Analysing the Redistributive Effects of the Italian PIT with Tax Files

Paolo Di Caro

Abstract This chapter studies the redistributive effects of the Italian personal income tax by using novel individual tax returns. The application of a decomposition of the reranking term shows that the set of personal income tax instruments can have different effects on vertical and horizontal equity. The distributional analysis is conducted for Italy as a whole and for the twenty Italian regions in order to add a new dimension of inquiry to the study of regional income disparities in this country. Results for the two main tax expenditures for the owner-occupied house, the deduction for the main residence and the mortgage interest tax credit, throw new light into the total redistributive consequences of such tax expenditures in Italy. It is found that, the mortgage interest tax credit, a tax measure often criticised at both national and international level, has a small, positive effect on vertical equity, but it has negative consequences on horizontal equity. A discussion of the pros and cons of using administrative tax data for studying redistribution is also provided

Keywords Redistribution · Administrative data · Personal income tax · Horizontal equity

1 Introduction

Three main stylized facts are generally associated to personal income taxation. First, personal income taxes represent a relevant source of public revenues. In 2017, data from the Organisation for Economic Development and Cooperation (OECD), the share of personal income tax (PIT) revenues on the gross domestic product (GDP) counted for about 8.5% in the OECD countries and about 11% in Italy (OECD 2018). Italy ranked among the first five countries with major income sources from personal income taxation in the European Union. Second, rising income inequalities between and within countries are seen as by-product of the inability of current

P. Di Caro (✉)
Department of Finance, Ministry of Economy and Finance, Rome, Italy
e-mail: paolo.dicaro@mef.gov.it

L. Paganetto (ed.), *Yearning for Inclusive Growth and Development, Good Jobs and Sustainability*, https://doi.org/10.1007/978-3-030-23053-1_11

tax-benefit systems, where the PIT plays a crucial role, to deal with real-world income disparities (Cowell and Van Kerm 2015). The progressive narrowing of the personal income tax base, which does not include most of financial and property incomes that are subject to proportional tax treatment, is often considered as one of the main weaknesses of personal income taxation (Gordon and Kopczuk 2014). Third, personal income taxation is perceived as unequal and inefficient given the large number of tax expenditures, that is, preferential tax treatments of particular individuals and groups that are exempt from ordinary taxation (Poterba 2011). As for Italy, tax expenditures are quite large, by ranging between 5.5% (MEF 2017) and 6.5% (Tyson 2014) of GDP; and, in this country, the number of PIT's tax expenditures is the highest in comparison to other taxes (Andrle et al. 2018). It is not surprising, therefore, that the reform of personal income taxation is debated in many countries and it has progressively attracted consensus among the citizens. One of the most debated aspects during the last Italian electoral campaign was a substantial reform of the Italian PIT with two objectives: the reduction of tax expenditures and the lowering of tax rates towards a flat-tax scheme.

The aim of this chapter is to throw further light into the redistributive capacity of the Italian PIT, by relying on a novel dataset containing information on 80,000 individual tax returns: a number that is almost twice that used in previous studies conducted for the Italian case. In what follows, I provide new evidence on the effects of selected personal income tax expenditures on vertical and horizontal redistribution with the aim of helping the current discussion on the reform of the Italian PIT. This is timely today when the Italian PIT is under attack from different parts (Baldini et al. 2017). This is also interesting from an international perspective (Miyazaki and Kitamura 2016). In particular, I use a novel decomposition formula of the Reynolds-Smolensky (RS) index, which was developed in Di Caro (2019), in order to analyse the redistributive effects of the set of tax instruments present in the Italian PIT, namely deductions, tax schedules and tax credits. This method allows for the evaluation of the effects of the tax instruments on vertical and horizontal redistribution, as well; the latter being relevant for understanding how PIT's instruments interfere with the original distribution of income (Dardanoni and Lambert 2001).

Furthermore, I will investigate how the two main tax expenditures for the owner-occupied house, the deduction for the main residence and the mortgage interest tax credit, influence vertical and horizontal redistribution in Italy as a whole and in the Italian regions. The preferential tax treatments for the owner-occupied house have been criticised, particularly in the United States, from an efficiency and distributive perspective (for a recent discussion, see Slemrod 2018). The most relevant criticism is that excluding net income from the owner-occupied house is a further limitation of a comprehensive income taxation scheme (Poterba and Sinai 2008; Viard 2013). In addition, this preferential tax treatment, which requires a large amount of public resources to be financed, can cause overinvestments in housing and does not necessarily improve income redistribution (Brueckner 2014). In Italy, for instance, the resources financing the deduction for the main residence and the mortgage interest tax credit are equal to about 4,6 billion euro per year (MEF 2017). In

doing this, we contribute to the works analysing housing taxation in Italy (Baldini 2008; Pellegrino et al. 2011, 2012; Figari et al. 2012).[1]

The interest for the regional dimension is motivated by two main reasons. First, the PIT can have asymmetric redistributive effects across places that need to be studied: in this direction, Bonhomme and Hospido (2013) provided evidence on the Spanish case. Second, income disparities between and within regions are growing in Europe and in Italy: it naturally raises the question if the personal income tax is able to smooth income differences of taxpayers living in different areas of the same country (CEPS 2018).

The rest of the chapter is structured as follows. Section 2 provides an overview of the Italian context. Section 3 describes the data and the methodology. The results are presented in Sect. 4. Section 5 concludes with some policy suggestions.

2 Overview of the Italian Personal Income Tax

In 2017, the last year when annual data are available, the Italian PIT contributed to tax revenues on accrual basis for about 184 billion euro, almost twice the revenues deriving from the value added tax (MEF 2018). Labour and pension incomes represent the majority of individual taxable income, whit income generated from financial activities and property being subject to preferential proportional tax treatments. This is one of the reasons why the actual redistributive role of the Italian PIT has been questioned at both international and national level (Verbist and Figari 2014). A description of the main characteristics of the Italian PIT for the fiscal year 2014, which is the focus of the present analysis, is provided in Di Caro (2017a). Tax schedules included the national progressive tax schedule, the regional and municipal surcharges, and the proportional tax *Cedolare Secca*. The *Cedolare Secca* has two rates (21% and 10%) and, since 2011, it has been applied to some income deriving from rented properties that has been excluded from the ordinary personal income taxation. The two deductions considered here, namely the deduction for the main residence and the deduction for pension contributions, are the most relevant deductions in terms of number of beneficiaries and average amount. In what follows, I also consider seven tax credits that include the tax credits for family members and employment conditions, which are part of the original structure of the Italian PIT for achieving redistribution. The remaining tax credits are used for addressing specific economic and social purposes and can be considered as tax expenditures.

Table 1 shows some descriptive statistics of the main personal income tax instruments used in the analysis developed in the next pages, which derives from Di Caro (2019). Because I am interested in the specific tax expenditures for the owner-occupied house, I will focus the discussion on such tax instruments. The

[1]Elsewhere I have studied the redistributive effects of the proportional tax *Cedolare Secca* that is applied to particular rented property income (Di Caro 2017a).

Table 1 Italian PIT instruments, summary statistics

Item	Variable	% of taxpayers > 0	Average value for taxpayers > 0 (Euro)	Gini coefficient	Concentration coefficient
Tax schedules	Progressive tax schedule	94.61	5460.35	0.5320	0.5275
	Regional Surcharge	72.79	384.12	0.5705	0.5472
	Municipal Surcharge	62.20	176.80	0.6248	0.5679
	Cedolare Secca	3.35	1263.90	0.9853	0.7242
Deduct.	Main residence	42.78	494.68	0.7348	0.3155
	Pension contributions	11.16	4234.35	0.9395	0.4170
Tax credits	Dependent family members	31.21	1016.88	0.8069	0.1819
	Employm., retirem., others	88.19	1172.17	0.2980	−0.0810
	Mortgage interest	9.66	277.14	0.9440	0.4167
	Health expenditures	41.34	241.74	0.8304	0.4154
	House renovations	18.57	534.64	0.9399	0.5894
	Interv. for energy savings	4.29	788.27	0.9833	0.6511
	80 Euro Bonus	27.53	540.60	0.7634	0.0365

Source. Di Caro (2019)
Note. Gini and concentration coefficients are obtained for taxpayers with positive items

deduction for the main residence allows for the exclusion of the cadastral income (*rendita catastale*) of the main residence from the gross income. It is interesting to note that more than 40% of taxpayers benefit from the deduction for the main residence with an average amount of almost 500 euro. This deduction is also less concentrated than other tax instruments, by confirming that many taxpayers benefit from it. As for the mortgage interest tax credit, it is applied to the mortgage interest paid for the acquisition of the main residence of the individual taxpayers up to a maximum amount of 4000 euro. Observe that, less than 10% of taxpayers benefit from it for an average amount of about 280 euro. Notably, this tax credit shows a

quite high concentration coefficient in comparison to the tax deduction for the main residence.[2]

3 Data and Methods

3.1 Data Description

Tax return data are widely recognised as important source of information for studying personal income tax redistribution. Indeed, tax files outperform survey data by providing a better approximation of top income shares and reducing survey-specific issues such as measurement errors and attrition (Card et al. 2010; Atkinson et al. 2011). On a regional level, moreover, tax statistics usually rely on larger sample sizes than surveys by improving the spatial coverage of observations (Longford et al. 2012). Despite their attractiveness tax files have some intrinsic issues. Information on individuals with income below the tax threshold (i.e. non-fillers) and households are not taken into consideration by potentially reducing the external validity of distributional studies using tax statistics (Atkinson and Brandolini 2001). Tax returns can be influenced by underreporting, which is of particular importance in a country like Italy where evasion and avoidance are high in comparison to other developed countries and show significant regional differences (Schneider et al. 2015). Therefore, the results of the distributional investigations of personal income taxation based on tax statistics, as those discussed in this chapter, have to be read in combination with the findings of other studies using different non-administrative data (Bourguignon and Spadaro 2006; Ceriani et al. 2013). For a more complete discussion of the pros and cons of using tax statistics for distributional analyses, see Di Caro (2017b, 2019).

The sample of individual tax returns used in this chapter has been received by the Italian Ministry of Economy and Finance (MEF) for the fiscal year 2014. The dataset contains different information on individual characteristics, income categories, and personal income tax instruments (e.g. tax schedules, deductions and tax credits). The sample is representative of the total population of Italian personal income taxpayers, as discussed in Acciari (2016) more in detail.

When comparing the average gross and net income in the twenty Italian regions obtained from the sample of tax files used in this study and the data from the MEF tax-benefit microsimulation model differences, on a regional level, are not marked. The MEF tax-benefit microsimulation model is the official model used by the Italian government for making ex ante and ex post evaluations of personal income tax reforms (Di Nicola et al. 2015). The data used in the tax-benefit microsimulation

[2]In 2014, there were minor tax credits for housing in terms of average amount and number of beneficiaries, which are not considered here because they are not available in the data used in this chapter.

model provides a much richer description of gross and net income than tax files, by taking into account property income, income from financial activities and a large set of personal income tax instruments including benefits that are not considered here (Di Nicola et al. 2017). Notably, T-test results do not reject the null hypothesis of the equality of standard deviations across regions among the two datasets at 5% level of statistical significance. This suggests that the data used in this chapter approximate quite well regional differences in pre- and post-tax income conditions.

Table 2 reports some measures commonly used for describing redistribution and progressivity in distributional studies (Cowell 2011). Specification I contains all the tax personal income tax instruments available in the dataset of tax files, but the mortgage interest tax credit, while specification II covers all the tax instruments. As expected, the mortgage interest tax credit produces an improvement of vertical income redistribution (i.e. RS index) and a worsening of horizontal equity (i.e. Atkinson-Plotnik-Kakwani index). Moreover, the Kakwani index passed from 0.2227 (without the mortgage interest tax credit) to 0.2249 (with all the tax instruments) by suggesting that the tax credit under consideration worked for reducing progressivity. The average tax rate passed from an average value of 19.82–19.90 when all the tax instruments are considered. For a more general discussion on the distributional aspects of personal housing taxation in Italy, see Baldini (2008) and Pellegrino et al. (2011, 2012).

Table 2 Personal income tax redistributive indexes, fiscal year 2014

Measure	I	II	Difference in %
Gini coefficient for gross income	0.4595	0.4595	0.0
Gini coefficient for net income	0.4059	0.4050	−0.2
Gini coefficient for net tax liability	0.6771	0.6775	0.1
Concentration coefficient for net income	0.4044	0.4036	−0.2
Concentration coefficient for net tax liability	0.6629	0.6639	−0.2
Redistributive effect	0.0536	0.0545	1.7
Reynolds-Smolensky index	0.0551	0.0559	1.5
Kakwani index	0.2227	0.2249	1.0
Atkinson-Plotnik-Kakwani index	0.0018	0.0017	−5.5
Suits progressivity index	0.2834	0.2868	1.2
Musgrave-Thin redistributive effect	1.0992	1.1008	0.1
Average tax rate (%)	19.82	19.90	0.4

Note. Specification I includes all the personal income tax instruments, but for the tax credit for the mortgage interest. Specification II includes all the personal income tax instruments and derives from Di Caro (2019). The table reports: the Kakwani index of tax progressivity; the Musgrave-Thin index of redistributive effect; the Reynolds-Smolensky index of redistributive effect; the Vertical Equity measure; the Atkinson-Plotnick- Kakwani index of horizontal inequity; the Suits' index if progressivity

3.2 Methodology

To calculate the redistributive effects of personal income tax instruments, I use the decomposition of the RS index discussed in Di Caro (2019). This decomposition formula is an augmented version of the generalised Pfähler-Lambert decomposition of the RS index (Onrubia et al. 2014), where the reranking term is also decomposed by using a geometric partition of the concentration index (Duclos 1993).[3] In short, the RS index has been decomposed as follows:

$$\Pi^{RS} = G_X - G_N = (G_X - C_N) + (C_N - G_N) \tag{1}$$

where G_X denotes the Gini coefficient of gross income, G_N the Gini coefficient of net income, and C_N the concentration coefficient of net income. Net income is obtained as the difference between the taxable income (i.e. $B = Y - D$), where D is the of the n deductions, minus the net tax liability T (i.e. $T = S - C$). S is the sum of l tax schedules and C the sum of the m tax credits. The difference $(G_X - C_N)$ in (1) represents the effects of a given set of tax instruments (deduction, tax schedules, and tax credits) on vertical redistribution, while the difference $(C_N - G_N)$ represents the reranking term and captures the effects on horizontal redistribution (Duclos 1993).

The main novelty of the decomposition of the RS index used here is that the reranking term describing the horizontal equity effects has been decomposed as follows:

$$C_N - G_N = R^D + R^S + R^C \tag{2}$$

where:

$$R^D = \left(Conc_{Y-T,\, Y-\sum_{i=0}^{D} d_i} - Conc_{Y-T,\, Y-\sum_{i=0}^{N} d_i} \right),$$

$$R^S = \left(Conc_{Y-T,\, Y-\sum_{i=0}^{S} s_i} - Conc_{Y-T,\, Y-\sum_{i=0}^{L} s_i} \right),$$

$$R^C = \left(Conc_{Y-T,\, Y+\sum_{i=0}^{C} c_i} - Conc_{Y-T,\, Y+\sum_{i=0}^{M} c_i} \right).$$

D, S, T denote the sum of deductions, tax schedules and tax credits, respectively. $N = 1, \ldots, n$ is the set of tax deductions; $L = 1, \ldots, l$ is the set of tax schedules; $M = 1, \ldots, m$ is the set of tax credits. The terms $Conc_{Y-T,\, Y-\sum_{i=0}^{D} d_i}$, $Conc_{Y-T,\, Y-\sum_{i=0}^{S} s_i}$, and $Conc_{Y-T,\, Y+\sum_{i=0}^{C} c_i}$ indicate that the concentration curves used to build the concentration indexes employ $\sum_{i=0}^{D} d_i$, $\sum_{i=0}^{S} s_i$, and $\sum_{i=0}^{C} c_i$, respectively.

[3] I follow the notation used in Di Caro (2019), wherever possible, where a full description of the methodology can be found.

4 Results

4.1 National Results

Table 3 reports the results of the decomposition of the RS index applied to the tax files for the year 2014. As before, specification I includes all the tax instruments present in the tax statistics used here, but the mortgage interest tax credit. Specification II includes all the tax instruments. The fact that I mostly focus on redistributive effects of the mortgage interest tax credit, leaving the deduction for the main residence on the background, is due to the relative major redistributive consequences of the former tax instrument with respect to the latter. In the next sub-section, however, I provide results for the Italian regions also for the deduction for the main residence. The results are similar to those presented and discussed in other related contributions (Di Caro 2018, 2019), where the reader can find a more detailed explanation. Vertical redistribution in the Italian personal income tax system

Table 3 Decomposing personal income tax redistribution in Italy

Tax instruments	Specification	
	I	II
Deductions (D):	**0.0123**	**0.0125**
Main residence (D_1)	0.0088	0.0090
Pension contributions (D_2)	0.0035	0.0035
Tax Schedules (S):	**0.4014**	**0.4012**
Progressive tax schedule (S_1)	0.3647	0.3645
Regional Surcharge (S_2)	0.0256	0.0257
Municipal Surcharge (S_3)	0.0125	0.0125
Cedolare Secca (S_4)	−0.0014	−0.0015
Tax Credits (C):	**0.6114**	**0.6119**
Dependent family members (C_1)	0.0767	0.0769
Employment, retirem., others (C_2)	0.4968	0.4965
Mortgage interest (C_3)	–	0.0006
Health expenditures (C_4)	0.0025	0.0025
House renovations (C_5)	−0.0122	−0.0122
Interventions for energy savings (C_6)	−0.0061	−0.0061
80 euro bonus (C_7)	0.0537	0.0537
Reranking (R):	**−0.0251**	**−0.0255**
Deductions (R^D)	−0.0010	−0.0010
Tax Schedules (R^S)	−0.0015	−0.0016
Tax Credits (R^C)	−0.0226	−0.0229
Total RS Index	**1.0000**	**1.0000**

Note. Values expressed as percentage of the total RS index. Specification I includes all the personal income tax instruments, but for the tax credit for the mortgage interest. Specification II includes all the personal income tax instruments and derives from Di Caro (2019)

is achieved through the national tax schedule and the two tax credits for family members (C_1) and occupational status (C_2). Residual effects on the total RS index can be associated to the other tax instruments, by confirming the limited redistributive weight of the set of personal income tax instruments for the Italian case. Similar results, even with a larger set of tax deductions and credits than those used here, were found by Barbetta et al. (2018).

As for the effects on reranking, which describes the interferences of the Italian personal income tax on horizontal equity, it is confirmed that tax credits have the largest impact on reranking among the tax instruments considered given that they are categorical benefits for selected individuals depending on various criteria (Ceriani and Verme 2012; Monti et al. 2015). Similar results for the Italian case were found by Pellegrino and Vernizzi (2018) with different data and techniques. Interestingly, from the comparison of the results for the specifications I and II, two aspects are worth commenting upon. When the mortgage interest tax credit is not included among the tax instruments (specification I) the relative contribution of the tax credits on vertical redistribution is slightly different than in the case of inclusion of this tax credit among the set *C* (specification II). Simply put, the mortgage interest tax credit plays a small, positive role on the total vertical redistribution of income among the Italian PIT taxpayers. As for the effects on horizontal equity, it is noticeable that the inclusion of the mortgage interest tax credit (specification II) contributes to increase the weight of the reranking term on the total RS index. In short, being a selected tax expenditure, the mortgage interest tax credit plays a negative role for horizontal equity. This result further supports the view that disentangling the effects of personal income tax expenditures in Italy on horizontal equity is important for assessing the overall redistributive consequences of tax expenditures (Monti et al. 2015; Di Caro 2019).

4.2 Regional Results

The analysis of the redistributive capacity of the Italian personal income tax from a regional perspective is instructive given that regional income disparities in this country are relevant and persistent (Fiorio 2011), and they have been widening since the crisis. Moreover, as recently documented by Mussida and Parisi (2018), Italian regional income disparities are relevant both across and within regions, the latter aspect needing further explanations (Di Caro 2018). In what follows, I report and discuss some of the results of the decomposition formula in (1) and (2) applied to the tax files for each Italian region. In particular, to describe the overall redistributive consequences of the selected tax instruments under observation the figures below compare their effects in terms of vertical and horizontal equity relative to total vertical equity, as calculated by the RS index net of the reranking (Duclos 1993).

Figure 1a shows the effects of the deduction for the main residence (D_1) as percentage of RS index net of reranking in the twenty Italian regions. In other words, this map illustrates how the specific deduction influence vertical redistribution in the different Italian regions. Positive effects are registered in all the regions

a

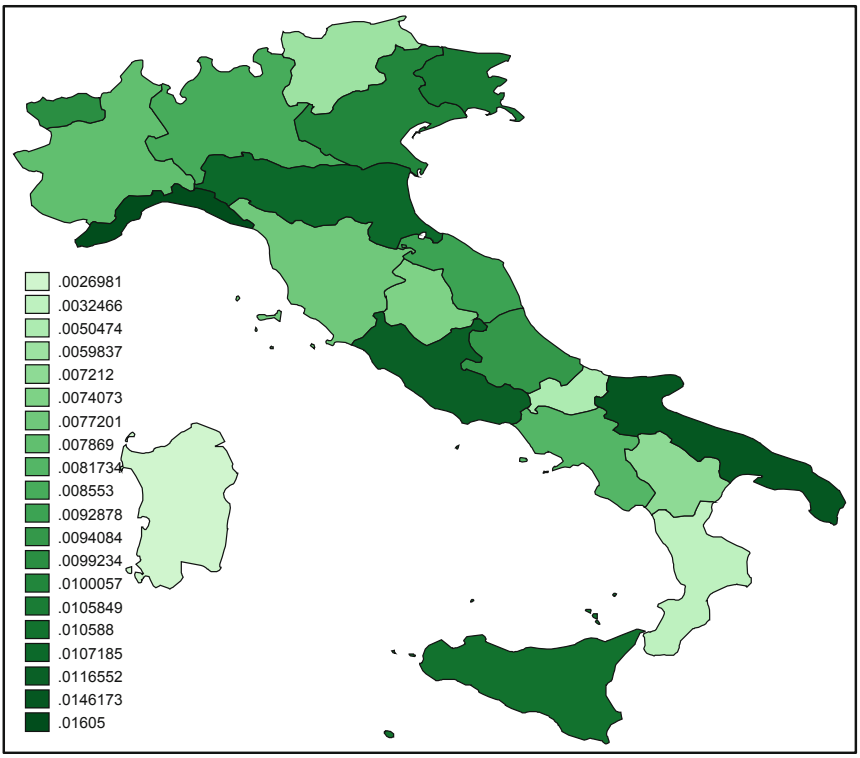

Fig. 1 (**a**) Vertical equity effects of the deduction for main residence, regional results. Note. Our elaboration, data for the fiscal year 2014. (**b**) Horizontal equity effects of the deduction for main residence, regional results. Note. Our elaboration, data for the fiscal year 2014

and, in some regions, such as Liguria and Lazio (Centre-North), and Puglia and Sicily (South) the effects are more marked. Figure 1b shows the effects of the same tax instrument on horizontal equity, calculated as the relative contribution of the deduction for the main residence on the reranking term in each Italian region, following the formula in (2). As expected, the deduction for the main residence negatively influence horizontal equity, that is, the effects on the reranking are positive in all the Italian regions. Yet, the more relevant effects are registered in the regions of the Centre-North, where there is a higher concentration of this tax expenditure than in the rest of the country.

Figure 2a shows the redistributive effects of the mortgage interest tax credit as percentage of total RS index net of reranking in the twenty Italian regions. Observe that, the mortgage interest tax credit positively influence redistribution in 11 out of 20 Italian regions, while in the remaining regions it negatively affect vertical redistribution. That said, in some regions like Sicily, Sardinia and Tuscany such tax expenditure worsens the vertical redistribution of income. Furthermore, from

a

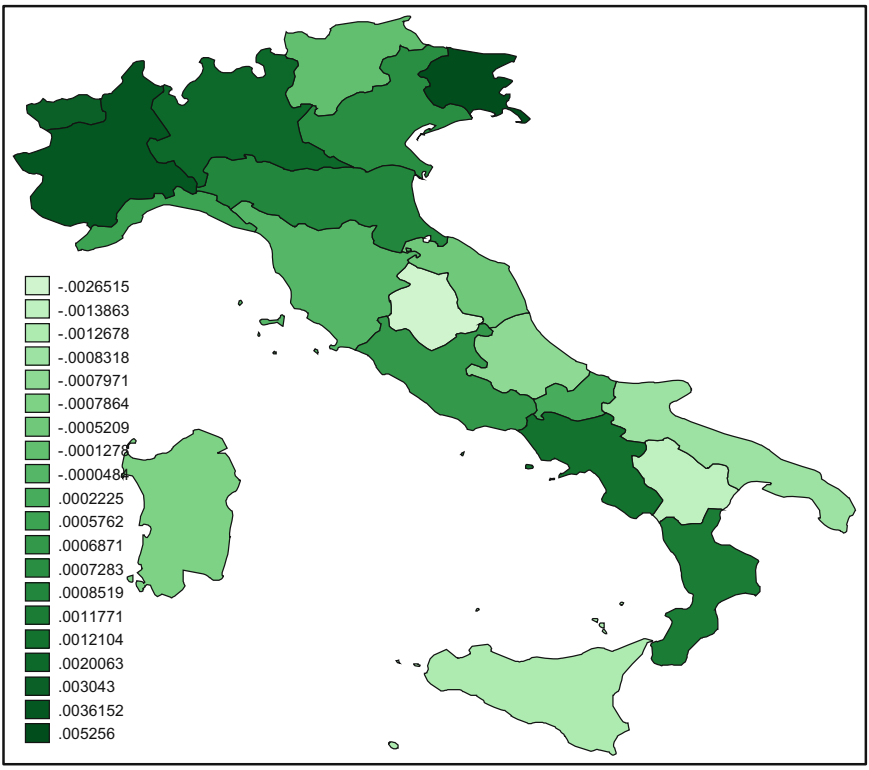

Fig. 2 (**a**) Vertical equity effects of the mortgage interest tax credit, regional results. (**b**) Horizontal equity effects of the mortgage interest tax credit, regional results

Fig. 2b, it can be noticed that the effects of the mortgage interest tax credit on horizontal equity are relatively higher than in the case of the deduction for the main residence shown in Fig. 2a. The effects on the reranking term lies between 0.14 and 0.15 and are quite evenly spread across Italy.

5 Concluding Remarks

The spread of wealth inequalities across and within countries requested new answers from distributional analysis, which is a broad research area within the economic inequality literature to which the usage of tax statistics added new emphasis and empirical challenges. With a more limited focus, in this chapter, I have contributed to the analysis of the redistributive effects of the Italian personal income tax by using original tax records for the Italian case and the methodology developed in Di Caro (2019). The main findings can be listed as follows. Additional evidence on the fact

that a very reduced number of tax instruments is able to explain most of the redistributive effects of the Italian PIT in terms of vertical equity. This is true on a national and a regional level, as well. In addition, the two tax instruments for owner-occupied house considered here, namely the deduction for the main residence and the mortgage interest tax credit play a small, positive role on vertical redistribution.

I have also shown that for a complete understanding of the redistributive consequences of tax expenditures it is necessary to provide evidence on both the vertical and horizontal sides of redistribution. In short, some tax expenditures can be welfare improving from a vertical equity perspective, but they can interfere significantly on tax treatment of equal individual. Frome the results discussed beforehand, it emerges that the mortgage interest tax credit counts for about 0.15 of the total reranking term in Italy and in the Italian regions, as well, by suggesting an important role in affecting horizontal equity. From a policy perspective, this means that the evaluation of policy reform proposals aimed at modifying the current structure of the personal income tax, in Italy as elsewhere, which can imply the assessment of the effects of tax expenditures, must necessarily balance the redistributive consequences of the personal income tax instruments on vertical and horizontal equity. Borrowing the expression of Duclos (1993), the weight to attribute to either vertical or horizontal equity is a decision of policymakers about which taxpayers have to be necessarily informed.

References

Acciari, P. (2016). *Collezione campionaria di dati estratti dalle dichiarazioni Irpef e analisi redistributive*. 12° Conferenza Nazionale di Statistica ISTAT. Rome.

Andrle, M., Hebous, S., Kangur, A., Raissi, M. (2018). *Italy: Toward a growth-friendly fiscal reform* (IMF working paper series WP/18/59). Washington.

Atkinson, A. B., & Brandolini, A. (2001). Promise and pitfalls in the use of 'secondary' data-sets: Income inequality in OECD countries as a case study. *Journal of Economic Literature, 39*, 771–799.

Atkinson, A. B., Piketty, T., & Saez, E. (2011). Top incomes in the long run of history. *Journal of Economic Literature, 49*(1), 3–71.

Baldini M. (2008). *L'IRPEF e la casa*. Mimeo.

Baldini, M., Giannini, S., & Santoro, A. (2017). *IRPEF una riforma da fare*. www.lavoce.info, April, 19.

Barbetta, G. P., Pellegrino, S., & Turati, G. (2018). What explains the redistribution achieved by the Italian Personal Income Tax? Evidence from administrative data. *Public Finance Review, 46*(1), 7–28.

Bonhomme, S., & Hospido, L. (2013). Earnings inequality in Spain: New evidence using tax data. *Applied Economics, 45*(30), 4212–4225.

Bourguignon, F., & Spadaro, A. (2006). Microsimulation as a tool for evaluating redistribution policies. *Journal of Economic Inequality, 4*(1), 77–106.

Brueckner, J. K. (2014). Eliminate the mortgage interest deduction or tax imputed rent? Leveling the real-estate playing field. *Cityscape, 16*(1), 215–217.

Card, D., Chetty, R., Feldstein, M. S., & Saez, E. (2010). *Expanding access to administrative data for research in the United States*. Mimeo.

CEPS. (2018). Income convergence in the EU: Within-country regional patterns, 5th February.

Ceriani, L., & Verme, P. (2012). The origins of the Gini index: Extracts from Variabilità e Mutabilità (1912) by Corrado Gini. *The Journal of Economic Inequality, 10*(3), 421–443.
Ceriani L., Fiorio C.V. & Gigliarano C. (2013). *The importance of choosing the data set for tax-benefit analysis* (EUROMOD working paper No. 5/13).
Cowell, F. (2011). *Measuring inequality*. Oxford University Press.
Cowell, F. A., & Van Kerm, P. (2015). Wealth inequality: A survey. *Journal of Economic Surveys, 29*, 671–710.
Dardanoni, V., & Lambert, P. (2001). Horizontal inequity comparisons. *SocCho&Welf, 18*(4), 799–816.
Di Caro, P. (2017a). *A redistributive analysis of IRPEF using fiscal microdata*. Economia Pubblica.
Di Caro, P. (2017b). The contribution of tax statistics for analysing regional income disparities in Italy. *Journal of Income Distribution, 25*, 1–27.
Di Caro, P. (2018). *Redistribution in real-world PIT: Evidence from Italian tax records* (MEF Department of Finance Working Paper, 2/2018).
Di Caro, P. (2019). Decomposing personal income tax redistribution with application to Italy. *The Journal of Economic Inequality*, 1–17.
Di Nicola, F., Boschi, M., & Mongelli, G. (2017). *Effective marginal and average tax rates in the 2017 Italian tax-benefit system for individuals and households* (DF Working Paper, n.1/2018).
Di Nicola, F., Mongelli, G., & Pellegrino, S. (2015). The static microsimulation model of the Italian Department of Finance: Structure and first results regarding income and housing taxation. *Economia pubblica, 2*, 124–158.
Duclos, J. Y. (1993). Progressivity, redistribution, and equity, with application to the British tax and benefit system. *Public Finance, 48*(3), 350–365.
Figari, F., Paulus, A., Tsakoglou, P. & Verbist, G. (2012). *Taxing house ownership: Distributional effects of including net imputed rent in taxable income* (IZA working paper, n. 6493).
Fiorio, C. V. (2011). Understanding Italian inequality trends. *Oxford Bulletin of Economics and Statistics, 73*(2), 255–275.
Gordon, R. H., & Kopczuk, W. (2014). The choice of the personal income tax base. *Journal of Public Economics, 118*, 97–110.
Longford, N. T., Pittau, M. G., Zelli, R., & Massari, R. (2012). Poverty and inequality in European regions. *Journal of Applied Statistics., 39*(7), 1557–1576.
MEF. (2017). *Rapporto Annuale sulle Spese Fiscali 2017*. Rome.
MEF. (2018). *Rapporto Entrate Tributarie*.. Rome.
Miyazaki, T., & Kitamura, Y. (2016). Decomposition of redistributive effects of Japanese Personal Income Tax, 1984–2009. *FinanzArchiv: Public Finance Analysis, 72*(3), 334–368.
Monti, M. G., Pellegrino, S., & Vernizzi, A. (2015). On measuring inequity in taxation among groups of income units. *Review of Income and Wealth, 61*(1), 43–58.
Mussida, C., & Parisi, M. L. (2018). Immigrant groups' income inequality within and across Italian regions. *The Journal of Economic Inequality, 16*(4), 655–671.
OECD. (2018). *Revenue statistics*, Paris.
Onrubia, J., Picos-Sanchez, F., & del Carmen Rodado, M. (2014). Rethinking the Pfahler–Lambert decomposition to analyse real-world personal income taxes. *International Tax and Public Finance, 21*, 796–812.
Pellegrino, S., & Vernizzi, A. (2018). *Decomposing the redistributive effect of taxation to reveal axiom violations*. Unito Department of Economics and Statistics WP Series No. 049.
Pellegrino, S., Piacenza, M., & Turati, G. (2011). Developing a static microsimulation model for the analysis of housing taxation in Italy. *International Journal of Microsimulation, 4*(2), 73–85.
Pellegrino, S., Piacenza, M., & Turati, G. (2012). Assessing the distributional effects of housing taxation in Italy: A microsimulation approach. *CESifo Economic Studies, 58*(3), 495–524.
Poterba, J. M. (2011). Introduction: Economic analysis of tax expenditures. *National Tax Journal, 64*(2), 451–458.
Poterba, J. M., & Sinai, T. (2008). Tax expenditures for owner-occupied housing: Deductions for property taxes and mortgage interest and the exclusion of imputed rental income. *American Economic Review, 98*(2), 84–89.

Schneider, F., Raczkowski, K., & Mróz, B. (2015). Shadow economy and tax evasion in the EU. *Journal of Money Laundering Control, 18*(1), 34–51.

Slemrod, J. (2018). Is this tax reform, or just confusion? *Journal of Economic Perspectives, 32*(4), 73–96.

Tyson, J. (2014). *Reforming tax expenditures in Italy: What, why, and how?* (IMF working paper series WP/14/7). Washington.

Verbist, G., & Figari, F. (2014). The redistributive effect and progressivity of taxes revisited: An international comparison across the European Union. *FinanzArchiv, 70*, 405–429.

Viard A.D. (2013). Proposal 8: Replacing the home mortgage interest deduction. In *15 ways to rethink the Federal Budget*. Greenstone M., Harris M., Li, Looney K. & Patashnik J. (eds.) Washington: Brookings Institution.