)
Elderly dependency ratio (regional)	0.489*** (0.130)	0.564*** (0.060)
Observations	104	79
Adjusted R^2	0.912	0.738

Notes: This table reports the results of OLS estimation on the difference between Gini on gross market income (before tax and cash benefits) and Gini on disposable income (after tax and cash benefits). Standard errors, reported in parentheses are clustered at country-level. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 15: Tax decentralization and within-region redistribution from market to disposable income; sample split on Gini on market income

	(1)	(2)
	Above median	Below median
Gini on market income (regional)	0.587*** (0.119)	0.272*** (0.071)
Local taxation (national)	-0.527*** (0.088)	-0.204*** (0.034)
Local spending (national)	0.306** (0.103)	0.125*** (0.032)
Public expenditure over GDP (national)	-0.006 (0.004)	-0.003** (0.001)
Total taxation over GDP (national)	0.003 (0.003)	0.003** (0.001)
GDP per-capita (regional)	-0.034*** (0.007)	-0.026** (0.010)
Elderly dependency ratio (regional)	0.708*** (0.108)	0.596*** (0.089)
Observations	89	94
Adjusted R^2	0.846	0.873

Notes: This table reports the results of OLS estimation on the difference between Gini on gross market income (before tax and cash benefits) and Gini on disposable income (after tax and cash benefits). Standard errors, reported in parentheses are clustered at country-level. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 16: Structure of local taxation and within-region redistribution from market to disposable income

	(1)	(2)	(3)	(4)	(5)
Gini on market income (regional)	0.496*** (0.061)	0.528*** (0.063)	0.433*** (0.049)	0.388*** (0.055)	0.410*** (0.062)
Local personal income taxes (national)	-0.073** (0.028)	-0.147** (0.051)	-0.143*** (0.037)	-0.150*** (0.031)	-0.229*** (0.041)
Local corporate income taxes (national)	0.793** (0.297)	0.702** (0.318)	1.282*** (0.161)	1.248*** (0.154)	0.624*** (0.183)
Local indirect taxes (national)	-0.298** (0.118)	-0.326** (0.115)	-0.255*** (0.054)	-0.258*** (0.047)	-0.324*** (0.059)
Local property taxes (national)	-0.609*** (0.155)	-0.723*** (0.158)	-0.530** (0.236)	-0.300** (0.113)	-0.280** (0.116)
Other local taxes (national)	0.034 (0.206)	-0.074 (0.120)	-0.311 (0.186)	-0.540*** (0.095)	-0.650*** (0.126)
Local spending (national)		0.079 (0.047)	0.030 (0.046)	0.028 (0.031)	0.112** (0.038)
Public expenditure over GDP (national)			0.004** (0.002)	0.002 (0.001)	-0.001 (0.002)
Total taxation over GDP (national)			-0.001 (0.002)	0.002 (0.001)	0.003 (0.002)
GDP per-capita (regional)				-0.039*** (0.008)	-0.030*** (0.008)
Elderly dependency ratio (regional)					0.368*** (0.099)
Observations	183	183	183	183	183
Adjusted R^2	0.744	0.754	0.793	0.849	0.879

Notes: This table reports the results of OLS estimation on the difference between Gini on gross market income (before tax and cash benefits) and Gini on disposable income (after tax and cash benefits). Standard errors, reported in parentheses, are clustered at country-level. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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Fiscal decentralization and income (re)distribution in OECD countries' regions*

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Abstract

Cross-country income inequality has declined in the last decades, but this trend has been paralleled by an increase in within-countries inequality. At the same time, many governments have implemented fiscal decentralization policies, devolving increasing decision-making powers on fiscal matters to sub-national levels of government. In this paper, we provide empirical evidence on the relationship between fiscal decentralization and intra-regional income redistribution, based on regional level data on inequality and local government revenues for 187 regions of 15 OECD countries. Our results show that within region income redistribution is negatively associated with fiscal decentralization, especially when it takes the form of revenue decentralization.

JEL classifications: H2, H7, R5

Keywords: Fiscal Decentralization; Inequality; OECD Regions

AUTHOR STATEMENT

All authors designed the research, performed the analysis, and participated in the writing of the manuscript.