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ANTI-POVERTY MEASURES IN ITALY: A MICROSIMULATION ANALYSIS

by Nicola Curci[*], Giuseppe Grasso[**], Pasquale Recchia[*] and Marco Savegnago[*]

Abstract

Introduced in 2019, the *Reddito di cittadinanza* (RdC) has replaced the *Reddito di inclusione* (ReI) as a universal minimum income scheme in Italy. In this paper, we use BIMic, the Bank of Italy's static (non-behavioural) microsimulation model, to measure the effects of the RdC in terms of inequality reduction and, as a novel contribution, of absolute poverty alleviation. Our results, which do not account for behavioural responses to policy changes, show that the RdC is effective in reducing inequality, and attenuating the incidence, and even more so the intensity, of absolute poverty. We also document how certain features of the design of this benefit affect the distribution of these effects across the population. For this purpose, we simulate two hypothetical changes to the current design of the RdC: one that directs more resources to large households with minors (on average more in need than other households) and the other that takes into account the differences in the cost of living according to geographical areas and municipality size.

JEL Classification: C15, C63, H23, H31, I32.
Keywords: microsimulation model, redistribution, poverty, minimum income, progressivity.
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Contents

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1 Introduction[1]

Inequality, poverty and social exclusion in the last decade have taken a centre stage in the public policy debate, due to the consequences of technological changes and of a prolonged period of economic depression which have proved particularly challenging for low-income households. Both applied and theoretical research has been devoted to study the resilience of national social protection systems, highlighting their differences and limitations (Matsaganis et al. 2003; Adema 2006; Immervoll 2009; Caminada et al. 2010; Figari et al. 2013; Marx et al. 2014; Leventi et al. 2019). Policy makers in Europe have discussed over ways to bolster social policies, following EU institutions that, in line with the Europe 2020 target of "lifting at least 20 million people out of the risk of poverty and social exclusion"[2], renewed their recommendations to implement measures providing an adequate minimum income support[3]

The urgency of remedying to the lack of income support for poor households is stronger in countries, like Italy, where traditionally such instruments were absent. The deep and prolonged economic crisis of the last decade exacerbated the extent of poverty and social exclusion in Italy. During the period 2008-2018, the incidence of absolute poverty among individuals increased from 3.6% to 8.4%, and from 3.7% to 12.6% for minors (Istat 2019)[4], while the share of people at risk of poverty rose from 18.9% to 20.3% (Eurostat 2019)[5].

[1]We are grateful to Giovanni D'Alessio, Paolo Sestito, Pietro Tommasino, Stefania Zotteri and two anonymous referees for their helpful comments. We are responsible for all remaining errors. Any views expressed here are those of the authors and not necessarily those of the respective institutions.

[2]Europe 2020 Strategy, see Eurostat (2019).

[3]The introduction of minimum income schemes has been advocated by EU institutions since 1992 (Council of the European Communities 1992) but more recent calls for it have been advanced in the post-crisis period (European Parliament 2010). These measures, known as minimum income (MI) schemes, are intended to provide households with a form of last resort protection against the risk of poverty.

[4]Poverty rates for 2008 are retriewed from `http://dati.istat.it/` and refer to the time series reconstructed by Istat for the period 1997-2013.

[5]Absolute poverty is defined by Istat as a condition in which households have a consumption expenditure lower than the monetary value of a basket of goods and services considered as essential to avoid severe form of social exclusion. The monetary value of the basket varies according to household socio-demographic characteristics, geographical area and municipality size. People at

Notwithstanding the pervasiveness of the phenomenon, Italy has long been lagging behind in the fight against poverty. Poverty-reduction policies have largely been delegated to local governments, with nationwide programs geared mostly toward the elderly (e.g. social pensions) and people with disabilities. Until 2017, together with Greece, Italy was the only EU country to not have any form of universal income support to the poor[6] (Crepaldi et al. 2017). Finally in 2018, as a result of a two-year legislative process, the first single, nationwide, structural, and universal minimum income scheme, called *Reddito di Inclusione* (Inclusion income, ReI), was ultimately introduced[7].

In April 2019, ReI was replaced by a new nationwide MI scheme, *Reddito di Cittadinanza* (Citizens' income, RdC[8]), financed by an amount of budgetary resources about three times larger. Despite its denomination, RdC should not be confused with a universal basic or citizens' income[9] (Van Parijs 2004; Toso 2016) since it is means-tested and therefore belongs to the class of MI schemes. The measure is not uniquely oriented at mitigating poverty through the provision of a cash transfer, but also includes employment-oriented and social inclusion policies.

In this paper, we aim to evaluate the impact of RdC in terms of inequality reduction and, as a novel contribution, of absolute poverty alleviation.[10] We focus

risk of poverty according to Eurostat are those with an equivalised disposable income below the risk-of-poverty threshold, which is set at 60% of the national median equivalised disposable income (after social transfers).

[6]Some non-universal anti-poverty measures were nevertheless in place, like *Sostegno per l'inclusione attiva* and *Carta acquisti*: the former was targeted to needy households with at least a minor, a disabled child or a pregnant woman; the latter was targeted to individuals aged more than 65 (or having children less than 3) with a particularly serious financial situation.

[7]ReI was enacted on January 1st, 2018. During the first six months since its implementation, it was only available to households in which at least one of the following categories of individuals were present: one member aged below 18; a person with disabilities (and at least a parent or tutor); a pregnant woman; an unemployed member aged at least 55. Such categorical requirements were dropped beginning on July 1st, 2018, thus de facto adopting a targeting within universalism approach (Skocpol 1991). For a detailed review of the income support schemes that preceded and paved the way to the introduction of ReI, see the case study on Italy in Crepaldi et al. (2017).

[8]If all the members of an eligible household are aged more than 66, RdC scheme takes the specific denomination of *Pensione di Cittadinanza* (citizens' pension, PdC). Henceforth, we will use the term RdC including PdC in its definition, unless otherwise stated.

[9]Differently to a MI, an universal basic income (UBI) is unconditional on both socio-economic status and behavioral requirements.

[10]There are other contributions focusing on the impact of RdC on inequality and *relative poverty*,

on the effects over household income and consumption in a comparative approach with ReI, using BIMic, the Banca d'Italia microsimulation model for the analysis of the Italian tax-benefit system (Curci et al. 2017). We evaluate the reduction in poverty rates induced by the new MI scheme, exploiting a statistical matching between the BIMic database and the Household Budget Survey conducted by Istat. This is an innovative feature of our work and adds to available evidence about the effects of RdC on widely known well-being indicators (like the ones on absolute poverty published by Istat), given that other studies are limited to estimate its effect only on the income distribution, while ex-post evaluation of the effects on poverty rates will be available only with the usual statistical delays.

BIMic is a static and non-behavioural model which assumes that individuals do not change their choices after a policy change; therefore, we only simulate the first-round effects of the new policy, and do not take into consideration the possible labour supply effects deriving by either the planned activation programs or the work disincentives associated to the benefit receipt. The former are still to be made operational as the services put forward by the National Agency for the Labour Activation Policies (ANPAL) have yet to start; the latter are likely to play an important role due to the generosity of the benefit, the amount of which drops significantly as labour income rises, thus discouraging the acceptance or continuation of temporary, and not particularly remunerative, employment contracts. The disincentive to seek employment is concentrated within those segments whose employment prospects are already limited (young people, those with temporary contracts and those living in the South), who could afford extended periods of inactivity. The structure and the generosity of the benefit may also encourage irregular employment if the legal penalties prove difficult to impose (Bank of Italy 2019).

According to our simulations, based on a RdC operating for the whole year and a number of beneficiary households substantially in line with the one reported by official estimates, the Gini index of the equivalised disposable income decreases by more than one percentage point after the introduction of RdC (from 35.3 to

such as the analyses included in Consiglio Nazionale Economia e Lavoro 2019. The only work we know discussing the interaction of RdC and *absolute poverty* is Gorga et al. 2019, according to which the number of households in absolute poverty resulting from Istat surveys is overestimated, due to under-reporting of consumption. This fact would mostly explain the relatively low coverage of poor households by RdC.

34.2%). The incidence of poverty is reduced by 2 to 3 percentage points, depending on the take-up hypothesis, while the intensity of poverty among the whole population would be substantially halved. However, we note that RdC directs a relatively smaller share of resources to large households with minors with respect to ReI. Furthermore, the share of beneficiaries living in the South is higher than the share of people in absolute poverty resident is the same area. In order to highlight these features of the measure, we discuss two alternative budget-neutral scenarios: the first one is aimed at redistributing resources in favor of households with minors, by realigning the equivalence scale to the one previously adopted for ReI; the second one takes into account the differences in cost of living, which is higher in the North, in the Centre and in metropolitan areas with respect to the South and small municipalities. In all our hypothetical scenarios we keep fixed the stringent eligibility requirement about long-term residency but we document how this excludes some poor individuals from accessing the benefit, especially in the North and the Centre where foreign nationals represent a high share of the neediest population. We find that poverty among minors would decrease in the first scenario and that the territorial distribution of beneficiaries would be more in line with the one of poor households in the second scenario.[11]

The paper is organized as follows. Section 2 introduces Minimum Income schemes, highlighting what the literature considers critical aspect of their design: this serves to better describe some characteristics of RdC that are the focus of our subsequent analysis. Section 3 describes the data and the methodology used in the paper. Section 4 contains the main results briefly reported above. Section 5 concludes.

[11]It is important to point out that commonly used measures of cost of living, as those implicitly adopted by Istat for the absolute poverty estimates, may fail from accounting for the uneven provision of public goods between territories both in qualitative and quantitative terms (Brandolini and Torrini 2010; Deaton and Dupriez 2011; Baldini et al. 2015; D'Alessio 2018), which can justify an uneven distribution of anti-poverty benefits. Moreover, price levels and public goods availability might vary substantially even within the same territorial entity to which Istat imputes a uniform cost of living.

2 Minimum income schemes

Minimum income (MI) schemes are selective provisions of cash transfers to individuals or households, provided that they meet certain conditions, often defined in terms of income and wealth requirements. Cash transfers provided under MI schemes cover the gap between the economic means of eligible households and a certain threshold that reflects the legislator's policy objectives in terms of poverty reduction given public finance constraints. The threshold is usually defined as a proportion of median or mean income (e.g. Eurostat's relative poverty line[12]), or expressed in terms of some standard of living indicator (e.g. absolute poverty line, basket of goods), or pegged to the statutory amount of other measures (e.g. minimum wage, unemployment allowance; Frazer and Marlier 2016). Moreover, this threshold is suitably rescaled according to household size, to account for both the growing needs and the increasing economies of scale (deriving from cohabitation) of households with different size and composition. In the case of RdC, means testing takes into account household income, wealth (also distinguishing between liquid and illiquid assets), as well as the possession of certain durable goods. The income threshold is set at €6,000 (increased to €9,360 for households living in rented accommodation) for a single person; for households with more than one member, the threshold is multiplied by an equivalence scale[13].

While the conditionalities that characterize MI schemes aim to channel resources to the neediest households, they may lead to unintended (although foreseeable) outcomes such as errors in delimiting the group of individuals who effectively take the benefit[14]. On one side, lower take-up rates deriving from lack of knowledge about the measure, transaction costs related to claiming and social stigma can induce "wrong" exclusions of potential beneficiaries (Moffitt et al. 1983; Smolensky et al. 1995; Currie 2004). On the other, successful attempts by some households to misrepresent their economic status in order to meet eligibility criteria (through

[12]Also known as the at-risk-of-poverty (AROP) threshold, which is equal to 60% of national median equalized disposable income (after social transfers).

[13]The equivalence scale for the RdC assigns a value of 1 to the first member and is increased by 0.4 for each additional adult and by 0.2 for each minor in the household, up to a maximum of 2.1 (2.2 if there is a disabled person).

[14]These effects may be amplified if the targeting criteria adopted to select beneficiaries are not explicitly linked to policy objectives (Sabates-Wheeler et al. 2015), e.g. absolute or relative poverty, an issue that will be discussed in greater detail later in Section 4.2.

under-declaration of income and/or assets) bring about "wrong" inclusions of beneficiaries (Sabates-Wheeler et al. 2015). Moreover, non-economic conditionalities inherent in the policy design may also bring about mistargeting of the poor. For example, besides the economic means-testing described above, the RdC has further requirements regarding citizenship and residency: as long as poverty is more acute among immigrants, those requirements limit the ability of the measure to target the most needy individuals.

MI schemes may also have potential negative effects on labour supply. In fact, conditioning benefit eligibility on low-income status may result in reduced incentives to increase employment income and lead to the so-called "poverty trap" that arises from the implicit tax given by the progressive withdrawal of income support following an increase in market earnings (Paulus 2016)[15]. In order to limit the negative effects on labour supply, many MI schemes (including the RdC) condition the provision of the benefit to the participation to activation programs, e.g. training courses, job search assistance, and other employment-oriented initiatives (Immervoll 2009)[16].

Table 1 shows the most salient features of RdC. For a more detailed description of RdC, with highlights on the differences with respect to ReI, refer to appendix A.

For a one-person household where the individual lives in a rented property and has no other income, the RdC amount paid is €780 per month (against the €188 paid by ReI). This theoretical maximum benefit is close to the relative poverty threshold estimated by Eurostat for 2016, a high level by international standards (the ratio of the benefit expected from similar measures to the above-mentioned

[15]However, as noted by Toso (2016), work disincentives can be reduced by deductions on incomes that are subject to means-testing, which lower benefit withdrawal rates below 100%.

[16]In theory some (but not all) the shortcomings of MI schemes could be overcome by basic income schemes, which are universally available to all citizens (or residents) of a country regardless of socio-economic conditions and behavioral requirements. Such schemes could allow to minimize some problems associated to means-testing of MI schemes (such as high administrative costs, imperfect targeting, limited take-up and discouraging effects on labour market intensive margin). However, if generous, these schemes could have a much higher budgetary cost and a strong negative effect on the labour market participation. As of today, this type of measure has been mostly implemented in the form of small-scale pilot schemes. As such, empirical evidence on its effects is currently rather limited.

Table 1: Most salient features of RdC regarding the cash transfer

Residency	10 years of residence in Italy, and the last 2 years continuously spent in Italy
ISEE[1]	must not exceed €9,360
Income test	Annual equivalised income must not exceed €6,000 (€7,560 for PdC; €9,360 if in rented accomodation)
Wealth test	Households' real estate (excluding the main residence dwelling) must not exceed €30,000 and financial assets must not exceed €10,000
Benefit amount	Two separate components: 1) annual household income supplement of as much as €6,000 (threshold increases with family size according to an equivalence scale); 2) additional €3,360 for households who rent their accommodation
Equivalence scale	1 for a one-person household, increased by 0.4 for each additional adult and by 0.2 for each minor in the household, up to a maximum of 2.1 (2.2 if there is a disabled person)
Duration	paid for 18 months but can be renewed after a 1-month suspension for an unlimited number of times

[1] *Indicatore della Situazione Economica Equivalente* (Equivalent Economic Situation Indicator).

threshold is 50% in Spain, 67% in France and 77% in Germany)[17]. In addition, according to the Bank of Italy's Survey on Household Income and Wealth (SHIW), the maximum benefit is equal to 58% of the median labour income for one-person households. The consequent effects of disincentives to work can be mitigated by the provision of strict requirements on participation to activation programs and of the planned reinforcement of public employment services. In the case of RdC, work disincentives at the extensive margin are mitigated by a temporary withdrawal rate set at 80% for the beginning of a new employment activity, while no deduction on income is provided at the intensive margin implying a 100% implicit tax rate[18].

[17] Our elaboration is based on OECD data retrieved from https://stats.oecd.org; we include housing benefit in our computation.

[18] At the intensive margin ReI is less discouraging since it provides a 20% deduction on employ-

Overall, the new scheme appears to be more generous than the old one, although differences are mitigated for large households with minors as a consequence of a relatively less generous equivalence scale[19]. RdC is also more selective than ReI as regards foreign nationals, as they now need to have been resident in Italy for ten years instead of two in order to make a claim.

3 Data and methodology

Our estimates are based on BIMic, the tax-benefit microsimulation model of Banca d'Italia (Curci et al. 2017)[20].

For the purpose of this work, BIMic complements its main database – built upon Banca d'Italia's Indagine sui Bilanci delle Famiglie (SHIW, Survey on Household Income and Wealth; Bank of Italy 2015)[21] – with data from Indagine sulle Spese delle Famiglie (HBS, Household Budget Survey), conducted by the Italian National Statistics Office (Istat)[22]. The highly detailed information on households' consumption expenditures contained in this last survey is needed to replicate the absolute poverty indicator used by Istat: absolute poverty is defined as a condition in which monthly consumption expenditure is below a level "deemed to be essential for a minimally acceptable quality of life" (Istat 2009). The reason why the definition is based on consumption and not on current income is that the former is a better proxy of permanent income than the latter; it indicates situations of "structural" deprivation and needs, as in the short run it fluctuates less than current income, thus avoiding mis-classification of households hit by temporary income shocks (Meyer and Sullivan 2003). We also assume that income information contained in BIMic is not mis-reported and corresponds to income declared to fiscal

ment income for the determination of the benefit amount.

[19]The equivalence scale for ReI considered a value of 1 for a one-person household, 1.57 for two members, 2.04 for three members, 2.46 for four members, 2.85 for five members and 3.20 for six or more members.

[20]A short description of the main characteristics of BIMic is reported in the appendix B.

[21]Information on consumption in SHIW is not detailed, reporting only aggregated expenditures on broad bundles of goods (such as, for example, food) and not coherent with official Istat definition of total expenditure used for attributing absolute poverty condition.

[22]The survey is conducted continuously, every month throughout the year. On annual basis, the sample contains about 16,000 households.

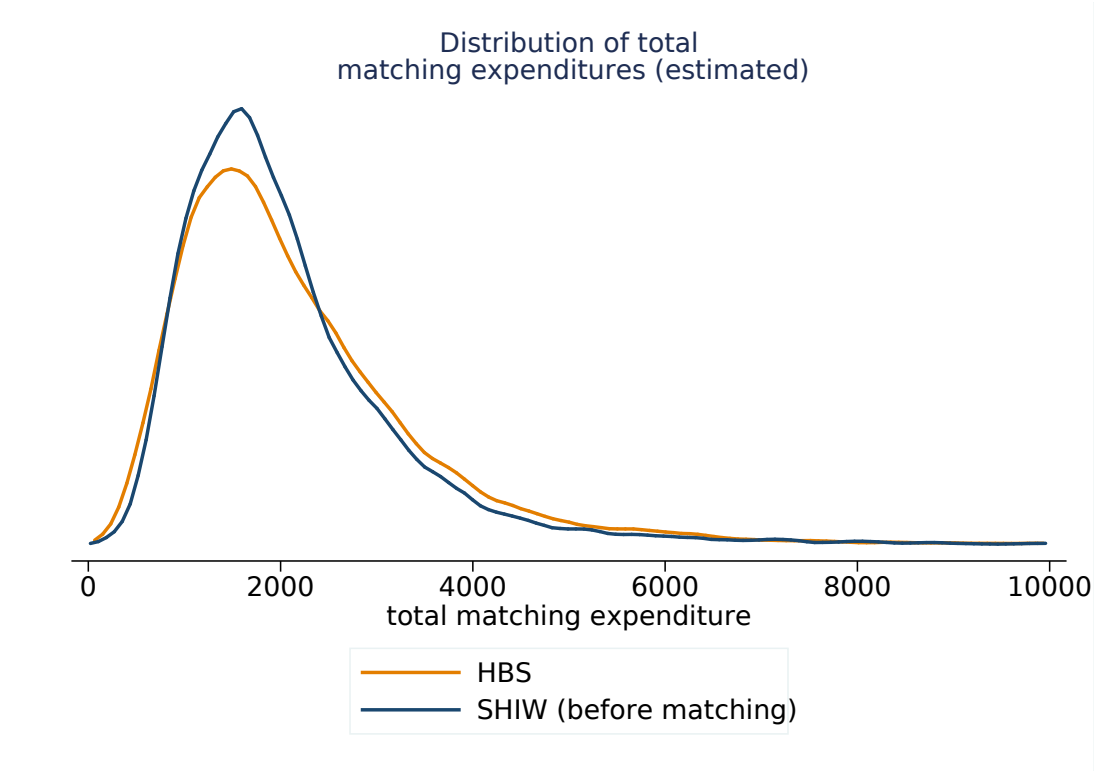
authorities. While taking into account tax evasion could affect the results, devising a proper methodology to meet this goal present challenges which are beyond the scope of this work.

Istat HBS data have been combined with the BIMic database through statistical matching techniques. Intuitively, statistical matching aims to pair each household in BIMic (recipients) with (at least) one household in HBS (donors), chosen to be the "most similar" in terms of a given set of variables (typically socio-demographic characteristics). The procedure exploits the fact that both samples derive from the same population of interest and that the two surveys share some relevant information.

All the common variables used for statistical matching have been harmonized (recurring to the imposition of assumptions when needed) between the two surveys in order to make the data comparable. Among the common variables that need to be harmonized, a special role is played by consumption. The information on consumption is in fact observed in BIMic, though in a less disaggregated way. Since the definitions of consumption aggregates are different between the two surveys, we construct in both surveys a "total matching expenditure" (henceforth, TME) to be used for matching purposes. Specifically we exclude from TME the expenditures for life insurance, loans repayments and extraordinary house maintenance, but we do include house rent and the imputed rent for home-owners, accordingly to the Istat definition of total expenditures for absolute poverty status estimation. Moreover, we exclude expenditures for rent different to the main dwelling, travels, cars and holidays, because the information is either absent in SHIW or not coherent between the two surveys. We find that the TMEs computed in both samples display similar distributions though the one derived from SHIW is more peaked and slightly under-estimated on average (Figure 1). Although SHIW is likely to under-report TME, we can assume it supplies a good piece of information on the rank of households in the consumption cumulative distribution.

We divide both samples into strata, using macro-area of residence (North-West, North-East, Center, South, Islands) and family size (single, two members, three members, four or more members) as stratification variables and further splitting each of the 20 resulting groups into 20 quantiles according to the TME conditional distribution. We impose matching to be exact between the resulting 400 strata. Data combination within each stratum is performed by nearest-neighbor matching,

Figure 1: Total expenditure distribution in the two samples before the statistical matching



Note: total matching expenditure (TME) refers to an expenditure definition that we harmonized between the two surveys.

based on Mahalanobis distance defined on the following matching variables: number of components aged less than 3 years old (and aged less than 18 and more than 65), age, sex and citizenship of the household head (identified as the one with the highest income), size and type of the town of residence (metropolitan area, big or peripheral, small). Most importantly, in order to better capture the link between consumption and household well-being, we include the following variables: an indicator for whether the household is home-owner, the imputed rent for homeowner households, the dwelling width (either owned or rented) and the monthly expenditure for in-house food consumption. Despite the different way of recording (through a straight question in SHIW, by aggregation of detailed item in HBS), food consumption displays a similar distribution in both samples and its inclusion among the common variables helps to capture the multivariate relationship between income, food consumption and consumption of all other items.

Table 2 shows the balancing property for the matching variables in the two (unweighted) samples. In general, these variables appear to be highly balanced among the two samples. Some differences only arise for household members' age, with SHIW having a lower incidence of "young" households. This could be due to the high non-response rate in the working-age population, typical of non-obligatory surveys like SHIW.

Figure 2 provides a graphical evidence about the goodness of the matching procedure. In the left panel, we plot the estimated marginal distributions of TME in the original HBS survey and in the matched SHIW data: we observe that the sub-sample of HBS chosen to be paired to SHIW (blue line) closely resembles the original sample (orange line). In the right panel, we provide suggestive evidence that the matching procedure is able to capture almost all of the consumption-to-income relation: in fact, the average amount of food expenditures by income decile is very similar using either the original food expenditures (one of the common variables in the matching procedure) or the food expenditures of the matched households.

A final issue may derive from the fact that households in HBS are interviewed in different periods of the year, therefore some expenditure items may exhibit some seasonality (like food or heating, for example). While the HBS weighting procedure takes this factor into account, obviously SHIW weights do not. In principle we cannot exclude that some households, for whom expenditures patterns can be highly seasonal, are matched with SHIW. However, seasonality patterns in HBS should compensate with each other when households are matched in SHIW (in fact, the distribution of the month of interview of the matched households closely resembles the one of the full HBS sample); moreover, the distribution of food expenditures for the full HBS sample (using the HBS weights, that account for seasonality) is similar to the one of the sub-sample of HBS household matched in SHIW (using SHIW weights), providing indirect evidence that the potential HBS seasonality does not qualitatively affect our results.

The availability of detailed consumption information makes it possible to evaluate absolute poverty and how it changes when RdC is introduced. The absolute poverty lines computed by Istat vary on the basis of three main parameters: (i) macro-area of residence (North, Center, South and Islands); (ii) size and type of the town of residence; (iii) household size and age composition. For each household in SHIW, based on the three parameters above, we obtain the corresponding exact

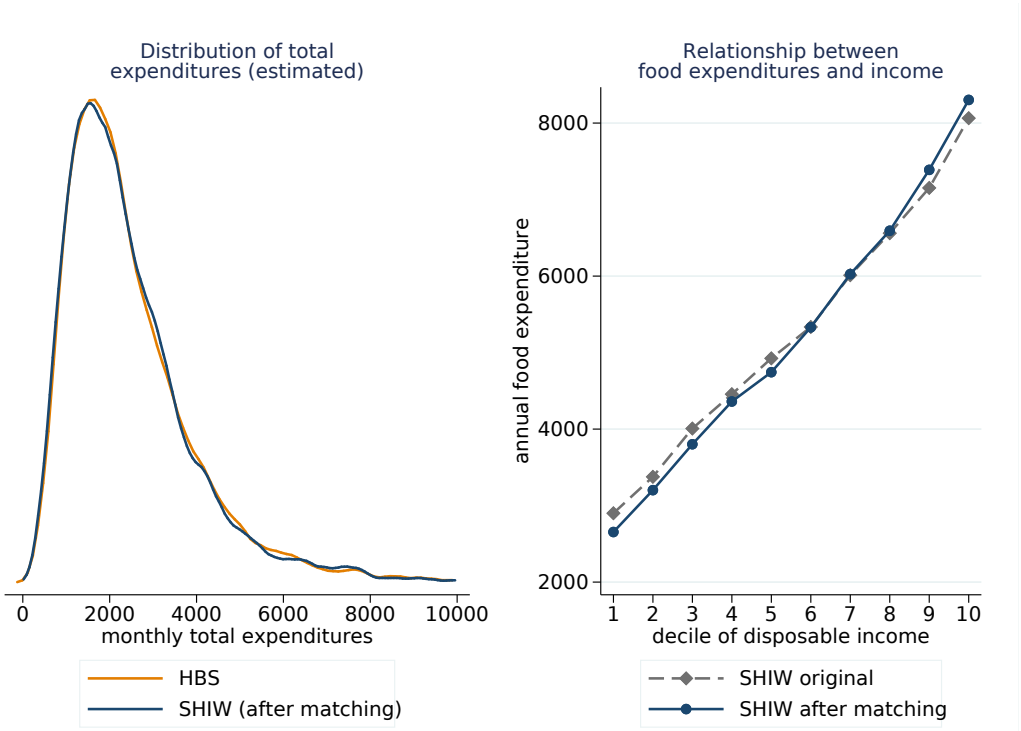
Table 2: Balancing property for the common variables in the matching procedure

Variable	SHIW		HBS	
	mean	sd	mean	sd
Male	0.65	0.48	0.69	0.46
Area: North - West	0.25	0.43	0.23	0.42
Area: North - East	0.20	0.40	0.21	0.41
Area: South	0.21	0.40	0.18	0.39
Area: Center	0.22	0.42	0.30	0.46
Area: Islands	0.12	0.32	0.08	0.27
Municipality size: Metropolitan Area	0.13	0.34	0.12	0.32
Municipality size: big or peripheral	0.45	0.50	0.27	0.44
Municipality size: small	0.42	0.49	0.61	0.49
Family size	2.37	1.25	2.38	1.25
Nr. of members age less than 3	0.03	0.17	0.05	0.21
Nr. of members age less than 18	0.20	0.40	0.24	0.43
Nr. of members age more than 65	0.47	0.50	0.38	0.49
HH's age	60.68	16.13	57.86	16.23
Foreigner	0.04	0.20	0.04	0.20
Home ownership	0.72	0.45	0.74	0.44
House width (squared meters)	102.35	48.05	98.10	39.81
Imputed rent for home-owners (€/month)	450.79	364.89	457.92	314.71
Food expenditures (€/month)	444.50	222.36	449.77	298.93
Total Matching Expenditure	2076.64	1227.69	2157.24	1278.18

absolute poverty line from Istat's website[23]. These, paired with total household consumption expenditure, allow us i) to assess whether households and individuals are in absolute poverty in a given year; ii) how any policy that affect individuals' disposable income would impact on poverty measures (under the assumption that the change in disposable income fully translates in a change in consumption, which can be thought as plausible enough for low-income households). In this work, we

[23]For any given household resident in Italy, absolute poverty lines can be obtained using the online calculator available at https://www.istat.it/it/dati-analisi-e-prodotti/contenuti-interattivi/soglia-di-poverta. For those featured in the SHIW dataset we computed about 660 different poverty lines.

Figure 2: Outcome of the matching procedure



Note: total expenditure refers to an expenditure definition that we harmonized between the two surveys. The information on food expenditures is present both in SHIW and HBS.

use 2014 waves for both SHIW and HBS. Gross incomes and matched consumption aggregates are inflated in order to represent their respective (expected) distributions in 2019[24]. Similarly, fiscal rules are also updated to reflect the legislation in force in the same year.

4 Main results

In this section we report the main results of our analysis. We first describe the socio-demographic characteristics of beneficiaries and quantify the amount of resources

[24]Income levels in 2014 are uprated to 2019 using the nominal GDP growth rate (realized until 2018, our forecast for 2019) while consumption levels are uprated using the household's consumption growth rate observed between the 2014 and 2017 waves of HBS, differentiated by geographical area and expenditure percentile, and extrapolated for 2019. Poverty lines are also uprated using average consumption growth rate observed in HBS between 2014 and 2017 (and extrapolated until 2019).

resulting from benefit receipt. We then evaluate the first-round effects of RdC on a rich set of inequality and poverty measures. Lastly, we investigate how such effects would vary under two hypothetical counterfactual scenarios in which the RdC scheme is differently designed.

4.1 A comparison between RdC and ReI

Drawing on the data sources outlined in Section 3, BIMic simulates RdC and ReI rules to define eligibility and to attribute the correct benefit amounts, under the hypothesis of full compliance in reporting incomes to tax authorities. In order to compare the intended effects of the two measures, at this stage we assume that benefits are fully taken up by eligible households: given the diversity of the two schemes, any assumption on an alternative common take-up rate or on two distinct rates would probably be arbitrary and unrealistic.

Our estimates of the yearly number of beneficiaries and the costs of the two alternative schemes are shown in Table 3. Around 2 million households are potential RdC recipients (5.3 million individuals), almost twice as much as the number of potential ReI recipients (1.1 million households, 3.1 million individuals). The estimated potential total cost of RdC for the Government is €10.3 billion[25], more than three times as high as the ReI cost (€3.3 billion). This would involve an average yearly per-household benefit of €5,181 for RdC (€2,995 for ReI). Given that it is unlikely that all eligible households would end up applying for the benefit, these estimates can be considered upper-bounds for the number of beneficiaries and for the total costs of the measures. Despite the fact that income and wealth eligibility requirements for RdC are less strict than for ReI, some of the potential recipients of the latter are excluded from the former since RdC is more selective as regards foreign nationals, as they now need to have been resident in Italy for ten years instead of two in order to make a claim. According to our estimates, this requirement excludes from RdC about 90,000 households that would have been entitled to the ReI (8% of the total); the adoption of the old, more relaxed, residency requirement to the new scheme would have raised the total RdC expenditure by €0.7 billion.

[25] According to government estimates, which assume partial take-up, total RdC expenditure would be €7.2 billion for 1.2 billion recipient households when fully phased in. We will introduce some take-up assumptions in section 4.2.

Table 3: Simulated beneficiaries and costs of RdC and ReI under full take-up assumption

	RdC	**ReI**
Recipients households (million)	2.0	1.1
Reached households (%)	8.1	4.6
Recipient individuals (million)	5.3	3.1
Total cost (billion €)	10.3	3.3
Average household benefit (€)	5,181	2,995

Note: Source: BIMic simulations based on SHIW - Full take-up assumed.

Table 4 shows the coverage ratio, the total expenditure and the average benefit for both RdC and ReI, by several socio-demographic variables (geographical area, household size and composition, main income source). The dissimilarities between the two schemes are remarkable. Geographical differences appear more pronounced for RdC than for ReI; RdC reaches a higher share of households in the South and devotes to them a higher share of total resources. This is partially due to the higher presence of foreigners in the Centre and North (where they represent roughly half of the individuals in the first decile of the equivalised disposable income distribution) that have to face a more stringent residency requirement within the new scheme. In our simulations, all the households with no income are eligible for ReI while less than 80% is eligible for RdC since the remaining part does not comply with the more stringent residency requirements.

The average benefit is always higher for RdC than for ReI; while for the former it is higher in the North than in the South, the opposite is true for the latter. This is partially due to the fact that the share of recipient households entitled to the additional support related to main residence rent or mortgage expenditure is higher in the North (81%) than in the Centre (49%) and in the South (48%). Moreover, the share of PdC beneficiaries among eligible units, who receive a small transfer (they usually already receive a pension or *assegno sociale*[26]) is higher in the South (17%) than in the North (9%).

[26]The *assegno sociale* is a social assistance benefit dedicated to old age indigent people. In 2019 eligible individuals must be at least 67 years old; the maximum benefit amount is € 5,954 a year for an unmarried person and € 11,908 a year for a couple.

Table 4: Recipient households as a fraction of total households, expenditure and average benefit

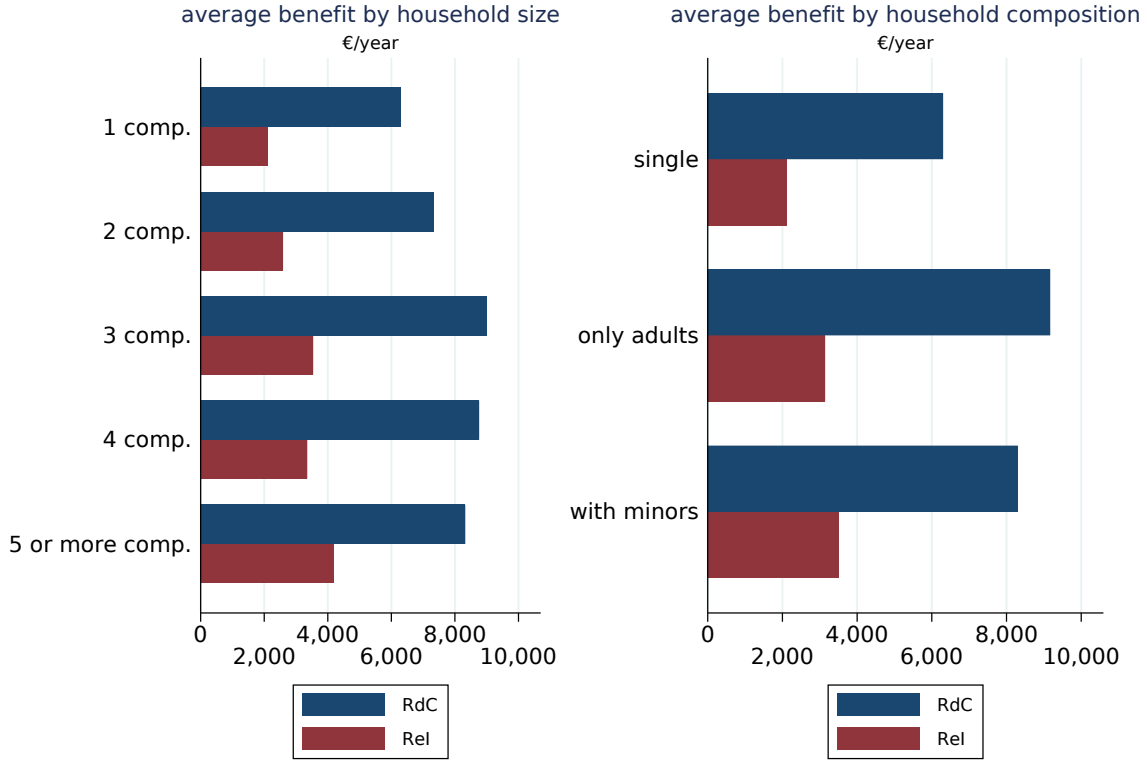
	RdC			ReI		
	reached (%)	Cost (bn.€)	average ben.(€)	reached (%)	Cost (bn.€)	average ben.(€)
Italy	8.1	10.3	5181	4.6	3.3	2995
Area						
North	5.9	4.0	5935	4.2	1.4	2905
Centre	4.6	1.2	5024	3.5	0.5	2735
South&Islands	13.6	5.1	4740	5.8	1.5	3193
Household size						
1	9.5	2.5	3640	5.1	0.8	2087
2	4.5	1.4	4520	2.4	0.4	2589
3	7.8	2.2	5989	4.2	0.7	3555
4	8.6	2.5	6627	5.1	0.8	3379
5 or more	17.4	1.8	6632	11.2	0.7	4130
Household comp.						
single	9.5	2.5	3640	5.1	0.8	2087
only adults	4.2	2.0	4366	1.3	0.4	3084
with minors	13.5	5.8	6848	9.7	2.2	3507
Main income source						
employee	6.4	4.1	5127	3.7	1.2	2677
self-employment	2.3	0.2	5126	0.9	0.0	3197
pension	4.2	0.5	1543	0.2	0.0	1212
other	38.2	4.5	6338	27.0	1.6	3153
no income	78.4	1.0	10655	100.0	0.5	3869

Source: BIMic simulations based on SHIW - Full take-up assumed.

The coverage rate and the average benefits for larger households (and households with minors) are higher in absolute value for RdC, since many more resources are invested with respect to the old scheme, even though they are slightly more generous in relative terms for ReI as a consequence of a different equivalence scale. However, the average figures shown in Table 4 do not fully reflect the expected pat-

tern of a relatively less generous RdC for large households with minors with respect to ReI, due to the fact that the selected units under the two schemes are different. Once we compute the average benefits on the sub-sample of 1 million households eligible for both RdC and ReI (Figure 3) we observe that, in the case of ReI, the average benefit for very large households (5 or more members) is almost twice as large as the average benefit for a single person, while in the case of RdC it is only 30% higher. Moreover, the RdC average benefit is higher for households with only adults than those with minors, while the opposite is true for ReI.

Figure 3: Average benefit by household size and composition on the sub-sample of units eligible for both RdC and ReI



Source: BIMic simulation based on SHIW - Full take-up of benefits assumed

In Table 5 we evaluate the potential redistributive and anti-poverty effect of the two measures, always under the assumption of full benefit take-up. The Gini index of equivalised disposable income[27] decreases by 0.53 percentage points after

[27]To take account of the different households' composition, the OECD-modified equivalence

the introduction of ReI and by one further percentage point after substituting ReI with RdC. In other words, the reduction in inequality induced by RdC is about three times as high as the one induced by ReI, much in line with the total cost for public budget that is three times as large (see Table 3). Qualitatively similar results are obtained looking at other widely used inequality indicators, like the generalized entropy measure or the Atkinson index. Consistent with this, the financial well-being of the sub-population with the lowest incomes improves significantly with the introduction of the RdC (Figure 4), which is also reflected in an improvement of poverty indexes – as will be more deeply discussed in section 4.3.

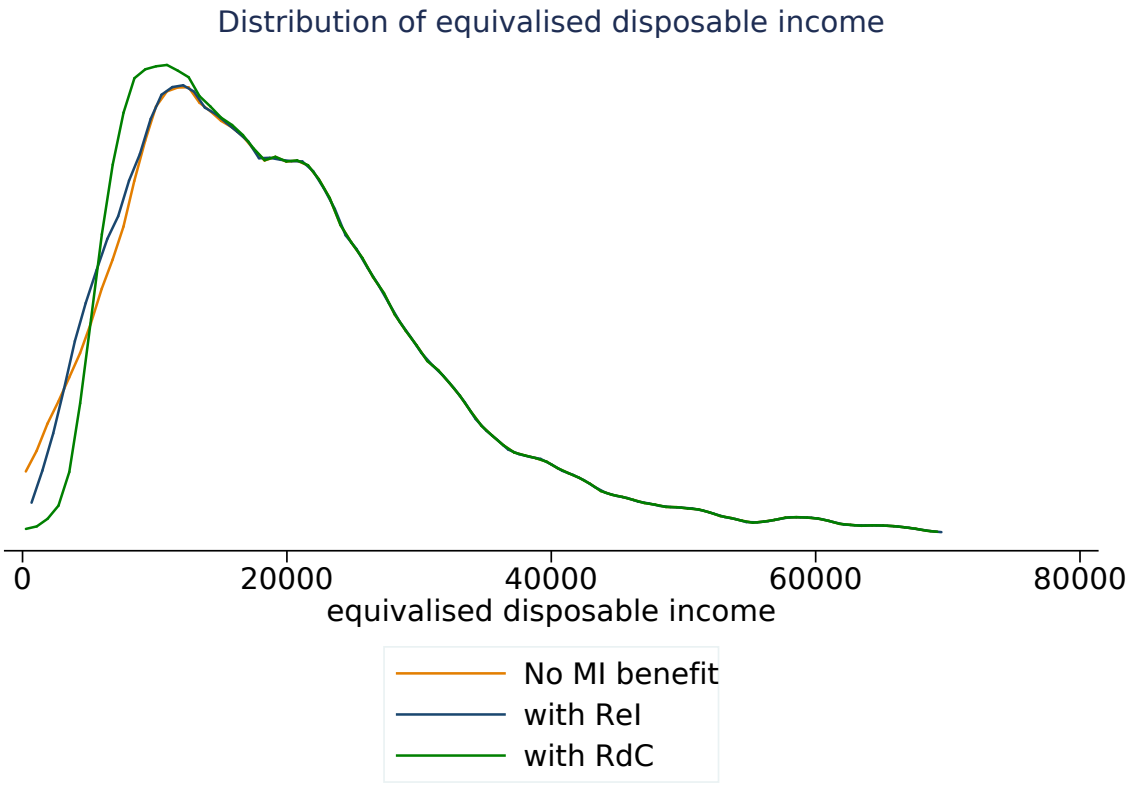
Table 5: Effect of the two MI schemes on inequality and poverty indicators under full take-up assumption

Index (×100)	without MI scheme	with ReI	with RdC
		Income inequality[1]	
Gini	35.33	34.80***	33.80***
Gen. entropy ($\alpha = 1$)	21.27	20.82***	19.55***
Atkinson ($\epsilon = 0.5$)	10.87	10.01***	9.26***
Quantile ratio $p(0.1)/p(0.9)$	18.66	19.01*	20.67***
		Absolute poverty[2]	
Poverty rate	8.5	7.7***	5.5***
Consumption gap ratio	24.0	20.4***	17.1***
Poverty gap ratio	2.0	1.6***	0.9***

Note: * p<0.05 *** p<0.001. Statistical significance is assessed with respect to the previous column.
Source: BIMic simulations based on SHIW - Full take-up assumed.
[1] Income inequality indicators are computed on the equivalised disposable income distribution.
[2] Absolute poverty indicators are based on consumption levels and poverty lines as defined by Istat.

scale is used to calculate equivalised disposable income. This scale assigns a value of 1 to the household head, of 0.5 to each member aged more than 14, and of 0.3 to each member aged 14 or less.

Figure 4: Distribution of equivalised disposable income before and after the introduction of one of the two MI schemes



Source: BIMic simulation based on SHIW. Full take-up of benefits assumed

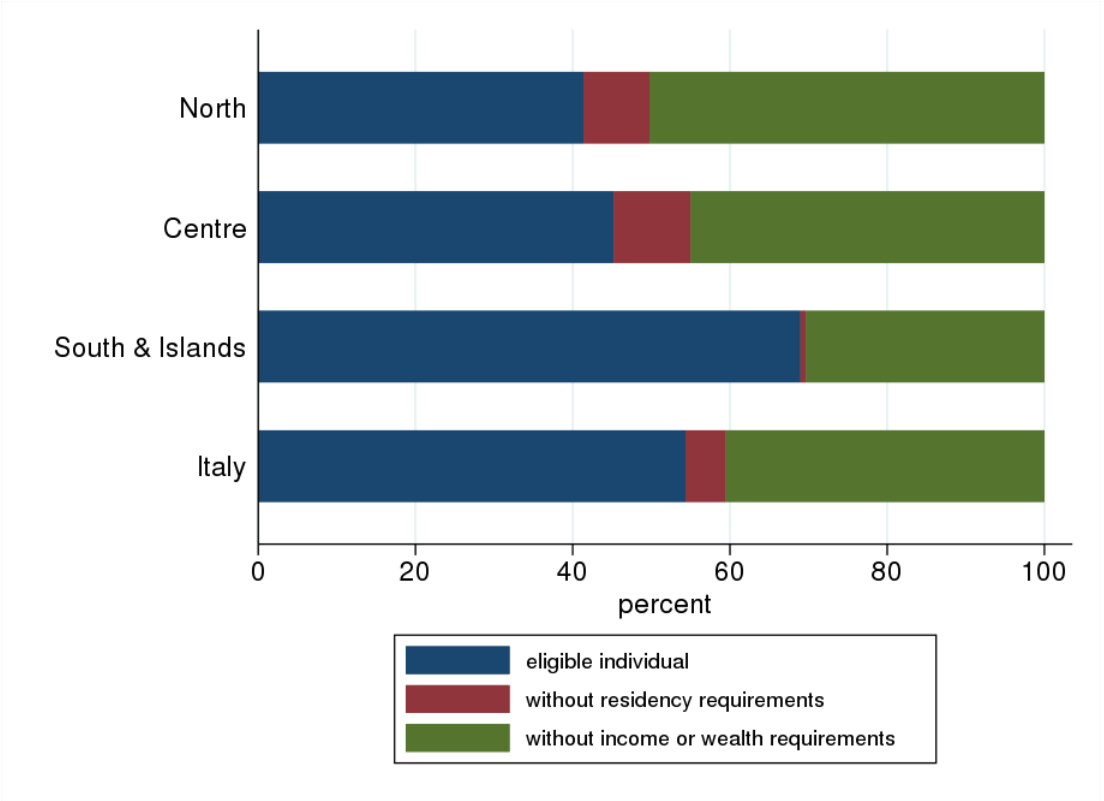
4.2 Coverage of the poor and take-up modelling

RdC appears to be able to benefit individuals at the bottom of the income distribution, but does it benefit those individuals classified as in absolute poverty? To assess whether it is the case or not, we need to switch the object of our analysis from the disposable income distribution to the expenditure distribution, exploiting the consumption information and absolute poverty lines integrated in our dataset as described in Section 3. As a baseline scenario for our analysis, we use 2019 rules for the tax and benefit system, excluding both ReI and RdC. In such a scenario, BIMic estimates 5.1 million individuals in absolute poverty (incidence of 8.5%) cor-

responding to 1.9 million households (incidence of 8%)[28].

The range of those potentially eligible for RdC only partially coincides with that of the individuals classified as absolute poor (Figure 5). Only 50% of poor households (corresponding to 55% of poor individuals) is eligible for the benefit; on the other side only 49% of eligible households (corresponding to 53% of eligible individuals) is classified as absolute poor. Specifically, about 5% of the individuals classified as being in absolute poverty does not comply with residency requirement and about 40% does not meet income and/or wealth requirements.

Figure 5: Individuals in absolute poverty: eligibility and reasons for exclusion from the RdC



Source: BIMic simulation based on SHIW

This unavoidable[29] partial mismatch is explained by the fact that eligibility

[28]For the sake of comparison, these figures are very close to the estimates for 2018 of 5.0 million individuals and 1.8 million households in absolute poverty status (Istat 2019).

[29]Even if there was a consensus that poverty is better measured by household consumption and that anti-poverty measures should be targeted to consumption-poor household, the actual design of such a hypothetical scheme would be prohibitive because of administrative and implementation

for the benefit is conditional on income, wealth and residency requirements, while the classification of absolute poverty is based on the household consumption levels reported in statistical surveys. In fact, while income, wealth and consumption are obviously related, their correlation is well below one: for example, looking at the SHIW data before any manipulation introduced by our model, we observe that only 62% of households in the bottom decile of the equivalised consumption distribution belongs to the bottom decile of the equivalised disposable income distribution. Looking at ISEE[30] (as simulated by BIMic) instead of equivalised income, with the aim of considering also wealth in this cross analysis, the same figure is merely 54%. This partial mismatch is acknownledged even by Istat (2020), which points out that RdC beneficiaries and absolute poor are two sets not perfectly overlapping[31].

There is a marked geographical discrepancy in the degree of mismatch between absolute poverty and eligibility for RdC: in the South, almost 70% of the poor would be beneficiaries; in the North and Centre the figures would be 41 and 45% respectively. At the same time, only 41% of the poor living in a metropolitan area is eligible for the benefit, while the figure is 58% for those living in a peripheral or small municipality. Both the larger numbers of foreigners, and the higher cost of living, which is not reflected in differentiated eligibility requirements (but it is considered in the absolute poverty definition), help to explain the lower coverage of poor individuals in the North, the Centre and in the metropolitan areas.

In any case, it is important to point out that the mismatch between the eligibility to RdC and the poverty condition is somehow related to the binary nature of the absolute poverty definition. Indeed, there might be individuals classified as non-poor who are eligible for the benefit but are not so far from their poverty line. In Figure 6, the orange line represents the distribution of the relative distance (%) from the poverty line of those that are not absolute poor but eligible, while the blue line represents the same distribution for those who are neither poor nor eligible. The

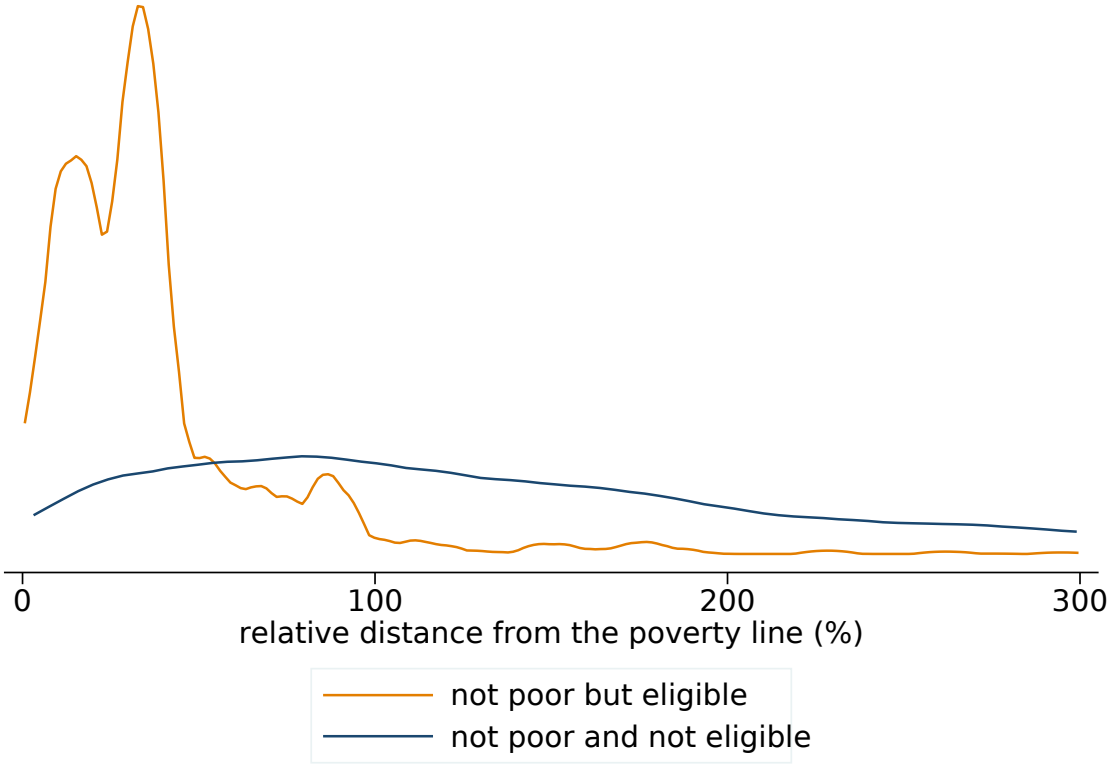
problems.

[30] *Indicatore della Situazione Economica Equivalente* (ISEE, Equivalent Economic Situation Indicator) taking into account both income and wealth. A short description of such indicator is reported in the appendix B.

[31] The not perfect correlation between consumption and income/wealth can be due to many factors. For example, a high propensity to save compresses consumption for given resources, while monetary support by non-cohabitant relatives or access to credit can sustain consumption even with limited means.

first distribution is clearly more concentrated towards the left, while the second one is flatter. The median relative distance from the poverty line for the first group is 33%, while it is 125% for the second group. This evidence confirms that, even though not all of them are classified as absolute poor, RdC potential beneficiaries are still in the lower part of the consumption distribution.

Figure 6: Distribution of the relative distance from the poverty line for not poor individuals: eligible vs not eligible.



Source: BIMic simulation based on SHIW

Given the already mentioned take-up issue, microsimulation analysis with full take-up reported above might eventually overestimate the expected effect of the new minimum income scheme on poverty indicators. Evidence from empirical studies on European countries shows that estimates of take-up rates for means-tested schemes of the type of those discussed here are generally below 60%, suggesting that the phenomenon of non-receipt of benefits by entitled individuals is far from being marginal (Eurofound 2015; Hernanz et al. 2004). Hence, to account for partial

take-up, we conduct some RdC simulations assuming a take-up rate of 65%. This relatively high take-up rate can be considered realistic given the already mentioned generosity of the measure; moreover it roughly equalizes the number of beneficiary households simulated in BIMic with the number reported by official estimates.

We design two partial take-up scenarios with different selection procedures[32]. In the first reduced take-up scenario (henceforth, TK1), we randomly draw 65% of eligible households and assign them the benefit amount computed by BIMic; this procedure completely ignores different incentives to apply related to the households' different states of need. To overcome this limitation, in the second partial take-up scenario (henceforth, TK2) we assume that all units classified as in absolute poverty and eligible for the benefit apply for it. In addition to them, all other eligible units are ranked according to their expected equivalised benefit amount and the first in the ranking are selected among beneficiaries until a total take-up rate of 65% is reached. In this way, we account for financial incentives to apply but we disregard other cultural or informational factors that may play a role in determining the actual take-up rate, like social stigma or lack of knowledge about the measure. Our estimates of the yearly number of beneficiaries and costs of the RdC, under each take-up hypothesis, are shown in Table 6. In these scenarios (last two columns), the number of beneficiary households falls to 1.3 million households and the number of recipient individuals decreases to about 3.3-3.5 million. The total annual cost of the measure falls to €7.0 billion for TK1, while it is higher for TK2 (€7.9 billion) since we have explicitly selected the worse-off households in the range of those eligible[33].

In Table 7 we show how recipient households are distributed among geographical areas, household size and class of benefit amount, under each of our take-up

[32] A similar approach has already been adopted by Baldini et al. (2018) in their analysis on the ReI.

[33] In the following section, we illustrate the effect of RdC on poverty indicators under both the take-up selection procedures, considering TK1 as a conservative scenario and TK2 as the best possible scenario in term of poverty reduction. As a robustness check, we have also designed a different take-up scenario that, following the TK2 procedure, equalizes the TK1 total expenditure. In such a scenario, the take-up rate would fall to 60%, but the extent of poverty reduction would be the same as the one we observe under TK2, because all eligible poor households would still require the benefit. Conversely, the degree of inequality reduction would be roughly in line with TK1.

Table 6: Simulated RdC beneficiaries and costs under full and partial take-up hypotheses

	Full take-up	Take-up 65%	
		TK1	TK2
Recipients households(million)	2.0	1.3	1.3
Recipient individuals(million)	5.3	3.5	3.3
Total cost (billion €)	10.3	7.0	7.9
Average household benefit (€)	5,181	5,369	6,074

Source: BIMic simulations based on SHIW. In scenario TK1, take up is assigned randomly. In scenario TK2, take up is assigned first to all households classified in absolute poverty, and then according to their expected equivalised benefit amount, until a take up rate of 65% is reached.

scenarios (first two columns) and according to the provisional data released by the National Social Security Institute (INPS)[34]. The average benefit is clearly underestimated under TK1 while it is close to the actual one under TK2. In both scenarios, we overestimate the share of recipient households in the North, and underestimate the share of one-person households; in any case, households living in the South and singles are correctly the most represented categories in the pool of beneficiaries. In general, the TK2 scenario more closely resembles the provisional distribution of beneficiary households than the TK1 scenario.

4.3 Impact of RdC on income inequality and poverty measures

In this section we assess the redistributive effects of RdC and its impact on poverty indicators under the hypothesis of partial take-up. We illustrate results under both the take-up selection procedures described in the previous section considering TK1 (random draw) as a conservative scenario and TK2 as the best possible scenario in term of poverty reduction under the 65% take-up assumption. The actual effect of RdC on inequality and poverty indicators might be in between the two different

[34]According to Inps data *"Osservatorio sul Reddito di cittadinanza"* updated to May 2020, almost 2 million household requests have been received: about 1.3 million have been accepted (but about 100 thousands of them have lapsed), almost 500 thousands have been rejected, over 100 thousands are still pending.

Table 7: Distribution of recipient households by area, household size and benefit amount.

	TK1 (%)	TK2 (%)	Actual* (%)
Area			
North	39.2	32.6	23.0
Centre	9.2	12.0	14.9
South&Islands	51.5	55.4	62.1
Household size			
1	31.6	32.7	39.7
2	15.1	17.5	19.9
3	20.2	22.2	16.9
4	19.7	20.6	13.9
5 or more	13.4	6.9	9.6
Benefit amount (€/month)			
<=200	24.7	18.6	16.5
200-400	20.3	15.4	17.0
400-600	24.1	28.0	31.4
600-800	18.0	23.9	19.3
800-1000	9.1	9.2	11.0
1000+	3.8	4.8	4.8
Average benefit (€/month)	447	506	519

Source: BIMic simulations based on SHIW. In scenario TK1, take up is assigned randomly. In scenario TK2, take up is assigned first to all households classified in absolute poverty, and then according to their expected equivalised benefit amount, until a take up rate of 65% is reached.
* Source: Inps - *Osservatorio sul Reddito di Cittadinanza* (updated to May 2020).

proposed estimates.

Table 8 shows the effect of RdC on a rich set of income inequality indicators under the two partial take-up scenarios. The Gini index of equivalised disposable income decreases by 1.0-1.1 percentage points after the introduction of RdC, a smaller (but still noticeable) reduction compared to the 1.5 percentage point fall in the full take-up scenario (see Table 5)[35].

[35]Note that the differences in the inequality indicators between the two partial take-up scenarios are not statistically significant.

Table 8: Redistributive effect of RdC under partial take-up

Index (×100)	without MI scheme	with RdC	
		TK1	TK2
Gini	35.33	34.31***	34.22
Gen. entropy ($\alpha = 1$)	21.27	20.07***	20.00
Atkinson ($\epsilon = 0.5$)	10.87	9.79**	9.62
Quantile ratio $p(0.1)/p(0.9)$	18.66	20.14***	20.35

Note: ** p<0.01 *** p<0.001. Statistical significance is assessed with respect to the previous column.
Source: BIMic simulations based on SHIW - 65% take-up rate assumed. In scenario TK1, take-up is assigned randomly. In scenario TK2, take-up is assigned first to households classified in absolute poverty, and then according to their expected equivalised benefit amount.

To assess the impact on poverty measures, we assume that the monetary transfer associated to RdC fully translates into a higher consumption expenditure, which can be deemed plausible enough for low-income households. We evaluate the potential performance of RdC in reducing absolute poverty by looking at the change induced in three well-known indicators: the poverty rate (PR), the consumption gap ratio (CGR) and the poverty gap ratio (PGR). The PR simply measures the incidence of poverty as a ratio of the whole population. Formally,

$$\text{PR} = \frac{P}{N} = \frac{\sum_{i=1}^{N} \mathbb{1}\{c_i < \bar{z}_i\}}{N},$$

where P and N denote respectively the number of individuals in absolute poverty and the total number of individuals, c_i represents the household consumption for individual i, $\bar{z}_i$ the poverty line (which is household-type specific) and $\mathbb{1}\{\cdot\}$ is the indicator function.

While its simplicity makes it an attractive indicator, the PR does not offer any information about the intensity of poverty. For this reason we complement it with the CGR, defined as the average relative distance from the poverty line among poor individuals. Formally,

$$\text{CGR} = \frac{1}{P} \sum_{i \in \text{poor}} \left(\frac{\bar{z}_i - c_i}{\bar{z}_i} \right),$$

where *poor* represents the subpopulation of individuals in absolute poverty, for whom $(\bar{z}_i - c_i) > 0$ by definition.

As such, the CGR is a measure of the intensity of poverty among the poor population and therefore excludes the non-poor from the calculation. The third indicator, PGR, combines information from the first two, being the relative mean distance separating the whole population from the poverty line, with the non-poor being given a distance of zero[36]. Formally,

$$\text{PGR} = \frac{1}{N}\sum_{i}^{N}\left(\frac{\bar{z}_i - c_i}{\bar{z}_i} \times \mathbb{1}\{c_i < \bar{z}_i\}\right) = \frac{1}{N}\sum_{i\in\text{poor}}\left(\frac{\bar{z}_i - c_i}{\bar{z}_i}\right)$$

As such, PGR measures the intensity of poverty among the whole population; it can also be thought as a measure of the resources needed to eliminate poverty, that is, to lift the consumption of the poor up to the poverty line.

As a reference, before the introduction of RdC we estimate a PR among individuals of 8.5% (see Section 4.2); on average, consumption is 24.0% lower than the poverty line among the poor subpopulation (CGR) and 2.0% lower than the poverty line among the whole population (PGR).

We observe that RdC leads to a reduction in the incidence and intensity of absolute poverty (Table 9). Under the take-up scenario expected to imply the strongest effect in terms of poverty reduction (TK2[37]), the poverty rate (PR) and the intensity of poverty among the poor (CGR) would fall by about one-third (from 8.5 to 5.5% and from 24.0 to 17.1%, respectively). As such, the intensity of poverty among the population (PGR) would be substantially halved (from 2.0 to 0.9%). The CGR might be not particularly suitable in comparing two scenarios, ex-ante and ex-post the introduction of a cash trasfer directed to poor households, since those who cross the poverty line thanks to the cash benefit are excluded from the calculation[38]; for this reason in what follows we will concentrate on the PGR when

[36]The three indicators are evidently connected. It can be shown that the poverty gap ratio equals the product of poverty rate and consumption gap ratio (PGR = PR * CGR); see Baldini and Toso (2009). PR and PGR correspond to FGT0 and FGT1 from Foster et al. (1984).

[37]Note that under the partial TK2 hypothesis, the effect of RdC on poverty indicators is the same as the one we would have obtained under full-take up since we have explicitly assumed that all the eligible poor would apply for the benefit and partial take-up derives from the non-poor eligible individuals.

[38]As a consequence, the intensity of poverty measured by the CGR might even increase after a cash transfer directed to all the poor households; as a matter of fact, the relative reduction measured by the PGR is mathematically equivalent to the relative reduction that would be measured

assessing the reduction in the overall poverty intensity.

Table 9: Effect of RdC on poverty indicators under partial take-up assumption

Poverty indicators (%)	Before RdC	After RdC	
		TK1	TK2
Poverty rate (PR)	8.5	6.6***	5.5***
Consumption gap ratio (CGR)	24.0	19.1***	17.1***
Poverty gap ratio (PGR)	2.0	1.3***	0.9***

Source: BIMic simulations based on SHIW - 65% take-up rate assumed. In scenario TK1, take-up is assigned randomly. In scenario TK2, take-up is assigned first to households classified in absolute poverty, and then according to their expected equivalised benefit amount.
Note: *** p<0.001. Statistical significance is assessed with respect to the previous column.

The effect of RdC on the PR and PGR is largely heterogeneous by geographical area and other individual or household characteristics of beneficiaries (Figure 7). The reduction in both the PR and PGR is stronger in the South and for households with many components (especially if minors).

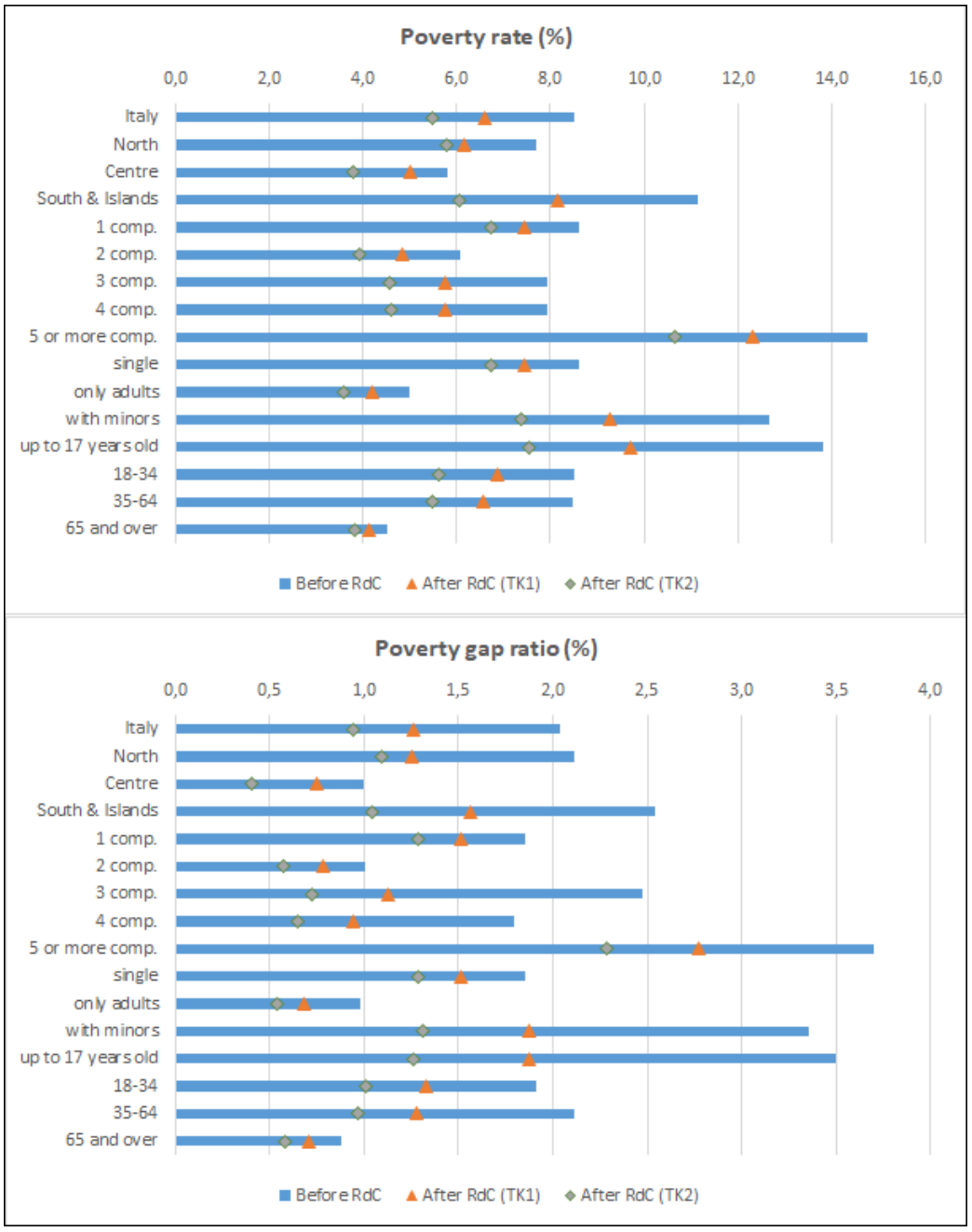
For the individuals living in the South, both pre-RdC incidence and intensity of poverty are markedly higher relative to the rest of the country, despite them enjoying a lower cost of living, as reflected by lower absolute poverty lines. The latter, in turn, paired with geographically undifferentiated benefit amounts entail larger extents of poverty reduction in the South, as indicated by its final poverty indicators, which become comparable with the ones at the national level.

For households with many components and with minors such stronger extent of poverty reduction occurs in spite of the fact that RdC benefits these kind of households relatively less (through the equivalence scale), for the very simple reason that they are associated with both the highest incidence and intensity of absolute poverty. In general, however, RdC appears to reach the goal of reducing the diffusion and intensity of poverty in household categories for which it is stronger, despite differences among groups remain. In particular, in the TK2 scenario, the PR among individuals aged 17 or less falls from 13.8 to 7.6% (over 2 points higher than the overall mean), and the PGR for the same group falls from 3.5 to 1.3% (0.4 points

by a hypothetical CGR computed keeping fixed the population of poor and assigning an intensity zero to individuals crossing the poverty line (i.e. if the PGR is halved, then even this hypothetical CGR would be halved).

higher than the overall mean).

Figure 7: Effect of RdC on poverty indicators under partial take-up assumption



Source: BIMic simulation based on SHIW. 65% take-up rate assumed. In scenario TK1, take-up is assigned randomly. In scenario TK2, take up is assigned first to households classified in absolute poverty, and then according to their expected equivalised benefit amount.

4.4 Hypothetical counterfactual scenarios

In our discussion we have already pointed out two relevant features of RdC: i) the adopted equivalence scale – with respect to the ReI one – is less generous for large households (especially with minors) than for singles; ii) the measure is more favorable to households living in the South and in small municipalities since the cost of living, which is lower in these areas, is not taken into account either in the means-testing or in the benefit amount assignment (while it is considered in the absolute poverty definition through differentiated poverty lines). In this section we highlight these characteristics by implementing two hypothetical counterfactual scenarios in which the benefit provision is modified accordingly, using as the baseline scenario the RdC simulated under the partial take-up assumption TK2.

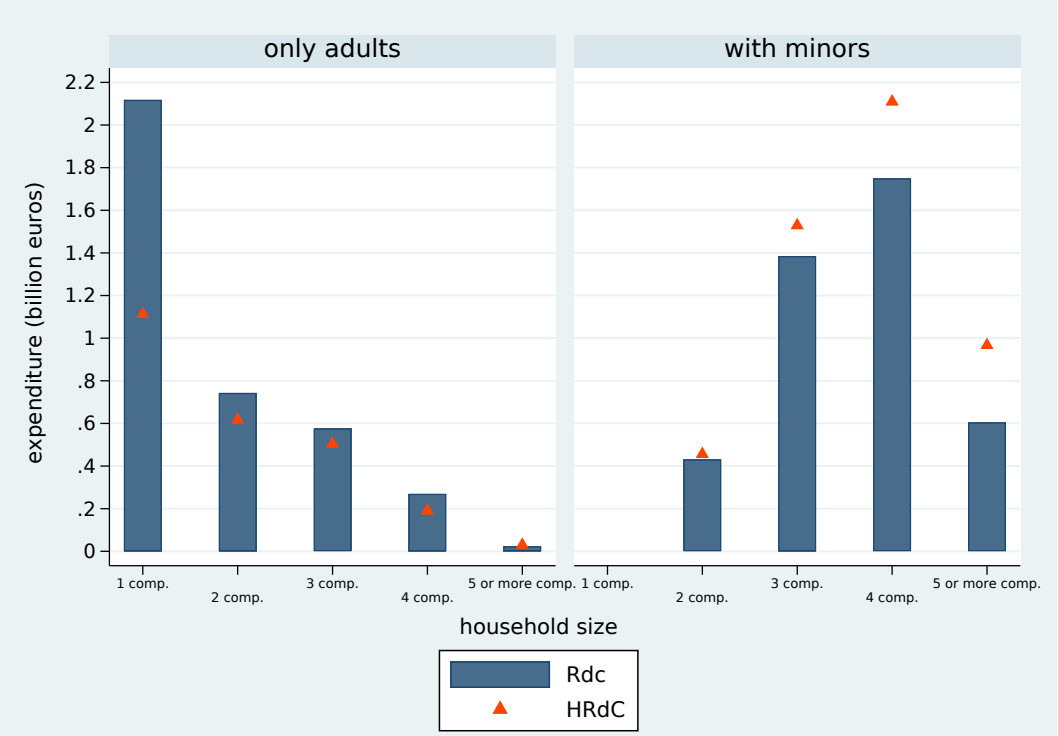
First counterfactual scenario: changing the equivalence scale. Under the assumption of full take-up, had the ReI equivalence scale been applied to RdC, the budgetary cost of the measure would have been raised by 43% (from €10.3 to €14.7 billion). We can discuss a different design of RdC in which the ReI equivalence scale is adopted, thus widening the difference in the monetary benefit between large and single-member households to the level obtained under ReI, while keeping unchanged the budgetary cost of the measure. Under this constraint, the income integration component of RdC and the support for rent or mortgage valid for single claimants should be reduced by about 17% (i.e. from a maximum benefit amount of €9,360 to €7,740 per year).

With this new hypothetical RdC (henceforth, HRdC) and under the partial take-up assumption TK2 already described in Section 4.2 (i.e. with total cost of about €7.9 billion), budgetary resources would be redistributed among households with different compositions, mainly addressing resources to minors (Figure 8). Households without minors would be worse-off under HRdC, as the measure would funnel to them a smaller amount of resources; conversely, households with minors would be better-off under HRdC.

With HRdC, the Gini Index of equivalised disposable income would only slightly decrease with respect to the baseline RdC scenario (from 34.22 to 34.18; the difference is not statistically significant). Both the incidence and the intensity of poverty at the national level would be substantially the same in the two scenarios, neverthe-

less we would observe a decrease in both the PR (from 7.6 to 7.2%) and the PGR (from 1.3 to 1.1%) among individuals aged 17 or less.

Figure 8: Distribution of total benefit expenditure among different household typologies. RdC versus HRdC conterfactual scenario



Source: BIMic simulation based on SHIW. HRdC is a hypothetical budget-neutral scenario in which the ReI equivalence scale is adopted for RdC, and the benefit for single person households is reduced. TK2 hypothesis is assumed with a take-up rate of 65%. Take-up is assigned first to households classified in absolute poverty, and then according to their expected equivalised benefit amount.

Second counterfactual scenario: indexing to the cost of living. We note that, while the share of households in absolute poverty who live in the South is 46%, the share of beneficiary households that we estimate in this area (under the partial take-up assumption TK2) is equal to 55% of the total. This difference mainly reflects the fact that the nominal thresholds for accessing the measure, homogeneous on the national territory, are more restrictive in real terms for the households living

in the Center and in the North.[39] Therefore, we discuss a second hypothetical conterfactual scenario in which we design an indexed RdC (henceforth, IRdC) taking into account the different cost of living along two dimensions: the geographical area and the size of residence municipality (metropolitan, big or peripheral, small)[40]. In this scenario, we adopt the poverty lines for singles in order to index the benefit (and the income test) for the cost of living, while keeping unaltered the budgetary cost of the measure. Under this constraints, the maximum benefit amount for households (with the same composition) living in a metropolitan city of the North would be 48% higher than the one for households living in a small town of the South.

Under the partial take-up assumption TK2, the share of beneficiary households living in the South would drop from 55% to 47% from the baseline RdC to the counterfactual IRdC, while the share of those living in the North would rise from 33% to 41%. Table 10 shows the expenditure levels by geographical area and type of municipality in the baseline RdC (top part), counterfactual IRdC (middle part) and the percentage change between the two scenarios (bottom part)[41]. We observe that IRdC implies a substantial flow of resources from the South to the North of Italy (households living in the former receive €4.0 billion from RdC and €2.8 billion from IRdC, while the amount for those living in the latter increases from €2.9 billion to €3.9 billion) and from small and peripheral municipalities to metropolitan areas (for the latter the amount increases from €1.4 billion to €1.9 billion). Looking more closely, we find that in the South the relative decrease of resources is substantially similar across municipality size (ranging from 37.9% in small municipalities to 26.5% in metropolitan areas), while in the North the increase of resources is mainly concentrated in metropolitan areas (104.5%).

The geographical discrepancy in the degree of coverage of poor individuals would be mitigated with respect to the baseline RdC: while remaining unaltered at the national level, the coverage rate of the poor would decline in the South (from 69% to 63%) and would rise in the North (from 41% to 48%) and in the Centre

[39]This feature was also present for ReI.

[40]To have an idea of the differences in cost of living in Italy, one can consider that, according to Istat, the poverty line in 2018 for a single aged 18-59 is €834.66 if she lives in a metropolitan city of the North, while it is €563.77 if she lives in a small town of the South.

[41]The two scenarios are not perfectly budget-neutral since IRdC costs €0.1 billion less than RdC. This relatively small difference is uniquely due to our take-up simulation since the two measures would have the exact same cost under full take-up.

(from 45% to 46%), but some differences would still persist. This is partially due to the fact that the share of poor individuals excluded for not meeting the long-term residency requirements is higher in the North (8%) and in the Centre (10%) than in the South (1%).

Under IRdC, the Gini Index of equivalised disposable income and both incidence and intensity of absolute poverty would be roughly in line with the one observed under the baseline RdC. However, we would observe a decrease in the incidence and intensity of absolute poverty among individuals living in the North (PR from 5.8 to 5.4; PGR from 1.1 to 1.0), and an increase in the same indicators for individuals living in the South (PR from 6.1 to 6.9; PGR from 1.0 to 1.3). It should be noted, however, that commonly used measures of cost of living, as those implicitly adopted by Istat for the absolute poverty estimates, may fail from accounting for the uneven provision of public goods between territories both in qualitative and quantitative terms (Brandolini and Torrini 2010; Deaton and Dupriez 2011; Baldini et al. 2015; D'Alessio 2018), which can justify an uneven distribution of anti-poverty benefits. For example, D'Alessio (2018) shows that, controlling for nominal income and socio-demographic characteristics, the subjective well being of individuals living in the South is lower than those in the North; in fact, the gap in well being between South and North goes beyond income differentials and might reflect a worse health status in the former, possibly due to a lower availability or quality of public health services (Cannari and D'Alessio 2016). Moreover, price levels and public goods availability might vary substantially even within the same territorial entity to which Istat imputes a uniform cost of living; for example, house prices vary largely even within cities (Agenzia delle Entrate 2019).

Table 10: Expenditures in the baseline RdC and in the counterfactual IRdC, by geographical areas and types of municipality

Area \Type	Metropolitan area	Big or peripheral	Small	Total
Baseline RdC (billion euros)				
North	0.6	1.2	1.2	2.9
Centre	0.2	0.5	0.4	1.0
South & Islands	0.6	2.1	1.3	4.0
Total	1.4	3.7	2.8	7.9
Counterfactual IRdC (billion euros)				
North	1.2	1.4	1.4	3.9
Centre	0.2	0.5	0.4	1.1
South & Islands	0.5	1.5	0.8	2.8
Total	1.9	3.4	2.5	7.8
Relative change from RdC to IRdC (%)				
North	104.5	20.4	16.6	35.6
Centre	47.8	13.7	3.7	15.5
South & Islands	-26.5	-28.0	-37.9	-30.9
Total	37.1	-7.7	-9.9	-0.7

Source: BIMic simulations based on SHIW - IRdC is a hypothetical budget-neutral scenario in which RdC is indexed for the cost of living. TK2 hypothesis is assumed with a take-up rate of 65%. Take-up is assigned first to households classified in absolute poverty, and then according to their expected equivalised benefit amount.

Target efficiency comparison among counterfactual scenarios. In order to compare our budget-neutral RdC counterfactual scenarios, we compute two indicators (Baldini and Toso 2009) used in the literature to measure the efficiency and the ability of the programs to reduce poverty:

1. Poverty Reduction Efficiency (PRE), which is the share of total resources that is directed to lifting the poor up to the poverty line (without exceeding it). It does not include the resources directed to non-poor households as well as the resources directed to poor households but in excess with respect to those necessary for them to reach the poverty line;

2. Poverty Gap Efficiency (PGE), which measures the proportional reduction of the overall poverty gap due to the effect of the program.

Table 11: Target efficiency comparison among different RdC counterfactual scenarios

Efficiency indicators (%)	baseline RdC	HRdC	IRdC
Poverty Reduction Efficiency (PRE)	39.2	42.1***	39.4*
Poverty Gap Efficiency (PGE)	26.5	28.9***	25.6*

Source: BIMic simulations based on SHIW - HRdC is a hypothetical budget-neutral scenario in which ReI equivalence scale is adopted for RdC, and the benefit for single person households is reduced. IRdC is a hypothetical budget-neutral scenario in which RdC is indexed for the cost of living. TK2 hypothesis is assumed with a take-up rate of 65%. Take-up is assigned first to households classified in absolute poverty, and then according to their expected equivalised benefit amount.
Note: * $p<0.05$ *** $p<0.001$. Statistical significance is assessed with respect to the baseline RdC scenario.

Looking at the PRE we observe that in all our scenarios only about 40% of resources is strictly directed to lifting the poor to the poverty line while 60% could be more efficiently addressed to other poor households. This is a direct consequence of the partial overlap among the two groups of RdC beneficiaries and of poor households already discussed in section 4.2. Looking at our alternative scenarios, compared with the baseline RdC, the PRE is higher under HRdC (42.1% vs 39.2%) while it is almost the same under IRdC (39.4%): the efficiency of the program could be increased by adopting a different equivalence scale. At the same time, also the PGE, our measure of the ability of the program to reduce the poverty gap, is higher under HRdC (28.9%) than under IRdC (25.6%) or the baseline RdC (26.5%). Overall we could conclude that changing the equivalence scale in order to address more resources to large households with minors would increase the efficiency of the program, while indexing for the cost of living (and shifting resources from the South to the North as a consequence) would not have any relevant effect on the aforementioned indicators.

5 Conclusions

Anti-poverty policies in Italy have been reinforced in the last few years, devoting to them an increasing amount of resources. The poor performance of production and

income in Italy in the last decade, paired with a high and increasing incidence of public debt (expected to sharply rise in 2020 due to the Covid-19 emergency), calls for an additional attention to the efficacy of public spending.

Along with the activation of out-of-the-labour-market individuals, the policy objective of RdC is to decrease poverty. The "absolute poverty" indicators published by Istat make them a natural benchmark to assess the ability of RdC to achieve its objective. However, such assessment should take into account that while the eligibility for means-tested benefits like RdC is conditional on income and wealth requirements, the definition of absolute poverty is based on household consumption, leading to an unavoidable mismatch between these two subpopulations. For example, we find that about one half of the potential RdC beneficiaries are not poor in absolute terms and about one half of the absolute poor are not potential beneficiaries.

Notwithstanding this mismatch, the effects of RdC is quite significant in terms of reduction in inequality and poverty, especially among individuals aged 17 or less. In particular, assuming a number of beneficiaries in line with the official estimates and a full-year coverage, the intensity of absolute poverty among the whole population would be substantially halved. This is not surprising, given the relevant amount of resources that have been devoted to its implementation.

We document how the stringent eligibility requirement about long-term residency excludes some foreign nationals that are classified in absolute poverty from accessing the benefit. This mitigates the effectiveness of the new policy in reducing the poverty indicators since, especially in the North and the Centre, these individuals represent a high share of the neediest population.

Finally we discuss two alternative budget-neutral scenarios: the first one is aimed at redistributing resources in favor of households with minors, by realigning the equivalence scale to the one previously adopted for ReI (which was relatively more generous towards larger households); the second one takes into account the cost of living, that is higher in the North and Centre with respect to the South and in the metropolitan areas with respect to the peripheral areas and small municipalities. In the first counterfactual scenario, while the overall poverty rates would be basically unaffected, the target efficiency of the measure would be improved and the incidence and intensity of poverty among minors would be further reduced. Such feature

deserves special attention since minors cannot be held responsible for their economic status and its long-term implications. In the second counterfactual scenario the geographical discrepancy in the degree of coverage of poor individuals would be mitigated (since the coverage rate of the poor would decline in the South and would rise in the North and in the Centre) leading to a territorial distribution of beneficiaries more in line with the one of poor households, but without substantially improving the target efficiency; it should also be noted that this kind of indexation might underestimate the disadvantage in terms of well being in some areas due to differentials in quality and quantity of public goods provision.

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A Appendix: a detailed description of RdC

The RdC scheme is articulated in two parts: a means-tested cash transfer (dispensed on a monthly basis through an electronic card) and a personalized activation program which aims at fostering the social and/or work inclusion of household members based on their specific needs.

RdC is potentially time unlimited since eligible households receive the benefit for 18 months; nevertheless, if one month after the end of the program eligibility conditions persist, they can apply for a renewal lasting an additional 18 months and there is no explicit limit on the number of possible renewals [42].

The first economic access condition to RdC is based on *Indicatore della Situazione Economica Equivalente*(ISEE, Equivalent Economic Situation Indicator)[43]: eligible households must have an ISEE up to €9,360 (the limit was €6,000 for ReI). Moreover, the value of households' real estate (excluding the main residence dwelling) must not exceed €30,000 and that of financial assets must not be greater than €6,000 for a single person; such limit is increased for larger households and in the presence of a disabled person (up to €10,000).

The main access condition to RdC is based on an income test: household income must be lower than €6,000 (€7,560 for PdC, €9,360 for household living in rented accommodation) where this threshold is multiplied by an equivalence scale parameter[44] in order to account for the household size and composition. The income condition appears to be more relaxed with respect to that of ReI, which was based on the ISEE sub-component, *Indicatore della Situazione Reddituale Equivalente* (ISRE, Equivalent Income Situation Indicator) that had to be lower than €2,250.

[42] On the contrary, ReI was time-limited (for up to 18 months, plus up to 12 months after a 6 months break).

[43] The ISEE indicator is derived by summing equivalised income (ISRE) and 20% of equivalised wealth (ISPE). The equivalence scale considers of a value of 1 for a one-person household, 1.57 for two members, 2.04 for three members, 2.46 for four members, 2.85 for five members and it is further increased by 0.35 for each additional member. Additional increases are provided for the presence of kids and disabled people.

[44] The equivalence scale for the RdC assigns a value of 1 to the first member and is increased by 0.4 for each additional adult and by 0.2 for each minor in the household, up to a maximum of 2.1 (2.2 if there is a disabled person).

Finally, further requirements regard citizenship and residency[45] and the non-possession of certain durable goods[46]. The presence of household members who are recipients of unemployment insurance or any other allowance for involuntary unemployment is compatible with RdC (it was not the case for ReI).

The yearly cash transfer provided by RdC consists of two parts:

1. an integration of the household income (including other means-tested transfers) to a given minimum income level, which depends on the household size and composition. Such minimum level is obtained by multiplying €6,000 (€7,560 for PdC) by the same equivalence scale adopted for the income test;
2. a support for main residence rent or mortgage expenditure (if there is any) up to €3,360 (€1,800 for mortgages or in case of PdC).

In any case, the transfer to an eligible household cannot be lower than €480. As such, the amount received by each eligible household can be described by the equations below:

$$RdC_{income} = max\left\{0, (T_Y \times eq_s) - B_{MT} - Y\right\} \tag{1}$$

$$RdC_{housing} = min\left\{H, T_H\right\} \tag{2}$$

$$TotalRdC = max\left\{480, (RdC_{income} + RdC_{housing})\right\} \tag{3}$$

where T_Y is the minimum income level for a single person household, eq_s is the household's equivalence scale parameter, B_{MT} indicates other means-tested cash benefits, Y is the household annual income, H is the housing expenditure for rent or mortgage, T_H is the maximum cash transfer support for housing expenditure. Y is computed as the sum of all household members' incomes. It is also worth noticing the different treatment of means- versus non-means-tested benefits in the calculation of RdC. While means-tested benefits (included in B_{MT}) reduce directly the amount of RdC, non-means-tested benefit (e.g. disability pensions) do not affect the size of RdC given that they are included neither in Y nor in B_{MT}. ReI was

[45]RdC can be claimed by: Italian or EU citizens (and non-citizen relatives with the right to reside); non-EU citizens with long-term residency permit; holders of asylum permits or subsidiary protection who have been residing in Italy for at least 10 years. The last requirement was only 2 years for ReI.

[46]Eligible households must not possess neither vehicles registered less than 24 months before the application nor pleasure boats or crafts.

similarly computed as the difference between a given threshold (€2,250 multiplied by an equivalence scale[47]) and the disposable income of the household (i.e. the ISRE expressed in non-equivalent terms) where two main deductions were considered: the rent paid and 20% of earnings[48].

To avoid losing entitlement, the law prescribes that certain members of RdC beneficiary households must undertake, depending on the characteristics of household members with regard to work and social inclusion, actions among the following: i) sign a "Work pact" with the Public Employment Services and then accept at least one out of three "suitable" job offers in the first 18 months; ii) be available to take part up to 8 hours a week in "socially useful activities" identified by municipalities; iii) sign a "Social Inclusion Pact" with municipal social services, if the beneficiary is concerned by "multi-dimensional" poverty and social exclusion.

Overall, the new scheme appears to be more generous than the old one, although differences are mitigated for large households with minors as a consequence of a relatively less generous equivalence scale.

[47]The scale for the ReI considered of a value of 1 for a one-person household, 1.57 for two members, 2.04 for three members, 2.46 for four members, 2.85 for five members and 3.20 for six or more members.

[48]Rents could be deducted by up to €7,000 plus €500 for each child after the second. Earnings could be deducted by up to €3,000 for each earner.

B Appendix: the tax-benefit microsimulation model BIMic

BIMic is a static and non-behavioral model able to replicate the most salient features of the Italian tax-benefit system, such as social security contributions, the personal income tax, taxes on real and financial assets, indirect taxes (i.e. VAT), and means-tested benefits. The model is periodically updated to reflect policy changes and modifications in the sample data[49].

BIMic is based on the Survey of Household Income and Wealth (Bank of Italy 2015), which is conducted by Banca d'Italia every two years on a sample of about 8,000 households representative of the Italian population. The survey contains a wide and detailed array of information on socio-demographic characteristics, labor market status, income and wealth. Incomes are reported at the individual level, net of taxes and social security contributions. Within BIMic, gross incomes (i.e. before taxes and transfers) are recovered from net incomes through an iterative procedure, which replicates recursively fiscal rules in force in the base year and a set of individual-specific characteristics (e.g. type of incomes earned, family composition, etc.; see Curci et al. (2017)). Wealth information is collected at the household level and pertains to both real (real estate, business properties, valuables) and financial assets (saving instruments): they represent a peculiar advantage of BIMic with respect to other microsimulation models based on the other similar survey available for Italy, namely IT-SILC, the national component of EU-SILC (EU Statistics on Income and Living Conditions).

Both incomes and wealth are exploited within BIMic to simulate the ISEE indicator, along with its corresponding sub-components: *Indicatore della Situazione Reddituale Equivalente* (ISRE, Equivalent Income Situation Indicator) and *Indicatore della Situazione Patrimoniale Equivalente* (ISPE, Equivalent Wealth Situation Indicator). These indicators are often used to determine eligibility for several means-tested benefits featured in the Italian social protection system.

[49]For a detailed presentation of the model and some illustrations of its possible policy analysis applications, see Curci et al. (2017).

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