The concentration of personal wealth in Italy 1995-2016

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Abstract

In this paper we study the distribution and concentration of personal wealth in Italy between 1995 and 2016 using a novel source of data on the full record of inheritance tax files, covering up to 63% of total deceased. Estimates of the shares accrued to top and bottom wealth groups, as well as other inequality indicators, are derived using the estate multiplier method applied to wealth left at death. The benchmark series of wealth concentration is derived to be fully consistent with the National Accounts and suggests that richest 1% of Italian adults increased their share of total personal wealth from 17% to 24% approximately from 1995 to 2016. Differently from what can be estimated from the national survey data, the results suggest strong rise in wealth concentration since the mid 1990s. Whereas the level of Italian wealth concentration is in line with other European countries the time trend is more in line with the US experience. A range of alternative series of wealth concentration helps better understanding the role of adjustments and imputations in driving the most important findings and allows for better historical comparability of the estimates.

Keywords: Wealth inequality, top wealth shares, distributional national accounts, inheritance tax

JEL Codes: D3, H2, N3

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1 Introduction

The stock of private wealth is equivalent to seven years of national income in Italy today, making it one the countries with the highest wealth-to-income ratio in the world.[1] Yet, very little is known about how wealth is distributed. This paper provides novel estimates of the distribution of personal wealth in Italy, with a particular focus on high-end wealth groups. We contribute to a growing body of literature focusing on estimates of wealth distribution that "are essential inputs to economic analysis of the distribution of capital and policy analysis of capital taxation" (Smith et al., 2019).

We make use of a newly assembled micro-data set from the administration of the inheritance tax, that provides direct information of the wealth holding of decedents from 1995 to 2016, and that has never been exploited so far. In conjunction with detailed mortality rates, we estimate the wealth of the living population through the application of the mortality multiplier method. This source is further complemented with the national survey on household income and wealth (to estimate the wealth of the population not represented in the inheritance tax records), and the national balance sheet on real and financial assets (to impute tax exempt and potentially under-reported assets), allowing us to fully distribute the total personal wealth from the balance sheets of the national accounts, instead of focusing on the top only. These findings are comparable to recent work for the US, France, and Spain (Batty et al., 2019, Garbinti et al., 2016, Martínez-Toledano, 2017, Saez and Zucman, 2016, Smith et al., 2019) which follow the Distributional National Accounts-DINA framework (Alvaredo et al., 2016).

Even if other sources and methods can be used to derive direct or indirect information about wealth holdings, few of them are easily applicable to the Italian case.[2] First, Italy does not have an annual and comprehensive wealth tax besides the property tax. Second, the income tax on most investment incomes is withheld at the source, and distributional information is not readily available, making the application of the capitalization method not possible at present.

This work provides the first set of comprehensive estimates of wealth concentration in Italy that complement those from the Survey of Households on Income and Wealth (SHIW) administered by the Bank of Italy since late 1980s. The use of different data sources for the study of wealth distribution is essential as every source is open to challenge and has different advantages and shortcomings. Moreover, the use of household surveys is deemed to be less suited to capture the wealth holdings at the very top for a variety of reasons, namely the lack of over-sampling of wealthy households, and differential non-response and under-reporting rates across wealth classes.

On the contrary, the use of inheritance tax data, as we show, can substantially increase the probability of better covering the very top, despite the usual claims of elusion and evasion

[1] See wid.world.

[2] There are at least six potential sources of evidence to study the distribution of personal wealth: (i) administrative data on the wealth of the living derived from annual wealth taxes; (ii) administrative data on investment income, capitalized to yield estimates of the underlying wealth; (iii) administrative data on individual estates at death, multiplied-up to yield estimates of the wealth of the living; (iv) household surveys; (v) lists of large wealth-holders, such as the Forbes list; (vi) population census.

as distinguishing traits of the Italian tax system. This is the result of the combination of the very high home-ownership rate, with a key administrative feature of the tax, which is strictly connected to the up-keeping of the real estate cadastral register: all inheritances involving the transfer of real estate property are obliged to file a return, even when no tax is due. As a consequence, the administrative data provides the information on the assets of more than a half of decedents.

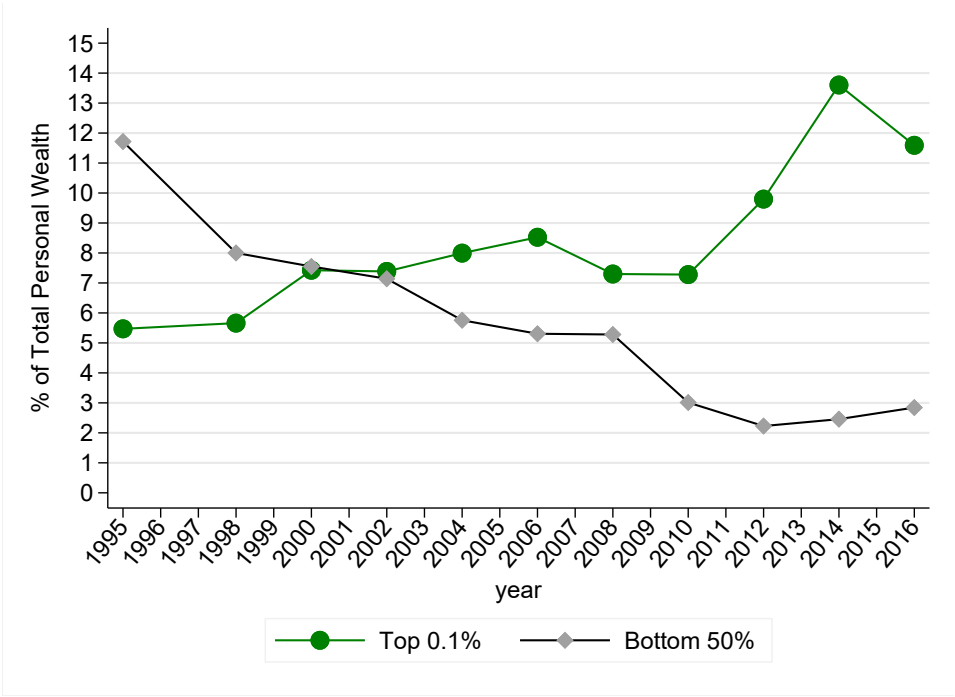
Indeed, our estimates suggest, even without applying adjustments for under-reporting, that the wealth holding in the upper tail is substantially above what household surveys capture, showing higher level of wealth concentration and a different trend. This is also true once the household-survey based calculations reflect the same unit of observation and similar wealth definition employed in tax-based data. According to the SHIW, the evolution of the share accruing to the richest 1% of adults has remained roughly unchanged between 1995 and 2016, at around 14%. Our estimates, instead, suggest that the share of the top 1% (half a million individuals) increased from 17% in 1995 to 24% in 2016. The share of wealth accruing in the hands of the richest 5000 adults (the top 0.01%) almost tripled, increasing from 3 to 8.5%. The latter figures account for an estimate of unreported financial assets in off-shore accounts after imputation above the 99th percentile (as in Alstadsæter et al., 2019). According to our numbers, financial securities and deposits held by Italians in off-shore accounts represent 2-3% of total personal wealth, with no apparent trend in the period under observation; it therefore has a level effect on the estimates of top wealth shares, keeping their trend relatively unchanged.

As a preview of the main results, figure 1 shows a stark inversion of fortunes between the the bottom 50% of the adult population and the richest 0.1%. The poorest 50% of the adult population controlled around 11% of total wealth in 1995; more recently such share has dropped to 3%. This corresponds to a 80% drop in average net wealth (from approximately €26 thousand to 6 thousand at 2016 prices). Interestingly, using the household survey data (modified to match similar wealth concept and unit of analysis) we estimate a very similar share in total net wealth held by the bottom 50% in recent years but we do not capture a similar decline in their relative share over time. Instead, according to SHIW data the bottom 50% lost only 1 percentage point as a share of total net wealth since 1995 and 4 percentage points since 1989. The dynamics of wealth share for the bottom 50% can be compared that of the richest 0.1% adults who saw an almost threefold increase in their real average net wealth (from approximately €8 million to €21 million), almost doubling their share in total net wealth over the same period: from 60 to approximately 120 times their proportionate share from 1995 to 2016.

The levels of concentration observed in Italy appear to be in line with other European countries for which comparable estimates are available, such as France and Spain (Garbinti et al., 2016, Martínez-Toledano, 2017). However, its time evolution appears to be more in line with that found in the US (Batty et al., 2019, Saez and Zucman, 2016, Smith et al., 2019).

The data also allows to estimate the growing incidence of wealth transfers flows in our economy. Bequests and *inter vivos* gifts as a share of national income almost doubled between 1995 and 2016, going from around 7% to 14%.

Figure 1: Top 0.1 % of personal wealth vs Bottom 50%



The use of tax data, however, does not come without costs, and several adjustments must be applied. First, the valuation of real estate has to be adjusted to bring real estate cadastral values reported for taxation purposes in line with market prices. Second, the distribution of decedents wealth holders needs to be reshaped into a distribution of identified living wealth holders through the application of the mortality multiplier method (in a robustness exercise the heterogeneity of mortality rates by educational attainment is also used to proxy the negative association between wealth and mortality rates). Third, allowance for the wealth of unidentified population in the tax data is estimated through household survey data. This is needed to estimate wealth concentration without using external estimates of total wealth and to systematically assess the distribution of wealth across the full population. Fourth, not all assets are taxable and their reporting may not be compulsory; this – requiring full imputation of their value – may be due to under-reporting, differences in valuation, tax-avoidance and evasion, as well as non-reporting due to lack of fiscal incentives to do so (e.g. filling in detail the complex tax form on the nature and composition of the estate might be regarded as an unnecessary burden if the resulting inheritance shares are below the taxable threshold).[3]

The benchmark approach adopted here is to distribute in full the balance sheet of the household sector in the national accounts. This is based, not on the assumption that the balance sheet gives the correct numbers (as discussed in section 2), but that it provides a reasonable indicator of the development over time, as well as the possibility of cross-country comparison of aggregates. This methodological decision, in line with the DINA framework, comes at the cost of imputing the wealth not observed in the tax records and the household survey. As this

[3]In a few cases the tax administration suggests to report the assets (e.g. government bonds) despite their total tax-exemption status, resulting in a partial adjustment.

involves a number of potentially controversial decisions, we also provide series based on tax data before imputations. This allows putting the benchmark series into the context of a wider range of values, representing different methods of estimation used in the literature. On the one hand, this is useful to convince readers (as well as ourselves) that the series of imputations, albeit important, do not drive the key findings about the evolution of wealth concentration, at least in the case of Italy. On the other hand, the exercise also appears crucial to compare, in a more consistent fashion, modern estimates to existing historical series, for Italy itseld and other countries, that are not up-scaled to the national accounts (e.g. GB2, Alvaredo and Saez, 2009, Alvaredo et al., 2018, Roine and Waldenström, 2015).

Our series are also triangulated with external evidence from the global Forbes list of large wealth-holders. Using Forbes data we can track the evolution of the share in total personal wealth of the richest 5 individuals since 1988 or the 10 richest individuals since 2001. The evolution of wealth concentration given by Forbes is consistent with the evidence assembled here based on tax data.

2 The macro dimension: the growing relevance of personal wealth in Italy

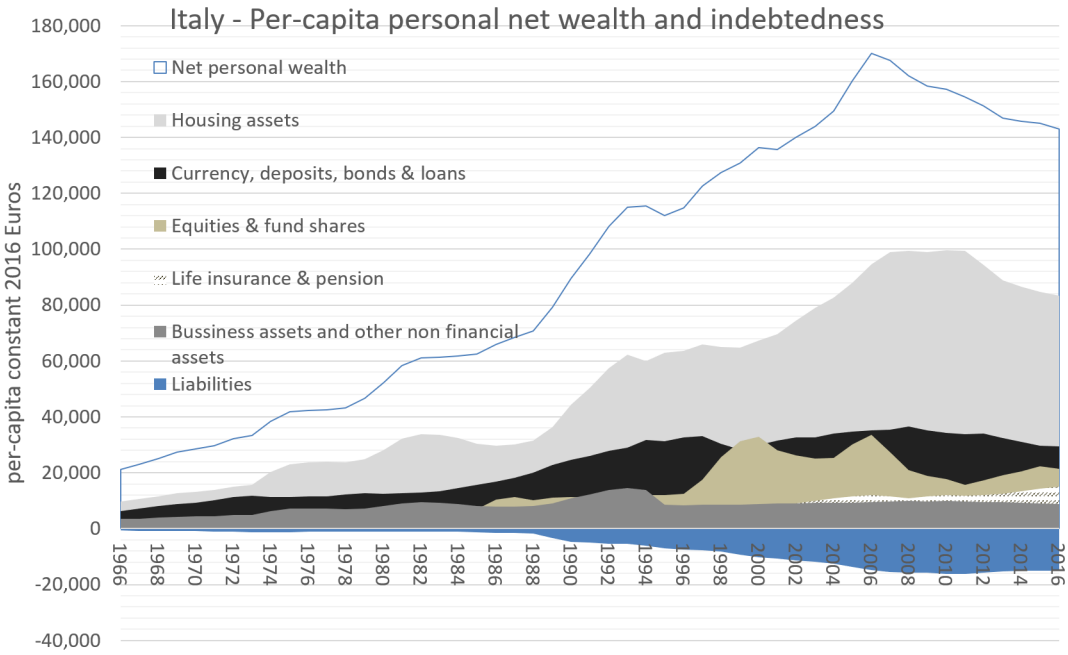
According to the national balance sheets, Italian households are among the wealthiest and least indebted among the rich economies. In 1966, the average net wealth per capita, taken as the sum of all financial and real assets minus all liabilities, was €21,000 (at 2016 prices), and experienced an 8-fold increase to €167,000 just before the onset of the great financial crisis in 2007. Since then, as shown in Figure 2, personal net wealth per capita has dropped to €143,000 in 2016. This is a remarkable drop that did not occur in any of the other advanced economies with the exception of Spain.

A substantial fraction of personal wealth is composed of housing and land assets, whose share increased from 46% to 58% over the 50 years going from 1966 to 2016. The weight of direct holding of equities, investment funds and indirect holding of financial securities via life insurance and private pension funds increased from 10 to 25% over the same period. Saving and current accounts, currency, and bonds decreased from 30 to 20%, as did business assets and other non-financial assets, from 20 to 10%. Finally, these huge mountains of assets are mirrored into very shallow waters of per capita indebtedness. Italian personal debt accounts for approximately €15,000 per capita, one of the lowest levels currently recorded in the rich world.

Comparison with other countries would take the purchasing power parity (PPP) into account. Using PPP would transform the 2016 wealth holding to €160,000, which can be compared to Japan and France (€150,000), Germany and Spain (€140,000), UK (€180,000) and the US (€190,000).

Italy is also one of the countries with the highest incidence of aggregate private wealth as a share of national income. More than seven years of national income are needed to account for the net worth of the household and non-profit sectors. This ratio was close to 2 around 1970. The private wealth to income ratio is close to 6 in other rich countries like France, Japan, and the UK, or to 5 and 4 as the case for the US and Germany, respectively. This may also mean

Figure 2: The growing relevance of personal wealth



that wealth in Italy is becoming less and less affordable, other things being equal, as one needs more and more years of income to accumulate assets.

The meaning of net wealth. Wealth holding, by shaping one's current and future consumption and earning potentials, is a unique determinant of individuals and households well-being. Specific assets such as company shares may convey direct or indirect control over the productive resources and, similarly, may also provide substantial power of influence. The level of individual wealth holding affects behavior, and grants or prevents the access to opportunities. Similarly, the aggregate level of national wealth, its composition and its distribution affect the functioning of our economies and the structure of our societies.

The main concept of net wealth used in this paper refers to the current value of all assets, tangible and intangible, that are under the control of the household sector, with the exclusion of the non profit sector serving households, and that provide economic benefits to the holders and over which property rights can be exercised. The assets may be financial, such as current or savings accounts, stocks, bonds, and insurance reserves, or real assets, such as land, houses and unincorporated self-employment businesses. Thus, our definition of personal net wealth is aligned with that of the national balance sheet according to the System of National Accounts (SNA 2008) and the European System of Accounts (ESA 2010).[4] This definition is grounded in conventional economic theory, where wealth represents a store of value for present and future consumption. It is worth stressing, however, that there is not a unique definition of wealth, and that the methods of valuation matter substantially.

[4]The assets recorded in the balance sheets are economic assets, which are defined as "a store of value representing the benefits accruing to the economic owner by holding or using the entity over a period of time. It is a means of carrying forward value from one accounting period to another." (ESA 2010, p.170)

The use of the national account definition bears a number of problems. The first main limitation comes from the fact that the concept of net wealth under the SNA excludes certain assets that are particularly relevant for different segments of the wealth distribution. NA do not fully capture the wealth that households own outside of the country of residence, which may well disproportionally benefit the very top of the distribution (e.g. foreign real estate; unreported offshore bank deposits; portfolios of financial securities managed by foreign financial institutions; valuables and works of art held abroad in vaults and "freeports"). Also, NA do not account for social security pension wealth, as well as all unfunded defined benefits pensions, which, instead, would likely add to the bottom and the middle of the wealth distribution; they can have important behavioural relevance as people may substitute future pension rights with alternative forms of private savings accumulation in order to face future consumption needs (Feldstein, 1974). The inclusion of these assets in the definition of wealth gives rise to a number of technical and conceptual issues. Future benefits to public pension cannot be disposed of, transferred to other people or used as a collateral, and are not under the control of the right holders. Saez and Zucman (2016) argue that 'although social security matters for saving decisions, the same is true for all promises of future government transfers. Including social security in wealth would thus call for including the present value of future Medicare benefits, future government education spending for ones children, etc., net of future taxes' (p. 526). Antiques, art, and valuables are included in the SNA definition of balance sheet, but consumer durables (e.g. vehicles, electronic goods, and other household possessions) are not. These are considered within the consumption section of the NA instead. Using the SHIW, we estimate that the total value of the means of transport and other durables (furniture, furnishings, appliances) owned by households was €366 billion in 2016 (5% of personal wealth). Such assets are generally more evenly distributed across the population than total net wealth, and their inclusion may reduce the estimated wealth inequality.

The second main limitation of the SNA definition is the market valuation of assets: the cash value that can be recovered (and therefore consumed) by selling the asset on a well functioning market. Such valuation method is problematic for assets that cannot be sold, either because a market does not exist or because the asset itself may not be marketable. Indeed, this is a valid qualification for shares of non-quoted incorporated business whose value cannot be dictated by the market, as they may never be, or have never been sold. In this case, the use of book value (based on the business balance sheet) is a more viable option. Alternatively, the market value of similar quoted shares of a business operating in the same sector may be helpful to obtain proxy valuations. Similarly, the savings accumulated into defined contribution private retirement plans cannot be sold on the market or easily accessed to be liquidated, and are generally transferable to other beneficiaries only in part. However, the accumulated sum of these private reserves for retirement is included in the balance sheet as 'insurance technical reserves.' This class of assets also contains the premia paid as well as the reserves for life insurance policies and the stock of unpaid severance payments held by firms on behalf of workers (in Italy this form of 'forced savings' is called *Trattamento di Fine Rapporto, TFR*).

The third important limitation refers to the valuation of the housing stock. Countries do not apply a common methodology for the estimation of real estate wealth in the national accounts (which gives rise to comparability issues), and the methods employed are less refined than

those applied to estimate financial assets. In the case of Italy, housing wealth is "estimated as the product of three factors: a) the number of dwellings owned by households; b) the average floor area in square meters of dwellings; c) the average price per square meter of the dwellings owned by households...The value of housing wealth is then increased by the value of public residential properties sold to households" (Banca d'Italia, 2014, p. 19).[5]

3 From the wealth of the decedents to the wealth of the living

3.1 The inheritance tax in Italy

The tax (*Imposta sulle successioni e le donazioni*) is applied to all world-wide taxable assets inherited, net of liabilities and deductible expenses, from a deceased individual fiscally domiciled in Italy. Strictly speaking it is an inheritance tax (on the amount received by each heir), and not an estate tax (on the amount of the estate) as the one applied in the US and the UK today.[6]

Different proportional rates apply depending on the degree of kinship. For spouses and direct descendants or ascendants, 4% above any inheritance share whose net value is higher than €1 million.[7] For brothers and sisters, 6% above €100,000. For relatives within the fourth degree, direct relatives in law, side relatives in law within the third degree, 6% with no exemption threshold; 8% applies on all other parties with no exemption threshold. The same rates and structure correspond to inter-vivos gifts.[8] Till 2016 the exemption threshold was reduced in an amount equal to the capitalized lifetime donations received from the same deceased. This provision (called *coacervo*) reduced the space for avoidance of the tax by means of gifts.[9]

The administration of the tax is linked to the up-keeping of the real estate cadastral register, as other taxes are due on transactions of real estate rights (e.g. registration duty as well as mortgage, and cadastral taxes). This administrative feature, combined with high home-ownership rate, means that inheritance tax data cover more than 50% of total decedents for every year under investigation, even when the inheritance tax was abolished between 2001 and 2006. The coverage rate was 63% in 2014 before dropping to just below 60% in 2016.[10]

A variety of exemptions permit the reduction of the effective tax bill beyond the statutory

[5]The value of housing can be further separated from the value of the land underlying the real estate, which can account for the largest share of the valuation of the stock. Very few countries report the land value separately from that of the housing stock.

[6]The inheritance tax is calculated only on the net value of assets located in Italy in the case of foreign residency.

[7]In the presence of a disabled heir the tax exempt threshold is €1.5 million.

[8]One exception applies for the year 2000 and 2001 when gift flat tax rates were 1 percentage point lower than the inheritance tax rates.

[9]It is not yet clear if this provision is still in force, as the supreme court (*Cassazione*) in the period 2016-2019 issued non-unanimous judgments on the issue. A system purely based on lifetime capital receipts, irrespectively of the identity of the donor, would be more effective in reducing tax avoidance. Indeed, currently, a single heir can receive different inheritances and still pay zero taxes as long as each inherited share is below the tax exemption threshold. It is also important to note that in case the *coacervo* will be definitively abandoned by the jurisprudence, tax avoidance schemes of inheritance tax through *inter-vivos* gift would be substantially easier.

[10]The evident decline after 2014 is also due to a change in legislation (passed at the end of 2014) which increased the non-filing threshold from €35.000 to €100.000 (the threshold defining the net value above which the filing is required for those estates without any real estate properties or rights).

description. Indeed, many assets transfers are not taxed, as reserves accumulated in private pension, life insurance funds, shares of family business passed to a surviving spouse or direct descendants, postal saving bonds, and government bonds. The tax-exempt status implies, in many cases, but not always, that such holdings are not reported in the tax records and need to be imputed. The treatment of tax-exempt assets is discussed in detail in the next section.

The period under investigation witnessed substantial changes to the tax code. Three major reforms were enacted in 2000, 2001, and 2006. Before 2000, the tax was a mixed between a progressive estate tax (with marginal rates ranging from 3 to 27 percent) and an inheritance tax (with a further graduation of marginal rates up to 33 percent) that applied only to recipients different from the spouse and direct relatives.[11] In 2001 the inheritance and gift taxes were abolished, followed by a reintroduction in 2006.

3.2 The inheritance tax data

Data used in this paper come from the universe of the inheritance tax returns referred to as 'successions' opened between 1995 and 2016 (year of death).[12] The microdata were transformed into tabular form by the statistical office of the Ministry of Economics and Finance, and shared with us. The tax return is filed by the estate executor (one of the heirs, or a legal representative) within twelve months of the death, and submitted to the office of the revenue agency (*Agenzia delle Entrate*) in the province where the deceased had residence[13]. A dedicated official at the local branch of the tax authority processes the returns in order to assess the tax liability. At the same time, legal proof of ownership and third-party reporting and assessments of assets valuation are often required, enhancing the accuracy of the information included in tax returns and reducing the scope for tax evasion.[14]

We determine the net wealth of the decedent by adding all reported financial and real assets and subtracting all liabilities. We add the market value of the assets sold within six months from death, which was reported between 1990 and 2000. This is typically negligible and we do not expect it to affect our results.

The wealth data obtained from digitized tax returns is grouped in four categories: real estate; business, shares and financial assets; other assets (including current and saving de-

[11] In October 1999 the first tax bracket was eliminated and the tax exemption threshold increased from approximately 125 thousand euros to 175 thousand euros.

[12] The appendix shows an example of the paper tax forms digitized by the Ministry of Economy and Finance to collect the data used in this paper, the so called 'Modello 4'.

[13] The time limit was set to 6 months up to 2003. The last data update in this paper was obtained in May 2019. However, and despite the legal time limit for submission of returns, we have reason to believe that data related to 2016 deaths may still be incomplete, likely due to the delay in filing or processing tax returns for those complex estates including many assets, which require more time to be assessed. Also, it is common to receive amendments to the tax returns previously filed by the estate executor as more precise information about the estate come to notice.

[14] For instance, banks and financial institutions need to certify the balances of any checking, savings or investment accounts; the cadastral office certifies the cadastral value of buildings, land, or dwellings; a certified copy of the most recent balance sheets need to be attached to proof the book value of any company; the official certification of ownership of quoted stocks should be provided. Similarly, all the expenses and liabilities that are reported for deductibility purposes need to be appropriately documented.

posits, valuables, etc.); and liabilities and deductible expenses.[15] The data provided for this work, therefore, lump together business assets (a form of real assets) within the more general category of financial assets.

3.3 The application of the estate multiplier method

The distribution of the taxable wealth of the decedents, provided by the inheritance tax data described above, is conceptually different from that of the wealth of the living. A number of adjustments are required: differential mortality multipliers have to be used to transform the estate data into estimates of wealth-holding; an estimate of the wealth of those not covered by the tax (the *missing wealth*), as well as that of the exempted assets, is necessary; real estate valuation has to be re-expressed from cadastral to market prices.

Re-weighting the population of the deceased. In 1995, 30 percent of declared estates belonged to individuals aged 80 years old and above. Similarly, males are over represented across all age groups, except the oldest group. To re-weigh the decedents population we apply mortality multipliers, obtained by inverting the mortality rates, which are therefore treated as if they were sampling rates of the living population. The application of the re-weighting factors leads to the derivation of the "identified" wealth and population. In this paper we make use of detailed mortality tables, published by the Italian Statistical Institute (ISTAT), available for each age, gender, and geographical location.[16] Given the large share of decedents covered every year (over 60%), the re-weighting of inheritance records allows the estate mortality method to account for a substantial share of the living adult population and personal net worth: the estimated wealth accounts for approximately 80% of total personal wealth in the NA in recent years (and 65-70% in mid 1990s), and this is before adjustments to inheritance data other than the correction of the market price of housing assets (cfr. Fig.3).

The valuation of real estate. The value of land, buildings and dwellings is reported at cadastral values for tax purposes; this generally underestimates market prices.[17] In order to overcome this problem we have applied, with the support of the statistical office of the Ministry of Economy and Finance, a proportional adjustment to bring the cadastral values in line with market ones. The yearly adjustment factor is the ratio of (average) market price and cadastral valuation at the national level. It is important to stress that this procedure generates a total housing and land stock that is very close to what is estimated by the national balance sheets, with different data and methods (see figure 33). The average estate at market prices, as reported in the tax records and after the adjustment of cadastral values, increased from €200 thousand in 1995 to €325 thousand in 2007; it remained relatively constant until 2012, and then started to decrease to €300 thousand in 2016 (2016 prices).

[15] Starting from 2017, the paper module for the inheritance tax returns will be gradually dismissed and substituted by an electronic form which has considerable amount of additional details about the composition of the estates. This information could not be used for this paper.

[16] Appendix C provides the description of the mortality data. We also give a more detailed discussion about how mortality multipliers affect the age distribution of wealth holdings.

[17] This is particularly the case of older building whose value has not been typically updated for many decades. The likely sell-up value is reported only for those buildings under construction or for those for which no cadastral rent has been attributed yet.

In view of the prevalence of home-owners in Italy, the number of inheritance tax filers who declare real estate assets is above 90 percent every year. Similarly, the total unadjusted estate value is also mostly composed of real estate assets (at market value): ranging from 90 percent in 1995 to 80 percent in 2013. This high share of real estate wealth in the tax records also depends on the extensive tax exemption of a number of financial assets.

The wealth of the missing population. The inheritance tax returns are mandatory only if rights on any real estate are transferred at death, or if the net value of the estate of the deceased is above 25 thousand euros.[18] Hence, only a fraction of total deaths are observed in the tax records: in 2013, 365 thousand estates out of 600 thousand deaths. Although incomplete, such a coverage rate, more than 60%, is very high compared to evidence in other rich countries: in the UK, the coverage rate is just below 50%, whereas in the US it is lower than 0.1%.

The application of heterogeneous mortality multipliers by age, gender, and geographical location, implies an indirect coverage rate for the living adult population of more than 50%. The need to estimate the amount of "missing wealth" is an important limitation of the estate method. At the same time, on the plus side, it is evident from the description given above that the valuation of the identified estates is the result of a much more thorough process than is likely to be carried out when collecting wealth data in other forms. To estimate the wealth holding of the remaining 50%, we make use of the SHIW, and allocate household wealth to household members, in order to be consistent with the distribution at the individual level (and not the household) as in the tax data (the transformation from household to personal wealth is described in Appendix I, and follows D'Alessio, 2018). We first identify in the SHIW the missing population among the non home-owners, whose wealth is below the reporting threshold. The working assumption here, and following the tax code, is that such individuals and their wealth holdings are likely not represented in the inheritance tax records.[19] The estimated missing population and their wealth holding are appended to the multiplied-up tax data. The remainder unidentified population (e.g. especially young people) is assumed to own zero net wealth. The final population of the adjusted tax records fully reflects the actual population by different age groups, gender, and geographical location.

Tax-exempt assets. Italian legislation grants full exemption to financial assets invested as private pension and life insurance funds, postal saving bonds (i.e. *Buoni Fruttiferi Postali*), and a number of national and extra-national government securities.[20] The list of exempted assets also include cars and vehicles in the national vehicle registry, credits towards the state, properties that are listed as cultural and historical heritage, and all family businesses and control shares of companies that are transferred to direct descendants or to a spouse.[21]

[18]The filing exemption threshold has then been increased to 100 thousand euros at the end of year 2014. It is too early to assess how this change will affect the nature of inheritance tax statistics in the future.

[19]To account for under-reporting in household survey data we increase the reporting threshold to 50,000 and 125,000, before and after 2014 respectively.

[20]There are now 134 countries whose tax authorities have 'adequate' exchange of information with Italy. As a result these countries are included in the so-called 'white list', necessary to get access to more favourable tax treatment.

[21]The tax exemption status is valid under the condition that the business is run and the control share is maintained for at least 5 years from the wealth transfer at death. Nonetheless, and similarly to what happens to any real estate rights, the value of business assets has to be reported in the inheritance tax returns and will

The total value of tax-exempt asset considered here, and imputed to the full population, is represented by the household sector balance sheet value of insurance technical reserves net of their liabilities (e.g. the total value of assets accumulated in pension, life insurance, and severance payment funds), and 50% of Italian government securities. Indeed, the reporting of government bonds is often advised by tax accountants and most certainly happens in those cases where securities are bundled with other assets in investment funds, as officially documented by banks and other financial intermediaries following death of a legal owner. Such investment bundles can be fully reported on the inheritance tax form, and the tax authority would then compute the relevant tax deductions.[22]

Trusts. Trusts are by definition not taxable under the inheritance tax, as the property of the settled assets is transferred from the settlors to the trustees. Very little is known about the amount of wealth held in trusts in Italy, but their use is not as widespread as in the US or the UK. Using the universe of income tax files, we have capitalized the reported capital income from trusts (*Redditi da capitale imputati ai trusts*) using similar rates as in Alvaredo et al. (2018) for the UK, getting a total of €200-300 millions. This is a very small amount, and we have not imputed it to the population.

Liabilities. The concept of net worth used in this paper should subtract all liabilities from real and financial assets. However, tax records report liabilities and deductible expenses jointly. The expenses include the costs of funeral or medical treatments during the last six months of the deceased person's life. Although the entity of these expenses may be negligible (only a small fixed amount of health and funeral costs that can be deducted for tax reasons), it is not possible to appropriately add the deductible expenses back to the value of the individual estate. Most importantly, the existence of very high tax exempt threshold reduces the incentive of detailed reporting of liabilities for most of the (non taxable) estates. As done for tax exempt assets, the unobserved value of liabilities reported in the national balance sheets is proportionally imputed to the population according to the distribution of liabilities reconstructed from the tax and survey data.

3.4 Combining different sources of data

The process of adding the wealth of the identified population (including the adjustment to real estate), the wealth of the missing population, and the imputation of exempted assets, shown in Figure 3, generates a total wealth that is between 80 and 100% of the balance sheet of the household sector in the NA, with very similar trends. Such high coverage rate is also due to substantial under-reporting of liabilities in the tax data, as the existence of very high tax exemption thresholds reduces the incentive of detailed reporting of liabilities for most of the non-taxable estates.

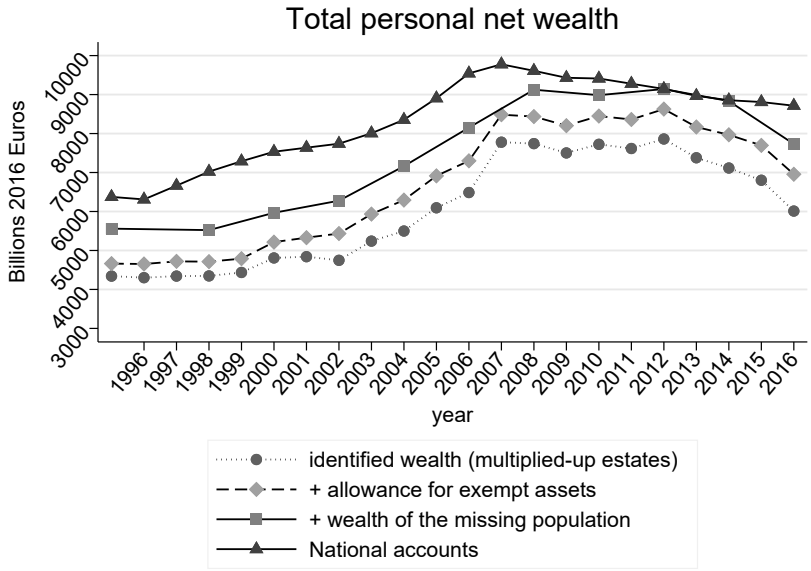
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be deducted from the final liability. The remaining exempted assets are generally not reported on tax records. It is also worth mentioning that inherited or donated assets of any kind may be fully exempted if the recipient belong to one of this categories: religious entities, NGOs, political parties, state, regional or local authorities, and research institutions.

[22] We consider 100% of government securities during the years where the estate, gift, and inheritance tax was not in place (e.g. the period included between October 2001 to October 2006).

In seeking to align the benchmark series to the national accounts, the remaining gap of total assets and liabilities is imputed to the population. This benchmark approach is justified on the grounds that the NA provides a reasonable indicator of the development of wealth over time, preserving a high degree of cross-country comparability, not on the assumption that the NA give the correct numbers. On the one hand, the imputation of the gap is a controversial exercise, riddled with difficulties and uncertainty. On the other hand, the adjustment to NA would indirectly deal with any residual mis-reporting, mis-valuation, tax avoidance and evasion ignored in the previous steps. In any case, it should be stressed that some of the difference between NA and other wealth data sources are rooted in definitional issues and not only on quantitative misalignments. We will also discuss how estimates behave once we deviate from the benchmark in a variety of ways, including not using any imputations altogether.

Figure 3: The coverage of total net personal wealth from NA using inheritance tax records



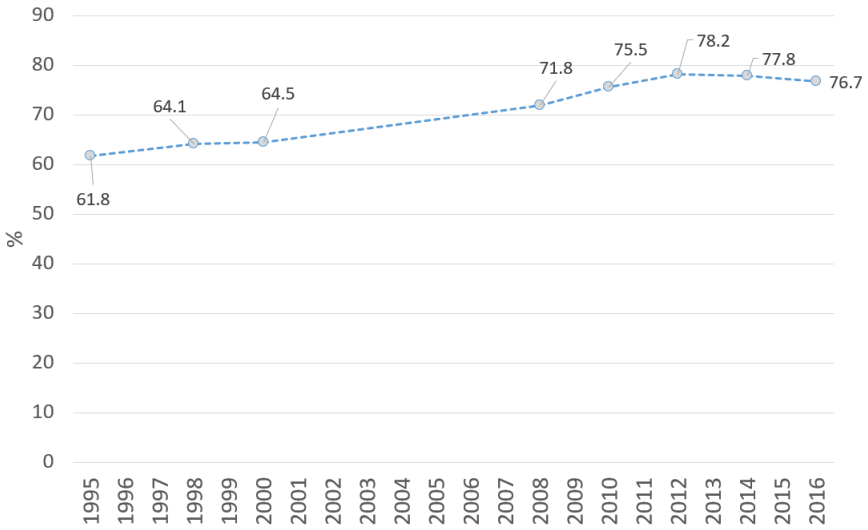
4 The growing concentration of wealth

4.1 Benchmark series

One of the immediate advantages of our benchmark approach, similarly to what can be done with household survey as opposed to the strict application of the estate multiplier method, is the possibility of analyzing the size distribution of wealth for the whole population. For instance, we can compute widely used inequality indicators such as the Gini coefficients for individuals net wealth. Figure 4 shows the evolution of the Gini coefficient for individuals net wealth using the adult population as the unit of analysis. Our estimates record a 16 percentage points increase in the Gini coefficient, from 61.8 in 1995 to 76.7 in 2016. In the same period the average net wealth per adult increased from €93 thousand to €176 thousand, meaning that if we take any 2 adults from the population at random, the expected difference in their

net wealth holding increased from €115 thousand to €269 thousand.[23]

Figure 4: Gini coefficient of individual net wealth (adults 20+) - benchmark series



The richer set of data constructed here are also likely to better capture the substantial wealth held by high-end groups, being fully consistent with the national balance sheets of the household sector.

In particular, moving away from inequality measures for the overall distribution, we can zoom in the upper wealth brackets showing a strong rise in wealth concentration at the top too. The top 1% group (half a million adults with at least €1.5 million and average net wealth holdings of more than €4 million) controlled almost a quarter of wealth in 2016, and the share increased by more than 6 percentage points since 1995 (Figure 6(c)).

Panels (a) and (b) of figure 5 also demonstrates the importance of looking within the top 1% as top wealth groups are highly heterogeneous. The share owned by the top 0.01% (5,000 individuals) has more than doubled between 1995 and 2016, increasing from 2% to 7% (Figure 5 (a)). Such tiny group of the adult population holds 700 times their proportionate share in total net wealth in 2016, with a minimum net worth of €20 million and average net worth of €128 million, approximately equivalent to 730 times the average net worth among all Italian adults. The share in total wealth of those in the top 1%, but not in the top 0.01% (i.e. the"next 0.99%") saw a rise in their share between 1995 and mid 2000s, followed by a period of stability until 2012 and slight decline since then.

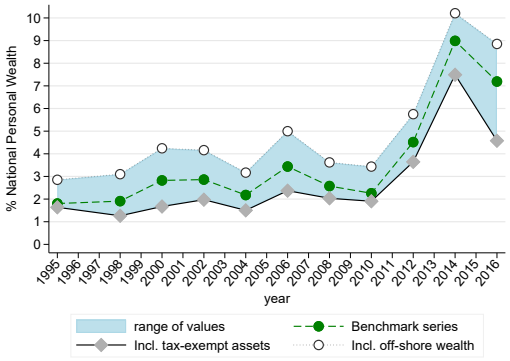
The range of values depicted in the figures underlines that the adjustments required to reach the benchmark series are not the only ones that can be adopted. Yet, the estimated wealth concentration and its evolution since mid 1990s is rather robust to the inclusion or exclusion of a series of substantial adjustments to the data. The bottom of the range represents the top share estimated with inheritance tax records including the adjustment for tax exempted assets, and using a consistent external total (e.g. independent from the reported

[23]A Gini coefficient of G per cent means that, if we take any 2 individuals from the population at random, the expected difference is 2G per cent of the mean. So that a rise in the Gini coefficient from 50 to 70 per cent implies that the expected difference has gone up from 100 to 140 per cent of the mean.

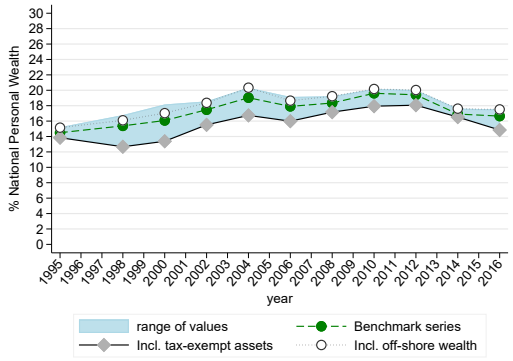
wealth in the tax records). This is conceptually similar to what has been done in Piketty et al. (2006) for France and in Kopczuk and Saez (2004) for the US.[24] The top of the range, instead, represents the top share including the allowance for unreported financial assets held in offshore tax havens and using an external total (i.e. the national accounts balance sheet augmented with the estimated total unreported net wealth held in offshore accounts). Imputing this wealth to their potential owners can have substantial implications for distributional measures of wealth holding as discussed in recent works by Alstadsæter et al., 2018, Alvaredo et al., 2018, Martínez-Toledano, 2017, Roine and Waldenström, 2009, Saez and Zucman, 2016.

In the case of Italy, and under the period of analysis, the inclusion of unreported wealth held off-shore can be seen in the estimated levels of wealth concentration at the top without affecting their trends over time.

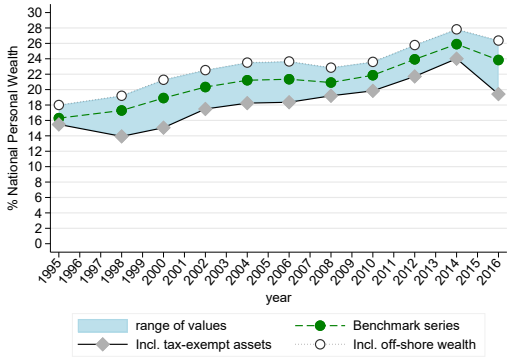
Figure 5: The evolution of top wealth shares: top 1% and top 0.01%



(a) Top 0.01%



(b) Next 0.99%



(c) Top 1%

Notes:

The wealth hidden off-shore and its imputation to top wealth groups. A fraction of financial wealth remains hidden from official statistics and tax agencies. Zucman (2013)

[24]Kopczuk and Saez (2004), for instance, makes explicit adjustments for missing wealth held in trusts, and modifies the reported value of reserves accumulated in private defined contribution pension funds to reflect exclusively their cash surrender value.

estimates that the hidden wealth held off-shore accounts to $5.6 trillion, or 10% of the world GDP. Pellegrini et al. (2016) independently estimate the share of hidden financial wealth held off-shore and, interestingly, provided a time series for Italy, Germany, France, the Netherlands, and Spain between 2001 and 2013. Pellegrini et al. (2016) made use of the official liabilities share of each issuing country as declared in the CPIS data (Coordinated Portfolio Investment Survey) to allocate the global estimate of financial assets held off-shore to different investor countries based. This implicitly assumes that "investors resident in any given country allocate the unreported foreign wealth to the same portfolio of assets used for the investment of declared wealth" (p.16). This procedure results into an estimated total value of undeclared debt and equity securities of approximately 140 billion Euro in 2007.

However, Pellegrini et al. (2016) exclude the value of undeclared bank deposits in offshore centers from their estimate. In order to derive a complete measure of financial assets held off-shore, we made use of the global amount of undeclared bank deposits held by non-banking sector in offshore centers as reported in Pellegrini et al. (2016) (based on the cross-border banking statistics released by the Bank of International Settlements as in Alstadsæter et al., 2018). We then assume that 1/2 of the undeclared bank deposits are allocated to individuals[25]. We then distribute a share of the global amount of individual bank deposits held off shore according the country's relative share of global GDP.

The resulting estimated value of total financial wealth held offshore by Italian investors is approximately 187 billion Euro in 2007. Incidentally this a very similar to the single 2007 value reported for Italy in Alstadsæter et al. (2018). In order to derive the evolution of offshore wealth for a longer period of time, between 1995 and 2016, we extrapolate our series backward (to 1970) and forward (to 2016) using the time series of European off shore financial wealth as reported in Alstadsæter et al. (2018). The resulting final series suggests that Italian financial wealth held in offshore accounts went from 5% of GDP in 1970 to approximately 11% of GDP in 2016. Off-shore wealth as a share of total net personal wealth appears, instead, to be more stable and oscillating around 2% between 1970 and 2015.

Matching individual tax records on income and wealth to records obtained from tax amnesties in Denmark and Norway as well as recent random leaks from offshore financial institutions (e.g. Panama Papers in 2016 and the "Swiss Leaks" from HSBC Switzerland), the work by Alstadsæter et al. (2019) suggests that the 90 to 95% of total wealth held off shore goes unreported to tax authorities. Moreover, their findings suggest that off-shore wealth is highly skewed at the top of the wealth distribution being concentrated almost entirely (up to 95%) to the top 1 percent (50% of which being allocated to the richest top 0.01% group alone).

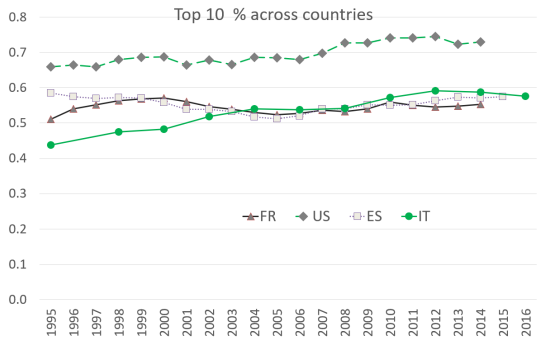
To estimate the effect that the undeclared off-shore financial wealth has on the estimates of wealth concentration, we assume that the share of undeclared wealth as well as its relative distribution across wealth distribution is the same in Italy as in Denmark and Norway. The level of the share of total net wealth held by the richest one percent of the adult population

[25]The same share was assumed in Johannesen and Zucman (2014) and appears consistent with more recent works by García Luna and Hardy (2019) who found that at end-March 2019, households (including non-profit institutions serving households) accounted for 51% of Switzerland banks' cross-border liabilities. In the same work, if considering all the countries in the sample, households accounts for only 14% of banks' cross-border liabilities.

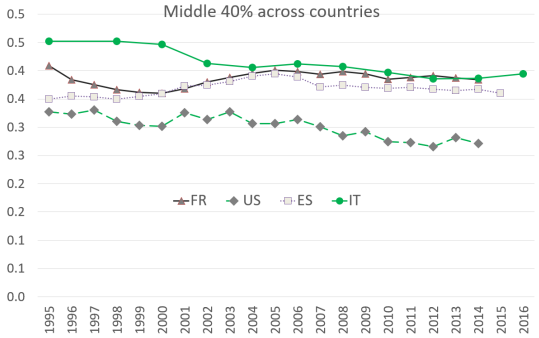
increases by approximately 2 percentage points throughout. This is a sizeable effect that becomes even more visible at the very top of the distribution. The richest one in one thousand individuals saw its share of total net personal wealth increasing by approximately 50% in 1995 (from 1.9 to 2.9 percent) and by 8% in 2016 (from 7.3 to 8.9 percent). The inclusion of unreported offshore financial wealth, however, does not appear to substantially affect the trend of the wealth concentration over the period of investigation.

Comparison with other countries. Estimates of wealth concentration that are comparable to our benchmark series currently exist only for a handful of countries, namely France, Spain, and the US. We use the available estimates to compare three main concentration indicators composing the full individual distribution of wealth: top 10%, bottom 50%, and mid 40%. We can refer to these three main groups as the 'affluent', the 'poor', and the 'middle-class' respectively. Results shown figure 6 suggest how Italy, in the midd 1990s, had one of the strongest wealth 'middle-class' among the set of countries under analysis and one of the lowest wealth concentration at the top. Similarly, the bottom 50% held approximately 12% of total net wealth in 1995 compared to 8% in France, 7% in Spain and 1% in the US. After 20 years, Italy, appeared to have experienced the largest drop in total wealth held by the bottom 50% and although the levels of wealth concentration are now closer to other European countries, its relative increase over time bears more similarity with the dynamics occurred in the US (Figure 6). On the contrary, the wealth middle class remains relatively strong and the mid 40% controls approximately 40% of total net wealth compared to around 30% in the US.

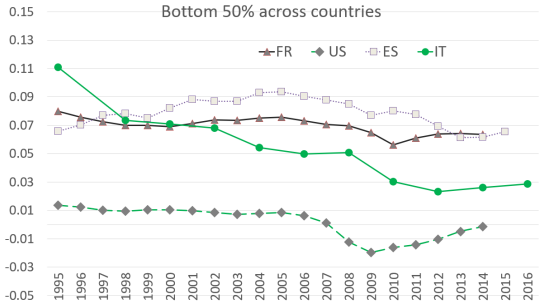
Figure 6: Wealth concentration : a cross-country comparison



(a) Top 10%



(b) Middle 40%



(c) Bottom 50%

5 Determinants of wealth concentration

Identifying the precise channels affecting the evolution of wealth inequality is a fundamental question that bears important implications for policy but remains broadly unanswered (Morelli, 2019). Recent work in the US has emphasized that wealth inequality can be fuelled by saving rates inequality coped with a growing level of income inequality (Saez and Zucman, 2016). Other body of evidence emphasized, instead, the importance of the heterogeneity of portfolio composition, asset prices, and rate of returns across the wealth distribution (Benhabib et al., 2017, Fagereng et al., 2016, Kuhn et al., 2017). Beyond these factors, individuals also differ by the extent of wealth transfers received via donations and inheritances throughout their lifetime. Using the Survey of Consumer Finance, Feiveson and Sabelhaus (2018) argue that the top 10 percent share of total wealth would be reduced substantially if all intergenerational transfers were equally distributed: from 73% to 57% or even 40%, depending on what interest rate is used to capitalize the transfer flows (e.g. the exercise uses a 3% or 5% interest rate and also rules out the dynamic implications of the heterogeneity of consumption patterns across the wealth distribution). The findings also illustrate that "policies that tax and redistribute intergenerational transfers have the potential to greatly shift wealth around the population with large welfare effects for subsets of the population".

This section explores the potential determinants of the estimated trend of wealth concentration in Italy in light of the available empirical evidence.

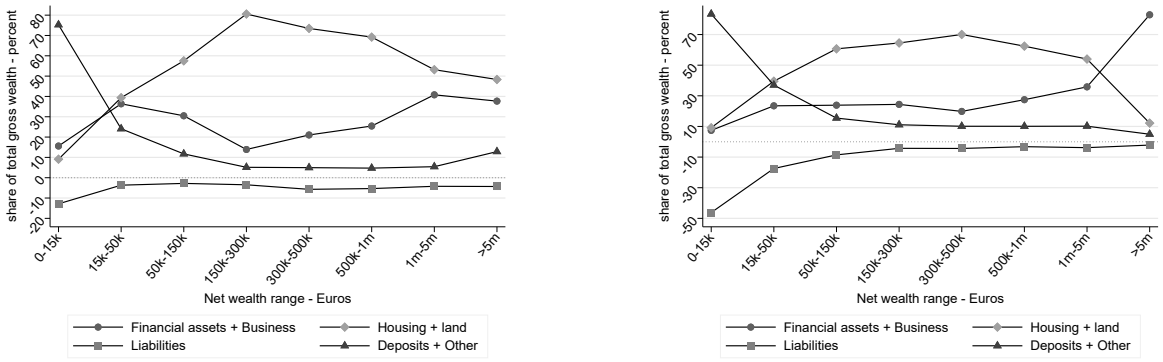
5.1 The portfolio composition across the wealth distribution

Workers save out of earned incomes during their working lives in order to dis-save through retirement and to face any other expected or unexpected need throughout their life-cycle. Moreover, for any given age, different people across the income and wealth distributions may have different saving rates. Beyond this (obvious) accumulation channel, the existing stock of real and financial assets tend to reproduce itself; financial and real estate wealth may be invested, generating income returns that can be saved in turn. Positive real interest rates may accrue on bank accounts and assets more broadly (including real estates) may also appreciate or depreciate over time, implying changes in the valuation of the stock of wealth independent from individual decisions to save.

More crucially, the strength of each of these channels may be varying over time and may well apply differently to different segments of the wealth distribution.

For instance, households savings rate out of disposable income has been steadily declining in Italy since mid 1990s, dropping from 16% in 1995 to 3% in 2016. In the same period the harmonized interest rates on deposits (by the household and the non financial corporation sectors) recorded by the Bank of Italy dropped from 5.6% to 0.4%. As the incidence of deposits in the wealth portfolio is particularly high at the bottom of the wealth distribution (see figure 7) it is reasonable to expect a fairly high co-movement between the decline of savings (and of returns on savings) and the wealth share of the bottom 50% of the adult population (individuals with a portfolio of less than €50-60 thousand). At the same time we should expect the middle 40% group (adults with net wealth portfolios ranging between €50-60 thousand and €400 thousand approximately) to be particularly sensitive to the dynamics of the real

Figure 7: The composition of wealth across the wealth distribution

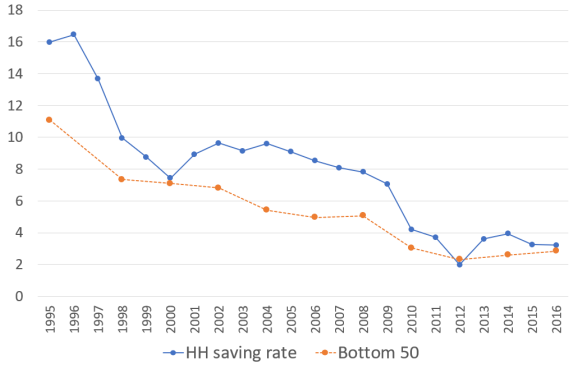


(a) 1995 (b) 2016

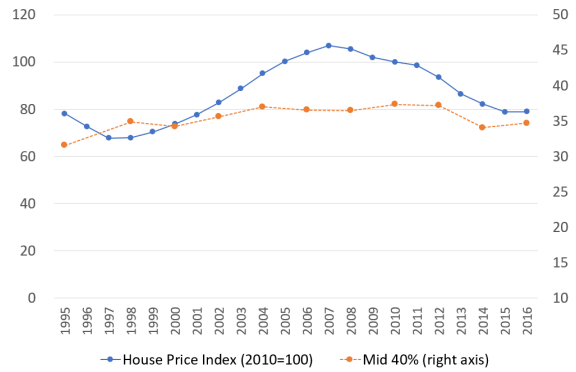
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estate market. House price index increased by 36% between 1995 and 2007 whereas the share of total net wealth held by the mid 40% group of adults increased from 31.5 to 36.5 over the same period, a 16% increase. Following the 2007-8 global financial crisis, house prices came to a halt and then started declining. By 2016, the reduction in the house price index amounted to 26%. Conversely the share of mid 40% stopped increasing between 2004 and 2012 and then dropped by 7%. The growth of housing wealth may have well "moderated the tendency for concentration to increase in other forms of wealth" as remarked by (Alvaredo et al., 2018, p.37) for the UK. Conversely, the sudden reversal of house prices since 2008 crisis, coped with a fast rebound of the stock prices may have contributed to the substantial rise in wealth concentration that we observe in Italy since 2010. Indeed, financial securities and business assets are the dominant group of assets in the portfolios of the wealthy, especially in recent years. In 2016 more than 80% of total net wealth was accounted by financial and business assets for individuals with more than €5 million (i.e. the 99.9 percentile threshold is around €5.5 million).

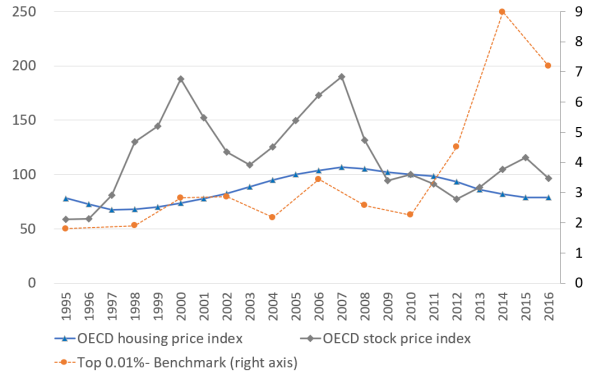
Figure 8: The role of asset prices and the households saving rate



(a) Bottom 50% and the household saving rate



(b) Mid 40% and the house price index

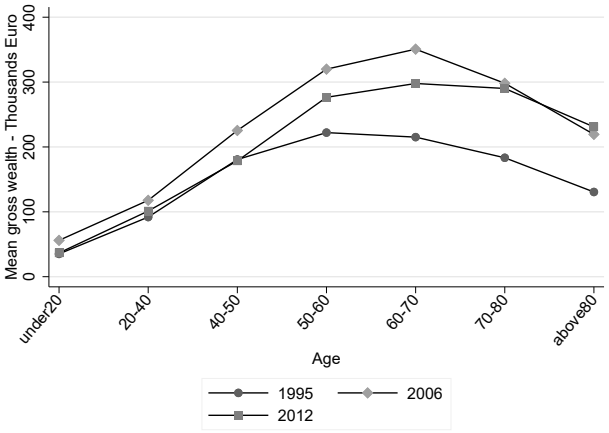


(c) Top 0.01% and the stock price index

5.2 The evolution of wealth over the life-cycle

The wealth concentration estimates discussed so far refer to snapshots of the wealth distribution in a given year and include wealth and savings accumulated for life cycle purposes. To the extent that differences in wealth holdings purely result from differences in age, it would be difficult to interpret wealth concentration as evidence of wealth inequality. As argued in Almas et al. (2012) 'a snapshot of inequality within a country or other geographical area runs the risk of providing a misleading picture of the differences in lifetime wealth or income of its citizens.' A similar message is echoed in the article review by Cowell and Van Kerm (2015), who wrote that 'even if everyone had common wealth accumulation paths over the life cycle, wealth at any point in time would turn out to be unequally distributed when pooling observations of individuals of different age.' Indeed, average wealth does vary considerably across the age distribution; older generations are much richer than younger ones as one would expect. In 1995 the average wealth peaked at around 40-50 years old and amounted to approximately €150 thousand (2016 prices); it was less than a third for the 20-40 years old group. Average wealth increased for all age classes till 2007 before receding following the Great Recession for all age classes, and in particular for younger groups (figure 9). However, assessing the average of wealth holding within age group would not be a sufficient description of the role of age in determining the extent of wealth concentration.

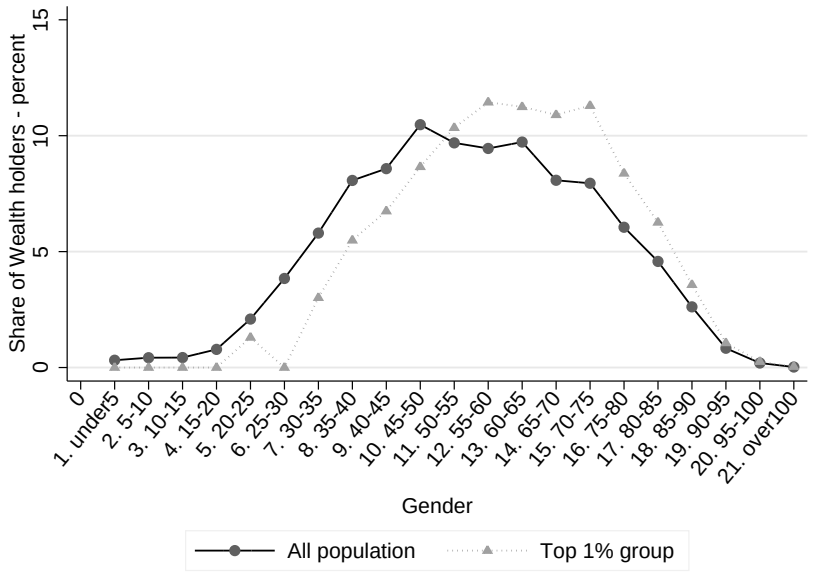
Figure 9: Evolution of mean wealth across age groups



To address this concern we take two steps, following Atkinson (1971). First, we assess the age distribution of wealth holding in the population as a whole and in the subgroup of wealthy individuals. If age were the most important factor driving wealth accumulation, we would find mostly older individuals populating the high end of the wealth distribution. However, as shown in Figure 10, this is not the case: old and middle-aged (and sometimes young people) alike can be found within the richest group of wealth holders (e.g. top 10 or 1% groups) as well as in the overall population of wealth holders, albeit in different proportions. Second, we analyze the distribution of wealth holding within each age group and compare it to that of the overall population. Figure 11 displays the segment of the Lorenz curve corresponding to the last vingtile of the wealth distribution for each independent age/gender group in comparison to that related to the overall population. The vertical dotted lines identifies the top 1% richest group in each case. One can derive the share of total wealth held by each top 1% group as 100% minus the cumulative % of total wealth identified on the y-axis where the vertical line meets each Lorenz curve. The result strongly suggests that wealth remains widely concentrated within all age/gender groups and the shares of total wealth held by the top 1% are roughly similar, irrespective of age and gender. Most importantly, no group presents a degree of wealth concentration that is considerable lower than that of the overall population. The only exception is the younger group of males, for whom wealth appears relatively much less concentrated than the overall population.

The fact that wealth inequality is similar across age groups is not a novel finding, but has not been sufficiently stressed in the literature. Cowell and Van Kerm (2015) made use of household survey data for a series of advanced economies, and show that the Gini coefficients are fairly similar across ages. As a consequence, the between age groups Gini for household net wealth is typically around a third or even a fourth of the overall Gini. Similar findings about considerable inequality even among people of the same age were already found for the case of the UK in Atkinson (1971), whose analysis therefore suggested that "if we standardize for age and sex, the degree of inequality is not substantially reduced" (p. 248). In other words, Atkinson concludes that "life-cycle factors cannot explain the upper tail of the current distribution

Figure 10: The age distribution of wealth

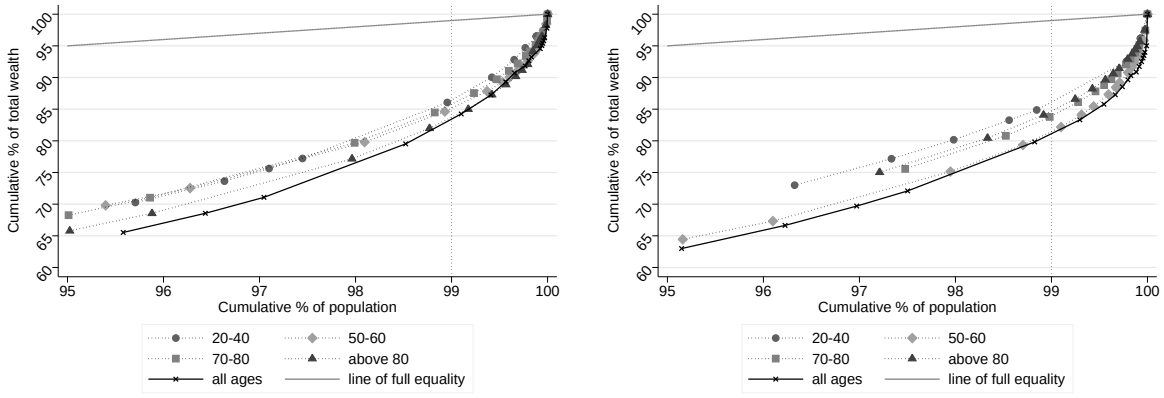


of wealth in Britain, and there are good reasons for believing that there is a high degree of concentration in the distribution of wealth inherited by people over their lives" (p.251-252). Such statement about the residual role of inheritance in driving wealth concentration at the top is very hard to verify with existing data.

One can, nonetheless, attempt to isolate the effect of age in wealth differences from that of other wealth-generating factors that are correlated with age, such as education level and birth cohort. To do so we compute an age-adjusted Gini index that directly isolates the net effect of age on inequality via a multivariate regression model as suggested in Almas et al. (2012). We apply this exercise to our tax-based data and the survey alike. The age adjusted Gini is found to be at most 1.5 percentage points below the unadjusted one, with no apparent trend effect, suggesting a very marginal role of age components in explaining current wealth distribution.[26]

[26]The adjustment procedure proposed by Almas et al. (2012) rely on calculations of the Gini coefficients without negatives and substituting all zeros with 1. This makes the method not particularly appealing to estimate the actual levels of wealth inequality given the substantial role played by zeroes and negative values in the distribution of wealth.

Figure 11: The upper Lorenz curve for different age groups by gender : 2012



(a) female

(b) male

5.3 Growing inheritances and the dwindling role of inheritance tax

Piketty (2014) stressed the growing relevance of private wealth in modern economies and how this is in turn making our societies more reliant on inherited wealth. Indeed, wealth transfers, including inheritances, and inter-vivos gifts, are crucial economic resources for households. In rich countries, their scale relative to national income has increased substantially in recent decades. Piketty (2011) documented the evolution of annual wealth transfers as a share of total national income in France since 1820, showing that their estimated share has increased threefold since 1950, from a level of 5%, to 15% in 2010. Atkinson (2018) and Alvaredo et al. (2017) produced estimates indicating a similar tendency for inheritances and gifts to increase their relevance for the UK and the U.S. economies, respectively.

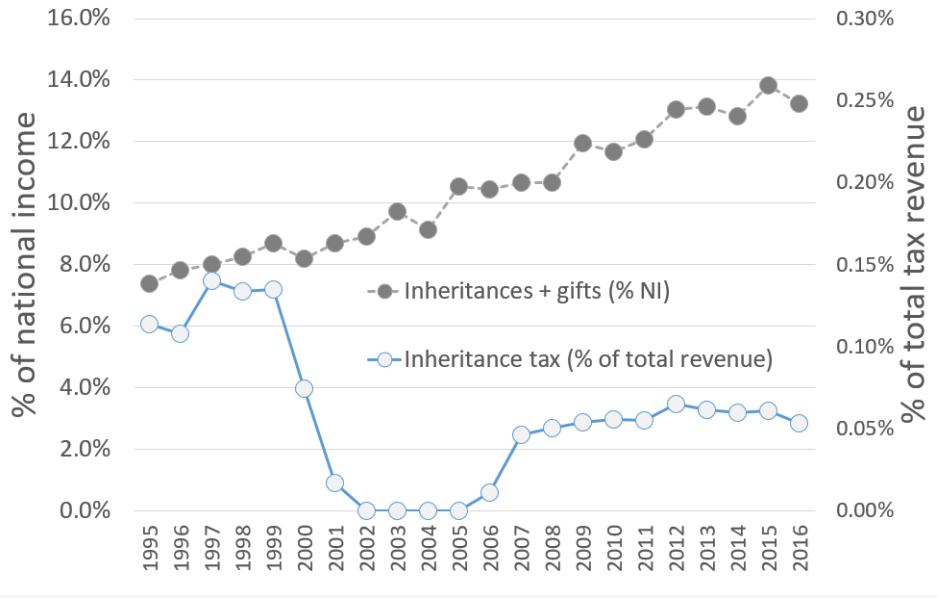
Using inheritance records, we reproduce similar evidence for Italy, showing a strong rise in the incidence of wealth transfers from mid the 1990s to 2016, almost doubling from 7.4% to 13.2% of national income. Annual flows of Inheritances and gifts grew from 1.5% to 2.1% as share of net personal wealth. However, during the same period, the receipts from inheritance tax as a share of total revenue experienced a threefold decrease from 0.3% to 0.1% (cfr. figure 12. At the same time, the top marginal tax rate on estate and inheritance tax has dropped from 27% to 4%, many wealthy heirs had seen their tax liability dropping substantially or even erased, and the inheritance tax lost most of its progressive structure. According to official tax declarations, approximately 70% of the estates above €300 thousand were subject to taxation according to the tax regime in operation between 1995 and 1999. In the tax regime valid since October 2006, as highlighted in figure 14(a), only 30% of estates valued between €2.5 million and €6 million and less than 80% of the richest estates (€10 million and above) were subject to taxation, on average. At the same time, an average of 14% of estates between 0 and €20 thousand were subject to taxation compared to only 1.6 % in the pre-2000 tax regime. This is also a result of the change from a system mainly built as an estate tax (levied on the estate or donor) to a fully inheritance tax (levied on the beneficiary). Conditionally on being taxed, richest estates have now a substantially lower tax bill. Richest estates (€10 million and above) paid the equivalent of 6.3% of the estate value in taxes on average before 2000,

with considerable variance around it.[27] As shown in figure 14(b), the average tax bill on the same estate has since 2006 dropped to 1.2% of the estate value. Moreover, this is not too dissimilar from the average tax bill of 0.7% associated to very small estates (between 0 and €20 thousand). Therefore, under the current regime, a much smaller share of large estates are subject to taxation, the average tax rate for the largest estates has dropped by 80%, and the progressive structure of the inheritance tax - relative to the estate value - no longer exists.

Wealth accumulation via interpersonal wealth transfers may have been enhanced by the dwindling role of estate, donations, and inheritance taxes in Italy. As suggested by A. et al. (2018) such taxes are very important for the "the long-run distribution of wealth, reducing equilibrium inequality (the 'predistribution' effect) by a much larger amount than what is apparent in terms of the immediate impact of the tax (the "redistribution" effect)."

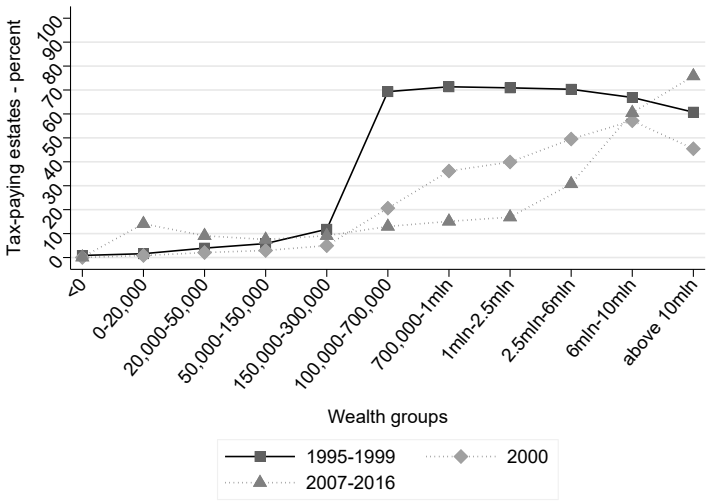
Other forms of taxation on income and wealth also have effects on the long-run equilibrium of wealth concentration. Changes in income taxes may reduce or increase the amount of disposable income that can be transformed into savings. Returns to wealth are affected by taxes on capital incomes, realized capital gains, and on the stock of wealth and assets.

Figure 12: Growing wealth transfers as % of total income Vs. decreasing inheritance tax returns as % of total revenue

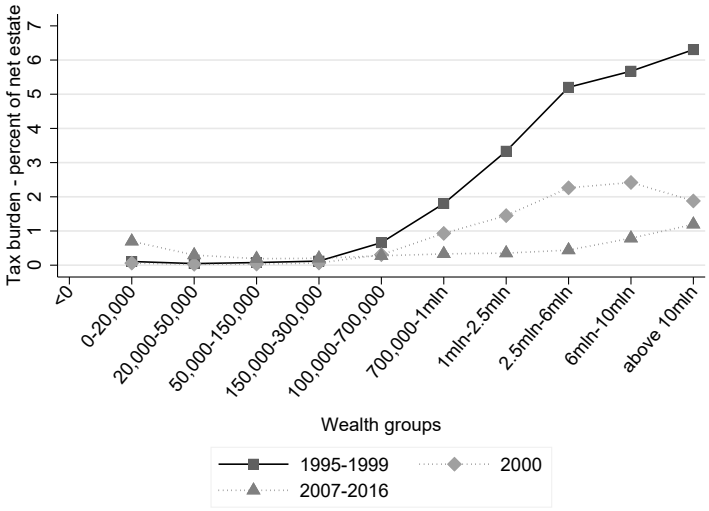


[27] The average tax rate for estates above €10 million could be higher than 20% of the estate value or even as low as zero.

Figure 13: The decline of the tax burden on the wealthy



(a) Tax coverage rates (% of estates subject to taxation)



(b) average tax rate (% estate)

Notes: the figures are estimated based on the official tax liability paid by each single estate. The tax liability is computed as the sum of the tax applied on the global value of the estate, when applicable (i.e., before 2000), and on the share of the estate inherited by the heirs.

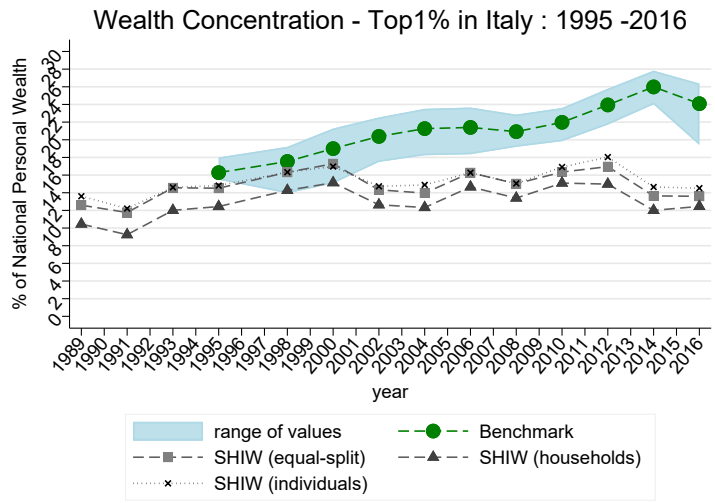
6 Triangulation with other sources

We now consider whether there is external evidence that is helpful in assessing the reliability of our estimates on the concentration of wealth in Italy. In this section, we provide evidence based on a variety of sources, from household surveys, to rich lists and banking sector reports. A detailed census on real and financial assets would be an excellent source to estimate the wealth holding of the population. Such information is common practice for real estate (in Italy the *Ufficio del Catasto* records the features, cadastral value, and the history of owners of all real estate assets in the territory), although it is usually very difficult to access for research purposes. A comprehensive registry of financial assets (who owns what and where) is tougher to come by. The necessary records for the implementation of a wealth tax can, in principle, get very close to a complete asset census; however, very few countries have such a tax (Italy levies taxes on foreign financial and real estates only), and where such a tax exists, most of it covers only a small fraction of the population over a narrow tax base. The stock of assets holdings may also be indirectly estimated through the observation of their resulting yields via capitalization methods. Such flow of income, the asset returns, can be partly observed in the income tax. A large fraction of investment incomes are not always taxable, and therefore not necessarily observable on the tax returns (e.g. Saez and Zucman (2016) argue that 2/3 of capital income is missing from the tax returns in the US). In Italy, most of capital incomes are taxed at the source and are not reported in the tax files, making the application of the capitalization method not feasible at present.

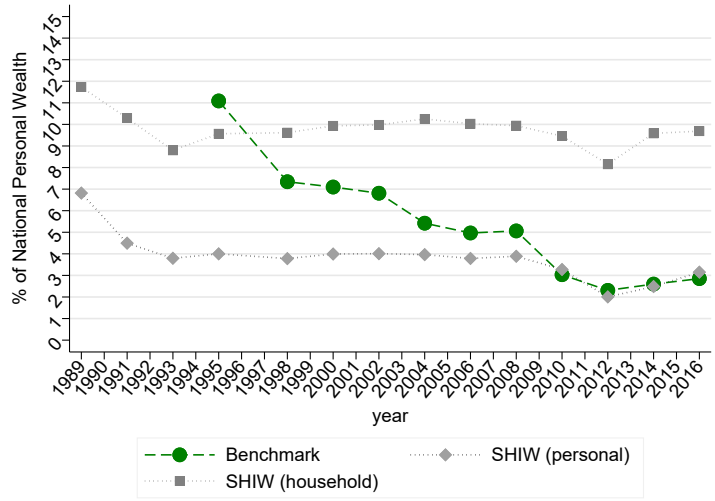
Household surveys. In the absence of assets registries and individual capital income data, household survey data do, in principle, provide a picture of wealth holding by asking direct questions to a representative sample of the living population. Such data from the SHIW exist at least since 1989 and can be used to derive measures of wealth concentrations that are comparable to tax data. The comparison with tax data requires changing the unit of analysis, moving from the households distribution to the distribution among individuals. As mentioned above, this requires the allocation of household wealth to each adult member using the relevant information from the survey questionnaire, as done in D'Alessio (2018). To bring in line the wealth concept, the estimated value of private insurance and pension assets is also imputed to individuals declaring payments of any insurance premium or private pension contribution to the SHIW. Figure 15(a) shows that the share of the top 1% increases by 2 percentage points when we move from household to individual units. The increase is almost the same if we split household wealth equally among the head of the household and his or her partner (equal-split series). The results suggest that wealth concentration levels and dynamics are very similar across tax and survey until 2000, when they begin to diverge substantially. According to the SHIW, the top 1% share has remained roughly constant between 1995 and 2016, whereas it has increased by approximately 10 percentage points according to our benchmark series. This is not surprising, as household surveys are not necessarily suitable to capture well the right tail of a very skewed wealth distribution, for a variety of reasons. First, the sample design of the survey may not be fully representative of all wealth groups. The distribution of wealth shows a rather thick tail, which makes the sampling particularly problematic. Second, even if very wealthy households were appropriately sampled, they might not be equally willing to cooperate to the data gathering exercise to reveal their complex and conspicuous asset portfolios. The compliance rate may well be lower at the top of the wealth distribution, distorting the estimation of inequality indicators Kennickell (2019), Korinek et al. (2007).

The SHIW identifies less people and lower wealth for the wealthiest ranges of the distribution. However, the total personal wealth recorded in the survey amounts to 60 to 70% of the balance sheets. Therefore, under-reporting of wealth and coverage issues also apply to the mid and bottom ranges of the wealth distribution. Our estimates indicate that the share of total net wealth held by the bottom 50% of the adult population is very similar across tax-based and survey-based estimates since mid 2000s. However, as shown in figure 15(b), before 2004, the share of total net wealth held by the bottom 50% is substantially higher in our tax-based estimates, as a result of fully distributing all assets assessed in the the national balance sheet. In 1995, currency, deposits and bonds accounted for 30% of personal wealth and survey data under-reported the total figure by 3.5 times. By 2004, the share of currency, deposits and bonds stabilized around 20% of total net wealth and the survey under-reports the National Account value by 2.7 times. In our benchmark series, deposits and other assets, such as valuables, constituted more than 70% of total net wealth for wealth groups with less than €15 thousand, a group including a substantial share of the bottom 50% adult group (cfr. figure 8(a)).

Figure 14: Top 1% and Bottom 50% shares in total wealth: comparing results with household survey data



(a) Top 1 %

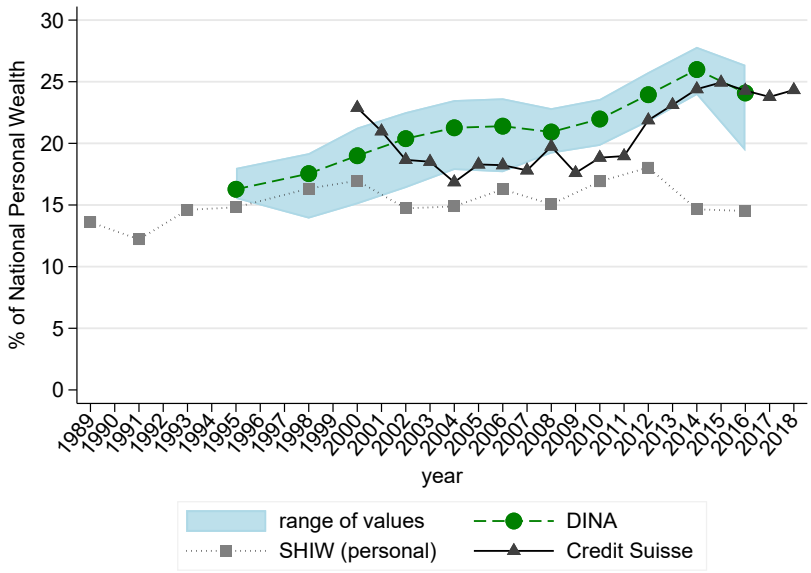


(b) Bottom 50 %

Source: MEF micro data on inheritance tax returns. Household survey estimates derived using SHIW data from the Bank of Italy.

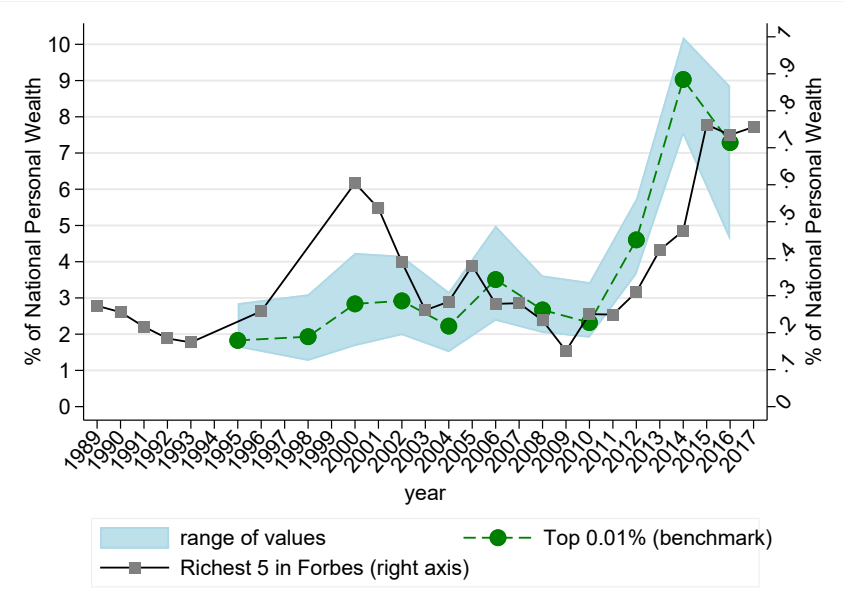
Rich Lists and banking sector reports. Forbes magazine gives information on the Italian $ billionaires; only 5 individuals were recorded in 1988, and 42 in 2017. It is not easy to assess the representativeness and reliability of these lists. The data are often based on journalistic estimates that can be subjected to several types of errors, and the methodology cannot be transparently evaluated. According to Vermeulen (2017), parametrically adjusting the SHIW with the extreme observations from the rich list increases the top 5% (top 1%) share by 5-6% (6-7%) from 32% (14%) in 2010. Applying related mechanics, Davies et al. (2017) for the Global Wealth Report by the Credit Suisse covered the years from 2000; their estimates are in line with our benchmark series, at least since mid-2000s, as figure 15 shows.

Figure 15: Top 1%: Adjusting SHIW data with Forbes



As shown in figure 16, we can track the share of wealth held by the richest 5 and 10 individuals, since 1988 and 2000 respectively. The top wealth shares derived using Forbes data are compared against the evolution of the our top 0.01% share benchmark series, representing the richest 5000 individuals. Again, the dynamics of the wealth concentration series obtained broadly corroborates the findings highlighted by our benchmark series for the top 0.01%.

Figure 16: Top 0.01% share in total wealth vs Forbes rich list



7 Robustness analysis

7.1 Alternative mortality rates

Older people, as expected, do have higher mortality rates than younger ones. Similarly, males tend to have a shorter life span than females. However, demographic factors are not the only ones influencing mortality. Socio-economic conditions such as marital status, geographical location, education, and income or wealth levels matter too. Indeed, rich people tend to live longer, other things being equal. Chetty et al. (2016), using administrative data for the US, highlighted that being at the top of the income distribution provides individuals with substantial longevity advantage; people aged 40-60 years old in the top 1% of the US income distribution have a mortality rate that is 30% the one prevalent in the overall population of the same age group. This could be relevant for the estate multiplier method, as failure to appropriately account for mortality heterogeneity may result in biased estimates of the distribution of wealth, a point that has been highlighted in earlier work (Atkinson and Harrison, 1978), although the underlying distribution of estates also plays a role, as explained in Alvaredo et al., 2018.

For a robustness analysis, we make use of the most updated mortality estimates from the Italian National Statistics Office, which account for the socio-economic gradient of mortality by linking the mortality records to the education levels for 2012, and for age groups between 25 and 90 years old. Distinction is drawn for four education groups: no education or elementary school; middle school; high school; college degree of higher.[28] Controlling for education has

[28]The ISTAT original classification is the following: "Nessun titolo o Licenza elementare"; "Licenza media inferiore"; "Licenza media superiore"; "Laurea o titolo superiore". Two additional categories are dropped as redundant: "Nessun titolo o licenza elementare o licenza media inferiore; and "Licenza elementare o licenza media inferiore".

Table 1: 2012 Mortality rates by education level as a share of overall population

Age group	*Mortality rate (overall population) - percent*	*No education or elementary (%)*	*Middle School (%)*	*High school (%)*	*College or higher (%)*
			All		
20	0.0005	208.8	119.9	92.2	67.6
40	0.0013	196.9	118.8	77.5	61.7
50	0.0034	150.6	106.6	83.9	64.3
60	0.0090	115.9	98.6	87.2	70.6
70	0.0252	106.1	95.3	85.9	75.9
80	0.0948	102.7	95.7	91.4	86.6
			Females		
20	0.0003	243.7	108.2	99.6	75.3
40	0.0010	181.7	116.0	81.8	73.8
50	0.0025	134.2	102.4	86.9	75.5
60	0.0061	106.7	99.2	90.9	79.9
70	0.0180	103.6	94.3	86.1	80.4
80	0.0780	102.3	93.5	89.8	85.5
			Males		
20	0.0006	193.8	125.0	89.0	64.3
40	0.0016	206.0	120.4	74.9	54.5
50	0.0044	159.8	108.9	82.3	58.1
60	0.0118	120.5	98.4	85.4	65.9
70	0.0324	107.4	95.8	85.7	73.4
80	0.1117	103.0	97.3	92.5	87.4

an important effect on mortality risk. The life expectancy of a 25 year-old without education or with elementary school is 4 years smaller, on average, than that of an individual holding a college degree or higher. The difference in life expectancy is higher than 5 years for males alone (cfr. Figure 31). Table 1 shows that, in 2012, the mortality rate for 40 year-old males was 0.16% on average. The mortality rate drops by more than half for a male in the same age group but with a college degree or higher. On the contrary, the mortality rate is more than twice the average (206%) in the case of an elementary school title at most. This is remarkably similar to what Kopczuk and Saez (2004) found for the US.

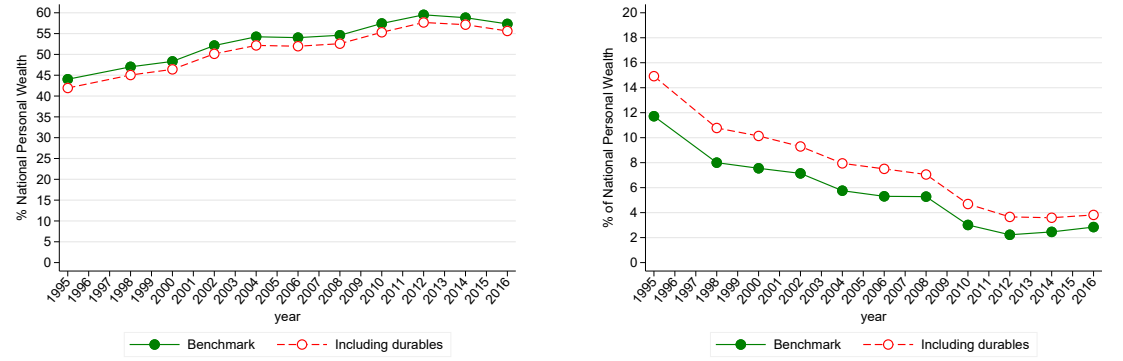
In seeking to establish whether and how steeper mortality multipliers change wealth concentration estimates, we assume that that individuals with assets above €1 million have a relative longevity advantage -in relation to the overall population with the same demographic characteristics- equal to those with the highest education class. Individuals with wealth below €50 thousand have been assumed to have the mortality rate of the group with primary education at most. Finally, individuals in intermediate wealth ranges, namely between €50 thousand and €300 thousand and up to €1 million, have be assumed to have mortality patterns similar to those with middle school and high school, respectively. The information about mortality rates adjusted by education is only available for 2012; the same relative adjustments can be applied to the remaining years in our sample. Results reveal that the direction of the change is as expected, but the difference with the benchmark series at the top is very small.

A further confirmation that the results are robust to the use of more refined mortality multipliers is the use of tabulations containing finer disaggregation by age brackets and geographical location. Multipliers in 1995 were lower in the north of the country compared to the south and the islands. By 2016 it was the opposite. Theoretically, not accounting for such heterogeneity may bias downward the increasing trend in wealth concentration, given that the northern areas are the wealthiest. Results show again that the benchmark series are robust in the presence of such refinements.

7.2 The inclusion of durables

The benchmark estimates discussed in section 4.1 are based on distributing the entirety of the national balance sheets to the adult population. In fact, the national accounts figures may not necessarily be the ideal benchmark of reference. We have discussed that some assets are missing from the official records, such as the financial wealth hidden in offshore accounts, which we estimate in this paper to be 2-3% of total personal wealth. Other disposable assets are explicitly missing from the NA too, despite their relevance for households, such as vehicles and other durable goods accounting for approximately 8% of total wealth according to the SHIW 2016 wave (12% in 1995). Both categories of assets imply an underestimation of total personal wealth as reported in the national balance sheets. However, the exclusion of such assets would be felt in different part of the distribution and have different distributional implications.

Figure 17: Top 10% and Bottom 50% shares in total wealth: including and excluding durables



(a) Top 10 % (b) Bottom 50 %

Source: MEF micro data on inheritance tax returns. Household survey estimates derived using SHIW data from the Bank of Italy.

7.3 The role of imputations of unobserved wealth

The benchmark series required a series of adjustments to distribute the full extent of personal wealth in the economy. Imputation exercises are always surrounded with considerable amount of uncertainty. In our case, the imputation of missing wealth could not be carried out asset by assets based on detailed micro-level information. Rather, due to limited data availability, the imputations rely on crude assumptions about how the missing wealth is distributed across the population, based on the observed wealth holdings aggregated by four large macro-categories.

Wealth concentration with no imputation It is therefore helpful to derive wealth concentration results without resorting to imputations of any kind, making exclusive use of estimated wealth holding derived from the mere application of the mortality multipliers to the information reported to the tax authority. Estimates for the UK in Atkinson and Harrison (1978) and Alvaredo et al. (2018), for instance, have followed this path.[29] To verify that the main

[29]Adjustment to the data to account for tax exempt assets, under-reporting and mis-valuation (e.g. in

findings described so far are not heavily reliant on the imputations of missing assets, evasion, and under-reporting, we also estimated the inequality series according to the reported estate data just re-scaled with mortality rates. We refer to this as the 'unadjusted' series, although one has to recall that they include the correction of housing values to match market prices.

For completeness, we estimate the unadjusted concentration series using both "internal" and "external" wealth totals. Typically, researchers use external data (cfr. the national accounts) on total wealth that bears no relation to tax data. However, when the population coverage of the inheritance tax records is particularly high (like in the case of Italy or the UK), one can rely on the multiplied-up estates as well as the estimated wealth of the missing population to derive an internal measure for total wealth (as in Alvaredo et al., 2018, Atkinson and Harrison, 1978). The derivation of such a variety of wealth concentration statistics, we believe, enhances our understanding of the series and their comparability across countries and over time. Historical estimates of wealth inequality, for instance, are generally derived via aggregate tabulations assembled by tax authorities without adjustments to the data.

Figure 19(a) demonstrates that the levels and trends of wealth concentration measures are broadly corroborated even without the use of any imputations. This appears to be true independently of the nature of the wealth total considered, although the use of internal total suggests a more moderate increase of inequality over the past decades. Importantly, and reasonably, the role of imputations appears stronger only in those years where the underlying inheritance tax data are much less complete (e.g. between 2001 and 2006, when the inheritance and gift tax was abolished, and in 2016, when data collection may not be complete yet).

Wealth concentration with alternative imputations One may also wonder to what extent the benchmark results are driven by specific imputation choices. In our benchmark exercise, we recall, we first multiply-up the estate distribution at death using mortality multipliers. We then append an estimate the wealth of the missing population to the re-scaled tax data, deriving a measure of identified wealth of the living. We estimate the wealth of the missing population directly from the survey data, adjusting reported wealth to reflect the average relative underestimation of reported total assets in the survey with respect to the NA, by asset groups. We then fully redistribute the remaining wealth in the national accounts to the population according to the relative distribution of asset classes estimated from the distribution of the identified wealth of the living as in the previous step.

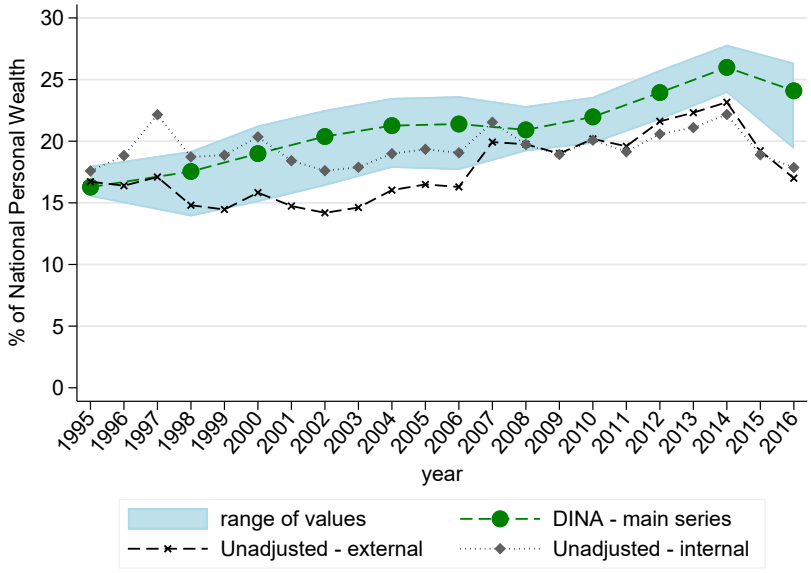
Two main alternative approaches exist. First, we do exactly as in the benchmark case but we take the wealth holding of the missing population (identified in the survey data) at face value, with no adjustments (we call this the "imputation n.2"). Second, we do as in the benchmark case but we change the last step. The relative distribution factors of each asset class, used for imputing the unobserved wealth from the national accounts, are derived from the estimated distribution of wealth of the living without allowing for the wealth of the missing population (we call this the "imputation n.3"). Essentially, the latter approach attaches more weight to wealth reported in the tax records, which is on average more concentrated than what would appear if one takes into consideration smaller wealth holdings that cannot come

particular of life insurance assets) are also reported as memorandum items and within robustness exercises. Similarly, the authors explore how the baseline series is affected by imputing estimates of missing assets held in trusts or in unreported offshore accounts.

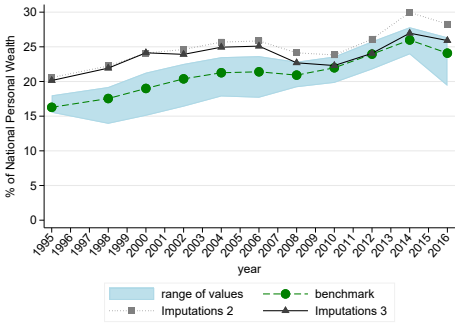
to notice to the tax authority.

Both alternative imputation methods, when compared to our benchmark series, imply higher wealth concentration at the top and lower share of in total net wealth held by the bottom 50% of the population (figure 19(b) and 19(c)).

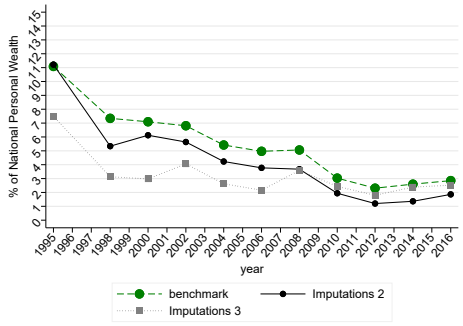
Figure 18: Top 1% with alternative imputations and without imputations



(a) No imputations



(b) Alternative imputations



(c) Alternative imputations

Notes:

8 Final comments

"Statistics on wealth distribution, writes Atkinson (1978), play 'a key political role' and they are as sensitive an issue as the balance of payments or unemployment figures. This means that it is all the more important that they should be firmly based. We should examine critically the evidence and the assumptions underlying it."

Growing wealth at the top can be particularly concerning when inequality of outcomes are persistent across generations, hampering economic and social mobility. Recent evidence, based on income tax administrative source, suggests that income mobility is still higher in Italy compared to the US (Acciari et al., 2019). Yet, cross-country comparable measures suggest that Italy and the US have one of the highest intergenerational earnings elasticity: offspring earnings are highly dependent on those of their parents, implying low intergenerational mobility across generations (Corak, 2013).

TO BE COMPLETED

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A Data sources on reported wealth at death in Italy

Figure 19: The coverage of decedents people using inheritance tax records

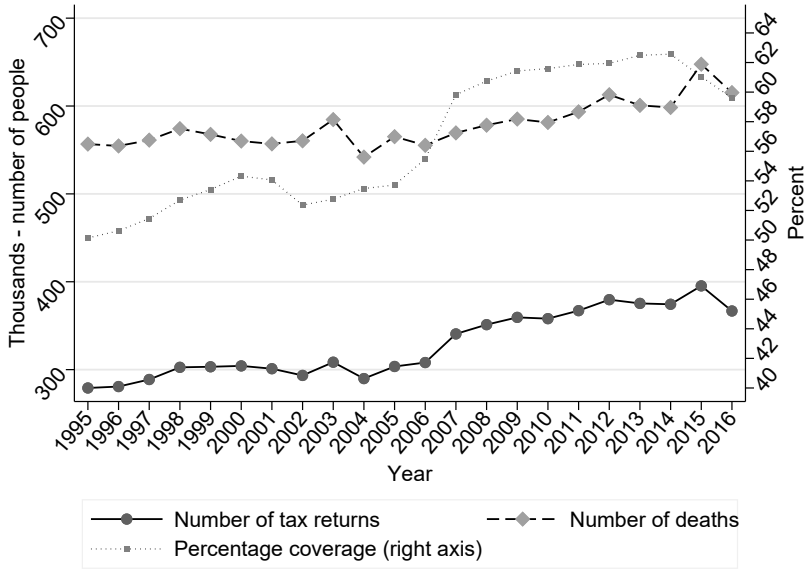


Figure 20: The coverage of decedents people and total adult population using inheritance tax records

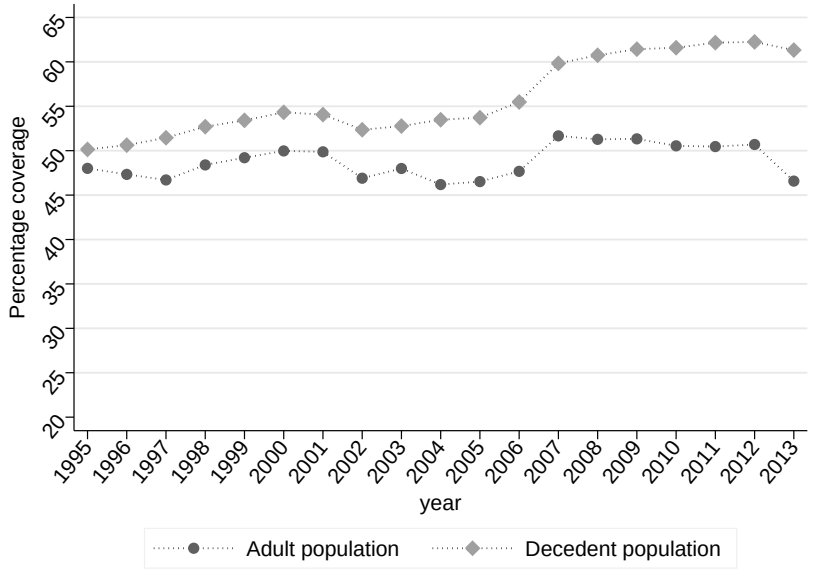
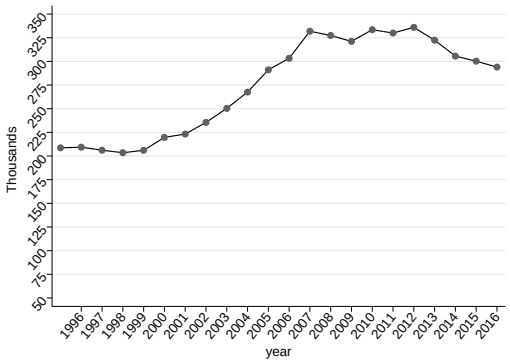
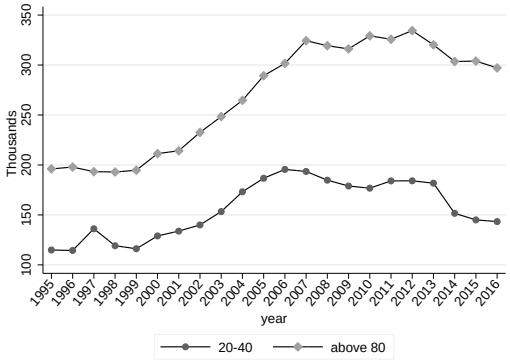


Figure 21: The evolution of average estate left at death



(a) All decedents



(b) Across age groups

Figure 22: The evolution of average estate left at death by age and gender: 1995 vs 2015

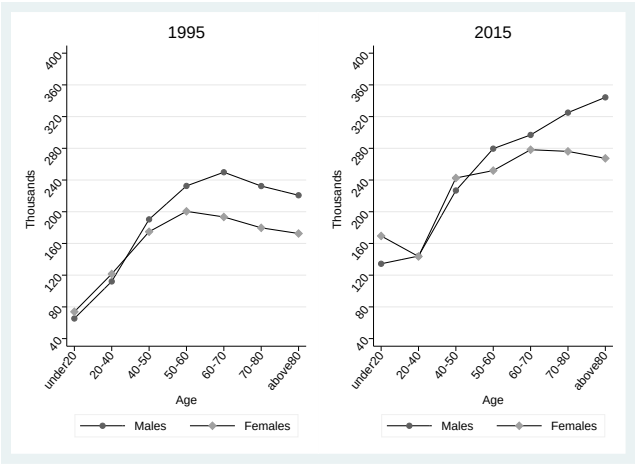
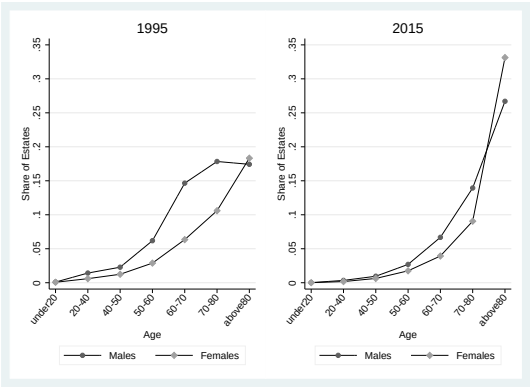
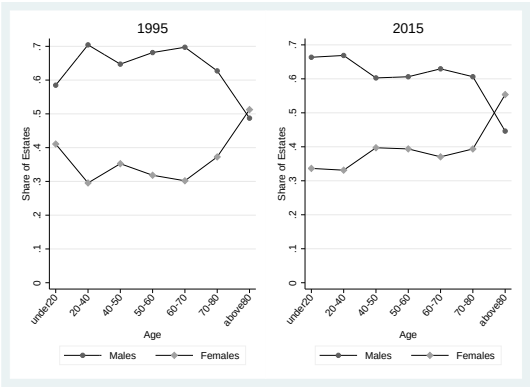


Figure 23: The share of reported estates left at death by age and gender groups: 1995 vs 2015

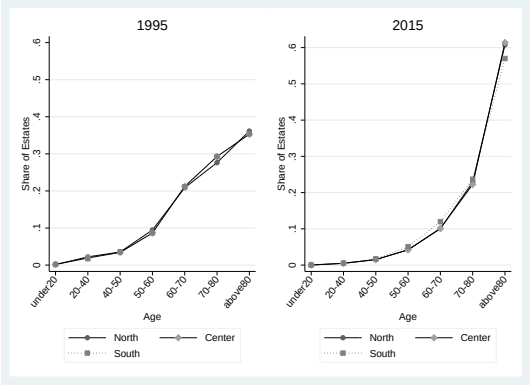


(a) Share of estates by age and gender groups

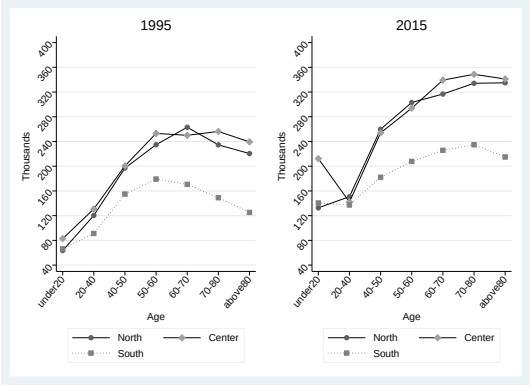


(b) Share of estates by gender within age groups

Figure 24: The geographical dimension of reported estates left at death: 1995 vs 2015



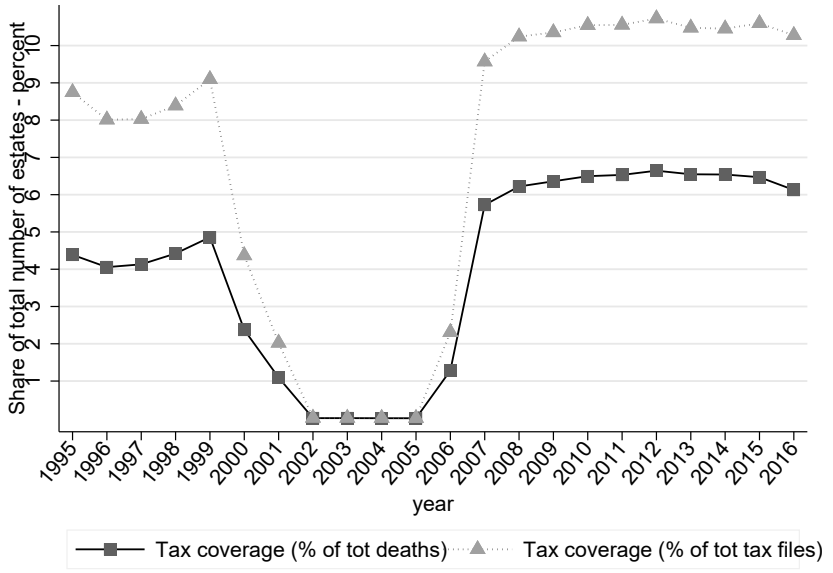
(a) Share of estates by macro areas



(b) The average value of estates left at death by macro areas and age groups

B The inheritance tax revenue, coverage, and its progressivity structure

Figure 25: The share of total estates subject to taxation

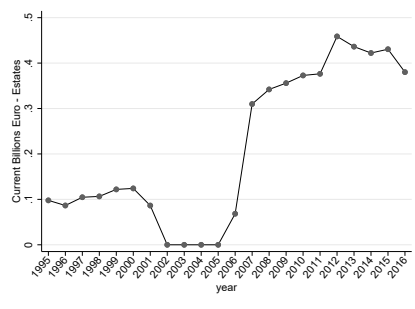


Tax audits

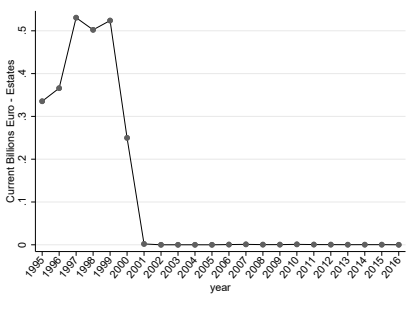
SECTION NEEDS REVISION AND UPDATE

Although an official measure of tax gap does not exists for the inheritance tax, the tax authority, Agenzia delle Entrate, runs audit programs. The results of this activity should be visible from the field "Ruoli" within the Rendiconto dello Stato 2015, available on the website of the Ragioneria Generale dello Stato: At pages 303/142 and 303/144 one can observe that the ordinary amount of inheritance tax receipt is around 640 mln, whereas the extraordinary receipts through "ruoli" amounts to 9 mln (cash value). The share total value of "ruoli" receipts and ordinary receipts is approximately 1,4%. This is slighlty higher than a similar ratio for personal income tax Irpef (1,6/182 bln=0,8% - pag. 303/1 e 303/8).

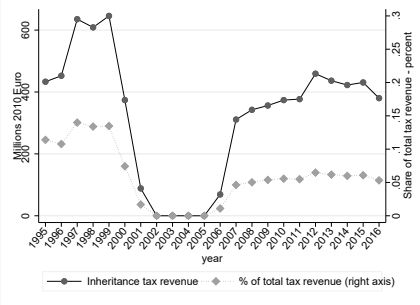
Figure 26: Inheritance tax revenue: 1995-2016



(a) Revenue from inheritance tax only



(b) Revenue from the estate tax only



(c) Inheritance tax revenue (% total revenue)

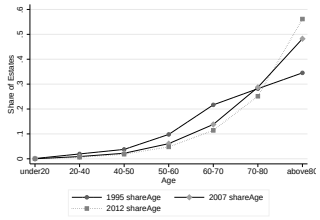
B.1 Re-weighting the population of deceased

Figure 27, illustrates how the age distribution of wealth holdings is affected by the application of mortality multipliers, shifting from the population of decedents (panels 28(a) and 28(d)) to the population of the living (panels 28(b) and 28(e)). Figure 27 also illustrates, in the panels 19(c) and 19(f), how the share of prevalent age groups differs across the wealth distribution by zooming into the richest 1%. The population of decedents is clearly skewed towards the individuals aged 80 and above, whereas the application of mortality multipliers rescales the population in favour of middle-aged groups. Yet, on average, wealthy individuals belonging to the top 1% tend to be older than the overall population.

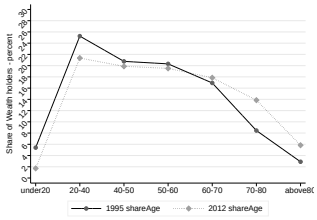
C Mortality rates

The main source of information for mortality rates in Italy is the database assembled by the Italian statistical office (ISTAT) and publicly released online at demo.istat.it. The information on mortality is provided on a yearly basis and it includes age, gender, and geographical location up to province of residence. We select geographical detail up to 5 macro-area of residence (north-est, north-west, center, south, and islands) and aggregate the information to 3 macro-areas: south (including islands), center, and north. The database includes, for each age, gender, year, and location, detailed biometric variables such as the number of deaths, life expectation, survival probability, and the probability of death. These biometric details are estimated out of a synthetic population of 100,000 individuals.

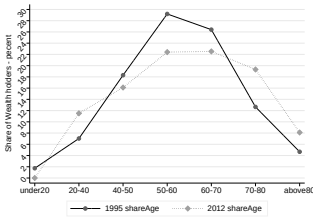
Figure 27: From the population of decedent to that of living wealth holders using mortality multipliers: distribution by age groups over time



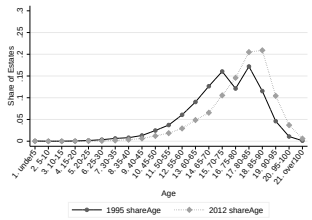
(a) Decedent wealth holders filing inheritance tax returns



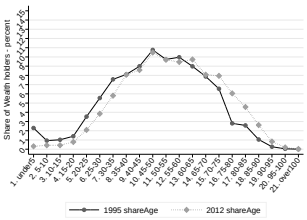
(b) Living wealth holders



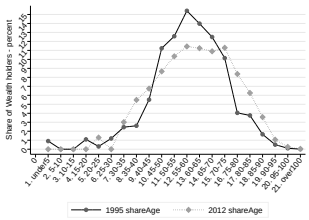
(c) Living wealth holders - above P99



(d) Decedent wealth holders filing inheritance tax returns-5 year age classes



(e) Living wealth holders-5 year age classes



(f) Living wealth holders-5 year age classes - above P99

Source: MEF micro data on inheritance tax returns and ISTAT mortality tables.

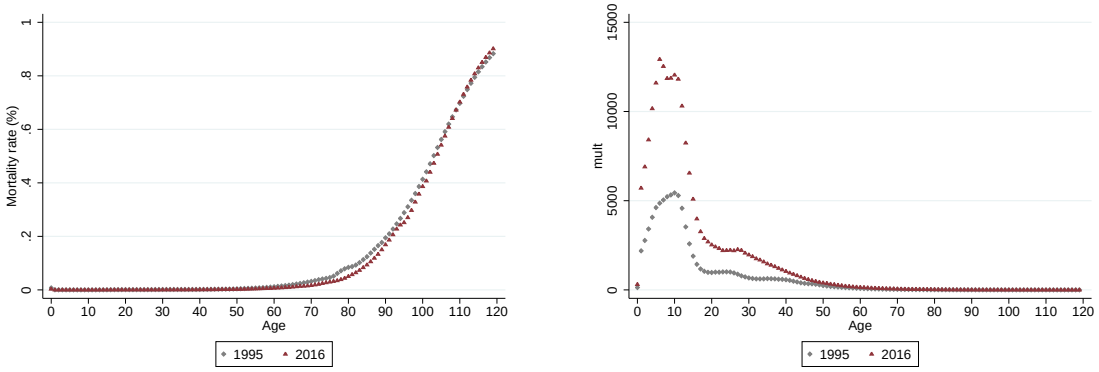
Once the database of mortality rates is structured we invert the rates to obtain mortality multipliers. The heterogeneous pattern of mortality rates and multipliers by age can be observed in figure 28 comparing the evidence in 1995 and 2016 for Italian men. As seen in panel 29(a), the probability of death for Italian men raises exponentially once we reach the 70 years old threshold and the average reduction of mortality rates occurred between 1995 and 2016 can be visibly observed as the 2016 line lies below the 1995 one especially for older groups. The mortality multipliers, by construction, show enormous heterogeneity for younger groups, especially below 30 years old. Panel 29(b) of figure 28, also reveals that imperceptible changes in mortality rates for younger cohorts would generate substantial variation in multipliers. Equally, more substantial changes in mortality rates for older cohorts is not necessarily reflected in substantial changes in mortality multipliers.

We further group age information to mimic the structure of tax tabulated information on estate left at death. Tax tabulations are structured in 7 age groups : under 20, between 20 and 40, between 40 and 50, between 50 and 60, between 60 and 70, between 70 and 80, and above 80 years old. Before grouping the data we delete mortality observation below 10 years and above 103 years to avoid outliers influence on the average mortality rate of the youngest and oldest groups. We also create 20 age groups, grouping observations every 5 years, to mimic the set of more detailed tax tabulations available in 1995 and yearly between 2012 and 2016. In this case, no age information is discarded.

The average mortality rate in Italy, as computed for individuals between 10 and 103 years

old, was approximately equal to 1.27 percent in 1995 and declined slightly over time to 1.20 in 2016. The resulting mortality multipliers - derived as the inverted mortality rates - range from 78 in 1995 to 83 in 2016. These trends can be seen in figure 29. The number of dead every year accounts to approximately 600,000 individuals in latest years, up by approximately 50,000 units from 1995.

Figure 28: The mortality rate and multiplier across the age distribution: 1995 vs 2016

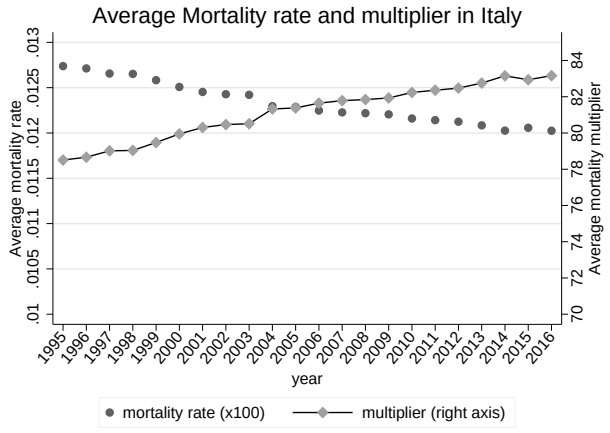


(a) Mortality rates

(b) Mortality multipliers

Source: Own computation from ISTAT mortality tables.

Figure 29: The evolution of average mortality rates and multipliers: 1995-2016

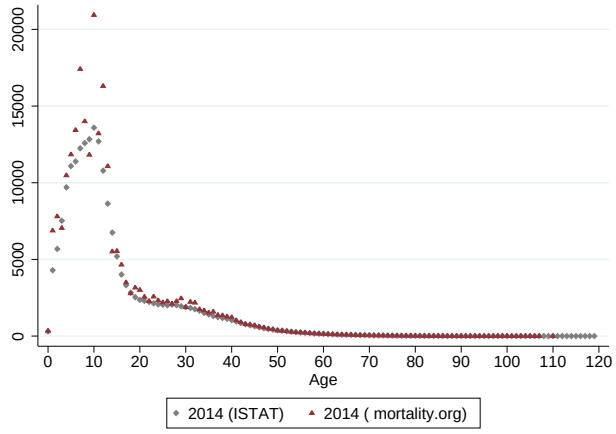


C.1 Alternative Mortality rates

Alternative mortality data are obtained from the Human Mortality Database (accessed at https://mortality.org/). The data on observed number of deaths and population by age is available on a yearly basis since 1872 and up to 2014. We make use of this database to compare the derived mortality multipliers as described in the above subsection. The mortality multipliers match pretty closely across the two databases with the exception of the youngest cohorts where a higher volatility is generated by very low mortality rates. Moreover, fewer

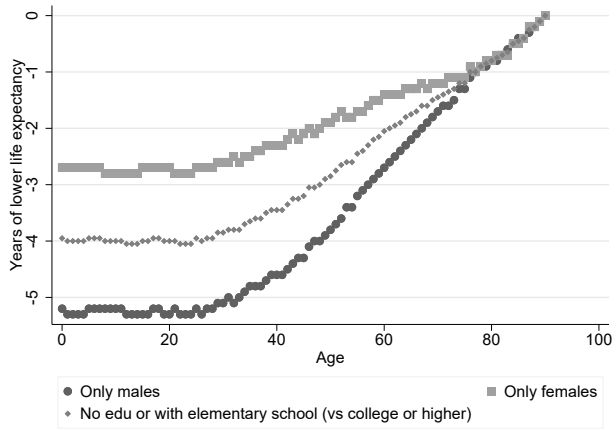
data points are available for very old age above 100. This appears less relevant as mortality multipliers are very stable in this age range.

Figure 30: 2014 mortality multipliers across alternative databases



C.2 Mortality rates by education groups

Figure 31: 2012 lower life expectancy of individuals without education or with elementary school compared to college degree of higher



D Adjusting the value of real estate in the inheritance tax records

Real estate assets are declared using a notional valuation (i.e. cadastral value) for inheritance tax purposes, rather the current market value. As Italian real estate cadastral values are typically well below market values, the use of unadjusted amounts declared in the inheritance tax returns will lead to distorted distributional information as well as an underestimation of

Table 2: The evolution of average cadastral and market values for housing

	2009	2010	2011	2012
Cadastral rent - total value	13,060,818,875	13,354,007,469	13,824,649,519	14,047,787,404
N. of owners	26,742,044	27,058,332	28,269,412	28,502,721
Average rent	488	494	489	493
Market value - total value	4,983,370,521,246	5,107,630,342,488	5,319,036,384,226	5,294,979,063,776
N. of owners	26,757,715	27,063,237	28,278,342	28,511,215
Average market value	186,241	188,729	188,096	185,716
		1.010496435	0.990893001	1.007822964
	488	494	489	493
	2009	2010	2011	2012
Calculation Cadastral value = (cadastral rent* 110 * 1,05)	1,508,524,580,063	1,542,387,862,670	1,596,747,019,445	1,622,519,445,162
N. of owners	26,742,044	27,058,332	28,269,412	28,502,721
Average cadastral value	56,410	57,002	56,483	56,925
Ratio Market Value/cadastral value	3.30	3.31	3.33	3.26
Ratio Market Value/cadastral value (one decimal point)	3.3	3.3	3.3	3.3

the value of personal wealth. Ideally, one would want to substitute the cadastral value for its equivalent market price for every building recorded within tax data. However, this would require an extremely refined and sophisticated set of data which is not possible to access. To overcome this problem, instead, we multiply the cadastral values by an annual adjustment factor derived as the share of average national nominal house price and cadastral value.

The derived ratio of average market price to cadastral value of housing is observed to be constant over the years 2009-2012 and equal to 3.3. In the following years, and following the reduction of housing prices, the ratio declined to 3.2 in 2013, 3.0 in 2014-2015 and 2.9 in 2016. The detailed time series of adjustment factors applied to our data for 2009-2012 is shown in table 2.

Average annual market value of properties for the years 2009-2016 is obtained from the "Osservatorio del Mercato Immobiliare - OMI", published by the Revenue Agency/Nomisma. Similarly, data on the average annual cadastral rent of houses owned by physical persons are derived from the internal data of the Revenue Agency and the Ministry of Economics and Finance, "Analisi Patrimonio Immobiliare - API".

The average cadastral values are then derived multiplying average cadastral rents by tax coefficients used for the inheritance tax base. For owner-occupying houses the coefficient equals 100 up to 2003 and 110 since 2004, and since 1997 an additional flat re-valuation of cadastral value of 5 percent is applied for tax purposes.[30]

Average cadastral value was relatively stable at around €56 thousand between 2009 and 2016, whereas the average marked value declined, over the same period, from €186 thousand to €162 thousand.

Unfortunately, for the years before 2009 we could not resort to the publication "Gli immobili in Italia" and we had to estimate the ratio of market price to cadastral value. To do so, we estimated the average market value by using the observed yearly variation of housing prices (using the Bank of International Settlements - BIS - estimates of nominal growth rate of

[30]The cadastral value for year 2013, as an example, would therefore be derived as the cadastral rent in 2013 times 110 times 1.05.

Table 3: Adjustment coefficient for cadastral value of real estates

	year	annual percentage change house nominal price (BIS)	annual percentage increase cadastral rents (MEF)	Inheritance tax coefficients on cadastral rent (owner occupied houses)	Inheritance tax revaluation coefficient of cadastral rent	Market value/ cadastral value
Estimates based on 14* cadastral rend and market price evolution	1995	0.01	0.004	100	1	2.2
	1996	0.04	0.004	100	1	2.3
	1997	0.03	0.004	100	1.05	2.2
	1998	0.00	0.004	100	1.05	2.2
	1999	0.01	0.004	100	1.05	2.2
	2000	0.04	0.004	100	1.05	2.3
	2001	0.06	0.004	100	1.05	2.4
	2002	0.12	0.004	100	1.05	2.7
	2003	0.06	0.004	100	1.05	2.8
	2004	0.06	0.004	110	1.05	2.7
	2005	0.08	0.004	110	1.05	2.9
	2006	0.06	0.004	110	1.05	3.1
	2007	0.05	0.004	110	1.05	3.2
	2008	0.03	0.004	110	1.05	3.3
8*MEF - Official estimates	2009			110	1.05	3.3
	2010			110	1.05	3.3
	2011			110	1.05	3.3
	2012			110	1.05	3.3
	2013			110	1.05	3.2
	2014			110	1.05	3.0
	2015			110	1.05	3.0
	2016			110	1.05	2.9

house price index based on the published figures by the Bank of Italy for more recent years). Similarly, we made use of the average yearly percentage change of average cadastral rent over the period 2007-2013, to estimate the average cadastral value between 1995 and 2009. Cadastral rents increased, on average, by 0.4 percent every year. As explained above, allowance for changes in the tax legislation affecting the cadastral values should also be made. As detailed in table 3, the derived yearly adjustment factors applied to the cadastral values range between 1.9 in 1995 to 3.3 in 2013.

The use of a yearly national adjustment factor for cadastral values may have a series of shortcomings. First, the use of a national multiplier ignores disaggregated geographical heterogeneity. This may affect estimates of wealth concentration as long as such unobserved geographical heterogeneity correlates with wealth rankings. Similarly, we adopted a unique adjustment factor across cadastral classes. However, different cadastral classes has different cadastral adjustment coefficients to be applied to the cadastral rent for tax purposes. As written above, as of January 2004, 110 is the multiplier applied to the main owner-occupied housing (e.s. "prima casa" falling within the cadastral classes A/1 to A/11 with the exception of A/10). The coefficient, as of mid 2004, is 120 if the house is not the main residence. These coefficients apply to regular dwellings, to castles, villas, and historical building alike. If most secondary houses were concentrated only in the hands of wealthy individuals, the use of a constant adjustment factor to house cadastral rents, may create a bias. Other things being equal, this may result in a upward bias for our estimates of wealth concentration, as the reported value of a secondary house in the inheritance tax return is 9% higher than the owner occupied house (120/110). However, the final effect on the wealth shares cannot be entirely known in advance as second homes may also have a larger systematic undervaluation of market value. Cadastral multiplier vary according to the type of real estate, 120 also applies to many

buildings in the C cadastral categories such as covered car parks, cellars, stores, laboratories and small businesses, with the exception of shops (cadastral category C1), in this case the coefficient is 40.8. On land rents the coefficient is 90 and on offices rent (cadastral category A10) the coefficient is 60. Other cadastral categories mainly apply to public spaces and buildings and may not be relevant for personal ownership of real estates. As a systematic assessment of the market value of all different cadastral categories is not available, it is not possible to assess how the adjustment factor based on the owner-occupied houses we used fits with the degree of underestimation of cadastral values of other real estate categories. Unfortunately, we could not obtain the information about cadastral types from our individual data but we could observe the share composition of different types of buildings owned by different individuals across the income distribution. Although not precise this exercise provides informative results, indeed, as shown in table A4 (ADD TABLE), real estate different from housing represent less than 10% of household real estate wealth and is distributed quite evenly across income classes. Despite some existing heterogeneity, the share of houses and appurtenant structure remains quite high even for the highest income class (86%). Therefore, unless the cadastral heterogeneity is systematically correlated to unobserved geographical variations, adjusting for different adjustment factors should not produce large biases in our estimates.

E Wealth totals

SECTION TO BE COMPLETED

Figure 32: Total wealth estimated from tax records and NA

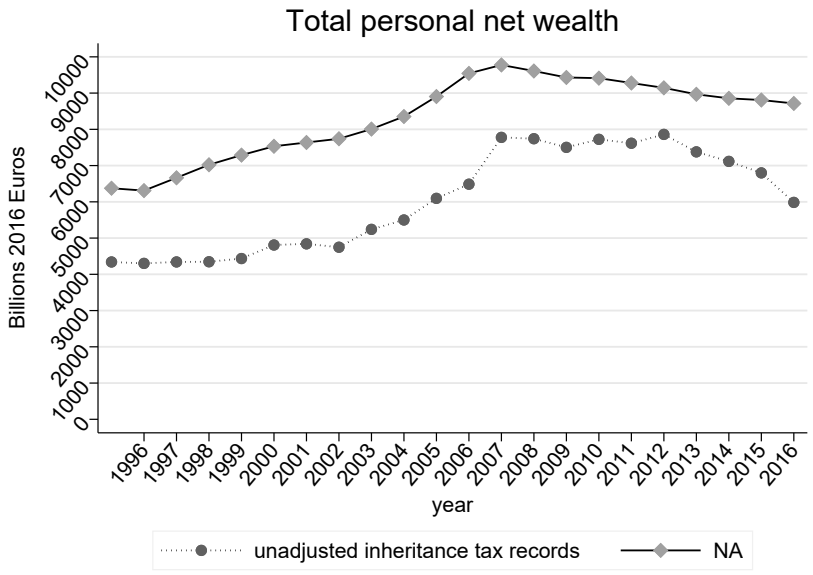
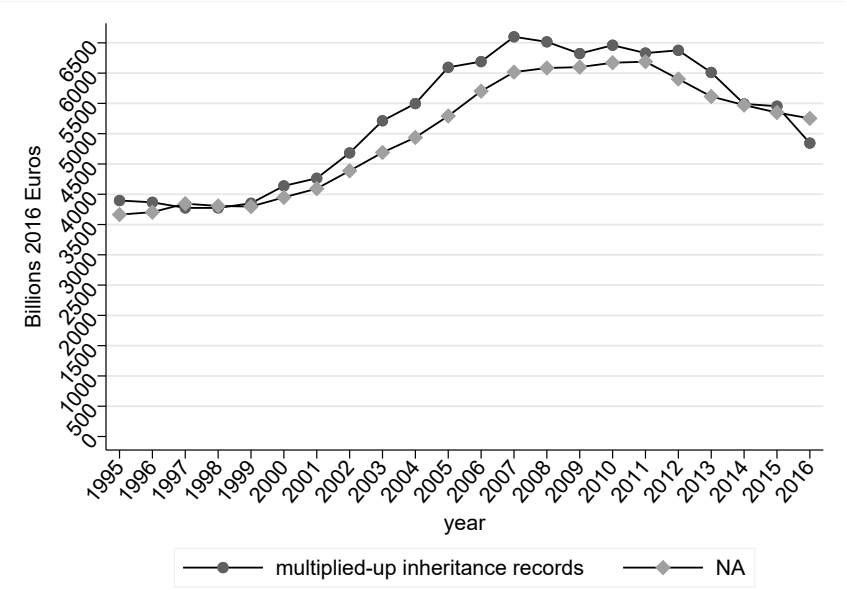


Figure 33: Total real estate wealth estimated from tax records and NA



F Imputation of missing wealth

F.1 Imputation of tax-exempt assets

SECTION TO BE COMPLETED

G Estimation of the wealth of the missing population

As discussed in the section describing the inheritance tax legislation, the inheritance tax return filing is necessary to legally transfer any real estate rights to the heirs. In the absence of any real estate rights, tax returns should be filed if the total value of the estate (net of liability) is higher than 35.000 Euro. In 2014, the latter threshold was raised substantially to 100.000 Euro.

We can therefore assume that any person who has relatively low value of accumulated wealth and has no real estate rights would not be represented in the tax records in the eventuality of death.

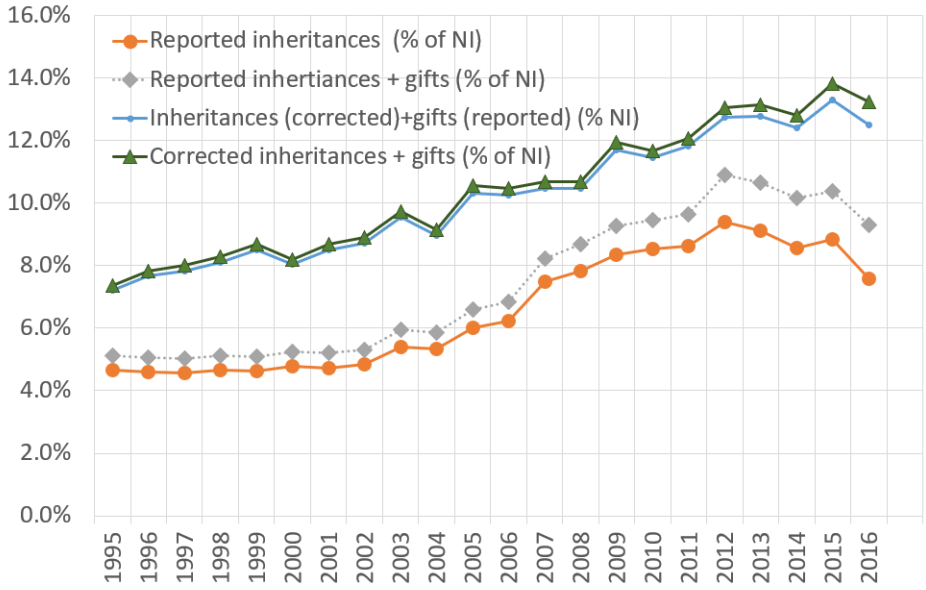
Using the Survey on Household Income and Wealth (SHIW), administered by the Bank of Italy, we identified the so called 'missing population'. To do so, we first allocate household wealth to each single adult composing the households. Following the work by D'Alessio (2018), we make use of detailed information about individual asset holding to allocate each specific asset to different individuals.[31] Alternatively, we split equally the total household specific asset value between the head of the household and her partner. In the absence of a partner all household wealth is allocated to the head.

[31]The final exercise slightly differs from D'Alessio (2018) as the information needed to split asset holding is not always readily available in the household survey public use file. The exact procedure used in this paper is explained in the AppendixI and differences in the procedure used by D'Alessio (2018) will be pointed out.

Based on information about pension and insurance contributions we also estimated the outstanding accumulated reserves available in these funds and allocated this assets to individuals.[32] Once individual asset holding is estimated we identify every head of household or partner who is not in possession of housing and who is below a specific wealth threshold: we assume 50.000 Euro before 2014 and 125.000 Euro after. Everyone who is below this threshold and is not a homeowner is considered to belong to the missing population. This also includes every adult, different than the head of the household or her partner, with wealth whose value is found below the specified thresholds. In 1995, we counted approximately 22 million adult individuals who are not homeowners and whose wealth is below the specified threshold. This number declined gradually by 2 million unit till 2010 before starting to raise back again to 1995 levels in 2016.

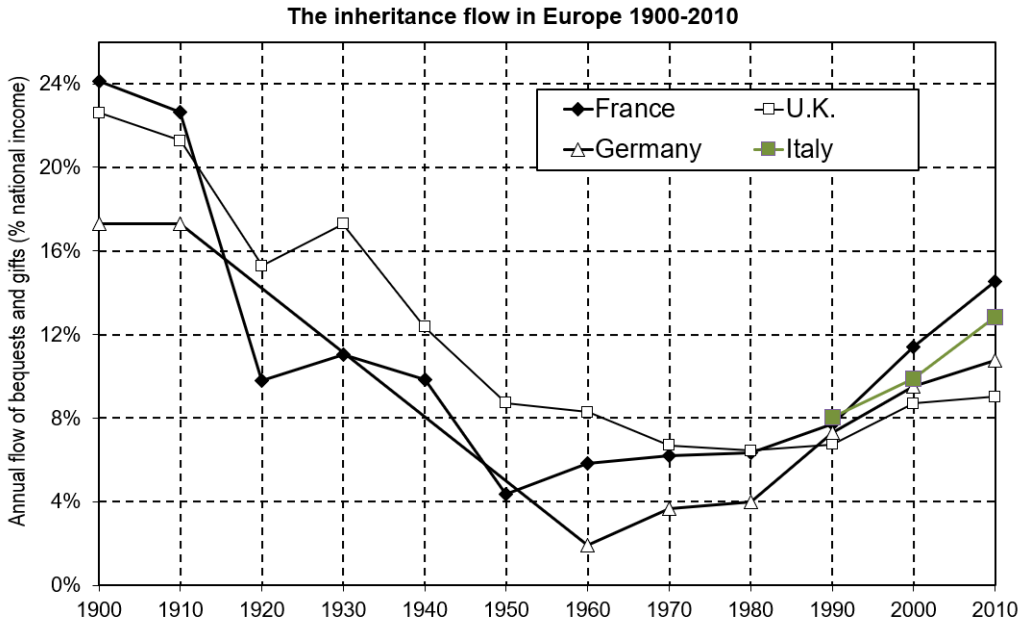
H Total inheritances and gifts

Figure 34: Growing wealth transfers as % of total income



[32]This exercise is explained within the AppendixJ.

Figure 35: Inheritance over national income : a comparison with other countries



I Allocating household wealth to individuals using the Survey on Household Income and Wealth

The derivation of the personal distribution of assets from the observations available at the household level can be approximated thanks to information about asset holdings available within the household survey responses to a variety of questions. In doing so, we follow the exercise carried out by D'Alessio 2018. Two main caveat apply. First, as we use the public available survey data, subject to a more restricted set of information, our results slightly differ from D'Alessio 2018. Second, whenever possible, we distribute each asset to the adult members of the household. However, the sum of the components of each asset subgroup is generally slightly different than the aggregate subgroup available in the survey. In fact, the imputations of missing assets carried out by the statistical office of the Bank of Italy are only distributed at a higher level of aggregation and not asset by asset. The observed discrepancy for each subgroup of assets is then distributed to individuals within the households (without changing the derived individual distributional of each asset subgroup). There are ten main asset subgroups relating to different subcategories of real and financial assets and liabilities. Net wealth in the Survey of Household Income and Wealth is defined as total real assets (AR) plus total financial assets (AF) minus total financial liabilities (PF). In turn, AR has three main subgroups (AR1= housing, land and other buildings, AR2 = businesses, AR3 = valuables), AF has four subgroups (AF1= Deposits, CDs, repos, postal savings certificates, AF2= Government securities, AF3= bonds, mutual funds, equity, shares in private limited companies and partnerships, foreign securities, loans to cooperatives, AF4 = Credit due from other households), and PF has three subgroups (PF1= Liabilities to banks and financial companies, PF2= Trade debt, PF3= Liabilities to other households).

The details of the exercise are the following.

AR1 is the result of the property value (VALABIT) times the household's ownership share (QPRO). The number of adult owners can also be identified. Each adult owner is given an equal share of the real estate. The amount of advance payments on property that household does not yet own (ANTIC) are also added to the variable AR1 and equally allocated to the adult members of the households.

AR2 is composed of the business equity value, excluding the value of properties. This information is contained in one variable (VALAZ) that can be extracted from three different datasets within the Self-employment income section of the survey: LINB - Self-employment income: until 1989 members of the professions, the self-employed, sole proprietors and entrepreneurs with fewer than 20 employees; LINC - Self-employment income: entrepreneurs with 20 or more employees, after 1989 active shareholder/partner; and LIND - Self-employment income: family businesses. In the first two datasets the personal ownership share of business equity can be directly identified. In the case of family business, we allocate the ownership share proportionally to the number of hours worked in the business (D'Alessio, 2018).

AR3 value is allocated to the households and there is no usable information within the survey that can be used to infer a distribution to individual members of the household. The reported value is equally split among each adult members of the household.

The value of AF1 (e.g. Deposits, CDs, repos, postal savings certificates) can in principle be allocated within the family after "according to the number of owners, selecting the components ordered by age (adults/non-adults), status in household (head of household, spouse, other member) and income" as described in D'Alessio (2018). However, the variable identify the number of owners within the households is not available in the public database. Hence, we only divide AF1 equally among all adult members of the households, similarly to what D'Alessio in doing for years preceding 2008.

Variables AF2 and AF3 (e.g. Government securities, bonds, mutual funds, equity, shares in private limited companies and partnerships, foreign securities, loans to cooperatives) can also be allocated to members of the households after 2008 by using the variable ICTIT containing information about the number of owners of investment and government securities within the households. Differently from the variable AF1, this can also be done using the public use files, although the information is only available in the annual wave files of the survey and not in the historically harmonized dataset. Following D'Alessio (2018) we distribute the value of AF2+AF3 to the members of the household by sorting them by age, status in household, and income. For year preceding 2008, the total value is divided equally among household adult members.

The variable AF4 is composed of business credits (CREC12d) from two datasets LINB e LIND, plus credits from other households (TCREDIT), which is only available in the annual wave files of the survey and not in the historically harmonized dataset. Hence, we derive the variable TCREDIT in the historically harmonized SHIW dataset as a residual from the difference between AF4 and the sum of the CREC12d from both LIND and LINB databases. The exact individual share of CREC12d can be computed directly from LINB whereas the value of CREC12d from LIND is allocated to individual members of the household based on the number of yearly hours worked in the family business. The variable PF1 is composed of business debts (i.e. DEBC12AB and DEBC12C from LINB and LIND databases) as well as all debts not linked to business activities (i.e. DEB12A; DEB12B; DEB12C; DEB12D; DEB12E; DEB12F; DEB12P from the FAMI database). The individual share of business debts from LINB are directly allocated to household members whereas they are estimated from LIND

based on estimated yearly worked hours within the family business. The sum of DEBC12AB from LIND and LINB should match the aggregate DEB12O reported in the FAMI database. This is not the case as imputation procedures are only reported at the higher aggregation level (e.g. DEB12O). The observed discrepancy for each households is distributed to its members using the observed number of yearly hours worked in the family business. The same applies to DEBC12C. The variable DEB12A, linked to housing ownership are allocated to individuals following the same criteria used to allocate housing assets within the household (e.g. method used to allocate AR1). The remaining debts, in the absence of more detailed information, are allocated equally to each adult member of the households. The sum of total sub-components would still be smaller than the estimated value of PF1 for each household as reported in the FAMI database. To match precisely the aggregates, we distribute the observed discrepancy to each household and keep the observed proportions of PF1 across household adult members. The variable PF2 is composed of self-employment and family business debts, DEBC12D from both databases LINB and LIND. As above, the exact individual share of DEBC12D can be identified from LINB whereas we estimate it in LIND by looking at the individual reported yearly hours worked in the family business. Similarly, to what was done for PF1, we distribute within each household, the difference between the household aggregate value of PF2 and the total PF2 derived as the sum of each sub-components. The variable PF3 (Liabilities to other households) was distributed equally among all adult members of the household.

J Estimating private pension and life insurance accumulated assets using the Survey on Household Income and Wealth

The Italian household survey on income and wealth, Shiw, asks households about the value of their accumulated capital private pension and life insurance funds. However, this information is not available in every year and contains lots of missing values. In order to estimate the accumulated reserves into pension and life insurance funds we also resort to additional information about the value of annual payments and contributions into pension funds and life insurance as well as the beginning year of contribution. The information is available at the household level and the information available within annual waves matches precisely the historically harmonized database. The accumulated capital in year t is then computed as the reported or estimated accumulated capital at time t-1 capitalized to time t using a constant 3% return plus the new contributions done between t-1 and t.

For the panel sample of the survey we can compare the reported year when contributions to pension or life insurance funds begins. When the answers are not consistent we consider the first answer available as the 'true' beginning year.

If such information is not available or if the information is not consistent with the first reported payment contribution, we consider as the official beginning year of the accumulation, the first year of reported contribution into life insurance (e.g. variable assvita) or pension fund (e.g. variable pensint).

If the contributions is reported to begin before the first wave of the survey, we used the year of the first reported contribution as the beginning of the accumulation process (e.g. this would presumably under-estimate the potential asset accumulation of older households).

In some years the variables assvita and pensint do not report any value. However, if any information is reported in both earlier and later years we compute the average between the two values and impute it to the missing observation.

In 2016, the survey asks what is the initial contribution to the insurance or the pension fund. If this information is reported we consider this as the correct information to compute accumulated capital.

J.1 Inter-vivos gifts

Tax planning may be used to reduce the tax liability at death if assets are donated in life. It is worth mentioning that the capitalized value to the date of death of all *inter-vivos* donations done at anytime by the deceased before death also need to be self-reported within the tax forms. Such provision, together with a fully unified system of gifts and estate/inheritance taxation, are designed to tackle aggressive avoidance of taxes via careful estate planning.[33] Moreover, keeping track of assets donations and transfers during lifetime is fundamental to compute the reserved share of total estate (so called "quota legittima") guaranteed by the Italian civil law to the spouse (and to civil partner since 2016), direct descendants, and ascendants of the deceased depending on circumstances.[34].

J.2 Accounting for the wealth hidden in offshore accounts

A fraction, perhaps substantial, of financial wealth remains hidden from official statistics and tax agencies. With the help of the wealth management industry and a growing freedom of capital movements, this could generate growing tax revenue losses. Zucman (2013) estimates that the hidden wealth held off-shore accounts to $5.6 trillion, or 10% of the world GDP. The global estimates of portfolio securities held offshore can be derived using two main sources, as described by Zucman (2013). First, one can estimate the total amount of financial wealth managed by Swiss banks on behalf of foreigners (approximately $2.3 trillion in 2017) using data from the central bank of Switzerland. This is sizeable and the authors suggest this 'data source alone captures a large fraction of the world's total offshore wealth (30–50% in recent years)'. Moreover, to estimate the global amount of offshore portfolio securities, beyond what is held in Switzerland banks, one could track anomalies in global investment statistics, namely the positive discrepancy between global portfolio liabilities and assets, indicating to what extent the portfolio securities are less likely to be reported as assets on the international investment positions of countries.

Until very recently, the information publicly available was not sufficient to reconstruct how the global offshore wealth was distributed across countries and whom this wealth belongs to. The distributional implication of unreported offshoring of wealth was, therefore, difficult to be precisely investigated (see Roine and Waldenstrom, 2008 for a previous attempt to investigate

[33]The self reported gifts and donations done in life concur to erode the inheritance tax exempted thresholds if the heir belongs to the degree of kin for which an exemption threshold is contemplated by the tax legislation.

[34]The reserved share of a single child is a half, whereas in case of multiple children the children are entitled to 2/3 of the total estate in equal shares. If there is a spouse and one child, the reserved portion is 2/3 split equally between the spouse and the child. If there is a spouse and more than one child, the spouse has 1/4 and the children's 1/2. If there are only ascendants, the reserved portion is 1/3. In case there are only ascendants and a spouse, the reserved portion of the spouse is half of the estate and that of the ascendants is a quarter. Finally, the spouse always preserve the right to inhabit the family home, even if not owned fully or partially, and the right to use the furniture in it.

this important issue). A series of recent works, helped to shed light on these important issues.

First, Alstadsæter et al. (2018) approximated the relative distribution of world off-shore wealth across countries around 2007. The authors unveil the cross-sectional heterogeneity of the incidence of off-shore wealth across different countries in the world. In the abstract of their work the authors write that 'The equivalent of 10% of world GDP is held in tax havens globally, but this average masks a great deal of heterogeneity from a few percent of GDP in Scandinavia, to about 15% in Continental Europe, and 60% in Gulf countries and some Latin American economies'. According to this estimates, Italians held approximately 12% of GDP of financial wealth in offshore accounts in 2007, equivalent to approximately 190 billion of Euro.

This estimate is obtained in two main steps. The most important country-specific information is derived from the Bank for International Settlements who recently disclosed bilateral deposits holdings by foreigners in the most significant offshore financial centers in the world (Switzerland, Hong Kong, Singapore, Cayman Island etc.). In doing so, Alstadsæter et al. (2018) compute the share of total deposits held in most offshore financial centers held by Italians. Bank deposits, however, only account for a small share of total financial wealth held off shore as it excludes portfolios of equities, bonds and mutual fund shares and other securities. In order to overcome this limitation, Alstadsæter et al. (2018) assume the remaining global financial wealth (portfolio securities) held offshore, as estimated in Zucman (2013), is distributed across countries in the same way as offshore bank deposits are. This is clearly an imperfect adjustment although the only feasible one with the current data availability. The authors suggest that"the correlation between the two distributions is likely to be high but imperfect."

To provide an external validation of this tentative estimate an alternative series based on the estimates provided by Pellegrini et al. (2016) who independently attempted to estimate securities financial assets held in offshore centers by investors resident in Italy, Germany, France, the Netherlands, and Spain between 2001 and 2013. In this paper the authors, similarly to what done in Zucman (2013), made use of global discrepancy between the stock of financial assets and liabilities to derive the global stock of financial assets held in offshore centers. The global undeclared amount of undeclared assets was then allocated to different investor countries based on two approaches. The baseline approach distributed undeclared assets according to the official derived liabilities share of each issuing country as declared in the CPIS data (Coordinated Portfolio Investment Survey), implicitly assuming that "investors resident in any given country allocate the unreported foreign wealth to the same portfolio of assets used for the investment of declared wealth" (p.16). This procedure results into an estimated total value of undeclared debt and equity securities of approximately 140 billion Euro in 2007.

In order to compare these figures directly with those provided in Alstadsæter et al. (2018) we further need to estimate the value of undeclared bank deposits held by individual investors in offshore centers. The work by Pellegrini et al. (2016) only derive the global amount of undeclared bank deposits held by non-banking sector in offshore centers as obtained from the cross-border banking statistics released by the Bank of International Settlements. In order to derive the share of off shore bank deposits held by Italians, we first assume that 1/2 of the undeclared bank deposits are allocated to individuals[35]. We then distribute a share of the

[35]The same share was assumed in Johannesen and Zucman (2014) and appears consistent with more recent

global amount of individual bank deposits held off shore according the country's relative share of global GDP. The resulting estimated value of total financial wealth held offshore by Italian investors is approximately 187 billion Euro in 2007. Incidentally this a very similar value to what independently derived by Alstadsæter et al. (2018).

This exercise is carried out also for the remaining years from 2001 to 2013 to derive a time series evolution of Italian financial wealth held in offshore accounts. In order to derive the evolution of offshore wealth for a longer period of time, between 1995 and 2016, we anchor the level of financial wealth held offshore in 2007 as reported in Alstadsæter et al. (2018) and we assume that the time series evolution follows the relative evolution of European off shore wealth. The results indicate that Italian financial wealth held offshore went from 5% of GDP in 1970 to approximately 18% in 2016. We will use the absolute values of this series between 1995 and 2001 and its relative evolution between 2013 and 2016, when no time series and country-specific information can be estimated from Pellegrini et al. (2016).

One important feature to highlight of latter work is the allowance made in their statistics for the voluntary declaration of financial assets held abroad to the Italian tax authority thanks to the Voluntary Disclosure (VD) agreement scheme put in place by the Italian government in 2009/2010. Under very favorable tax and legal conditions, thousands of taxpayers decided to declare approximately 100 billion of financial assets under this VD scheme, leading to subsequent revisions of the official statistics on the international investment positions and the Italian balance of payments.

The resulting final series suggests that Italian financial wealth held in offshore accounts went from 5% of GDP in 1970 to approximately 11% of GDP in 2016. Given the strong relative rise in household wealth over the same period, the choice of the comparator clearly matters. Off-shore wealth as a share of total net personal wealth appears to be more stable and oscillating around 2% between 1970 and 2015. The estimation of the time series of financial wealth held offshore by Italian households it is only the first step to investigate its distributional implications. The second step involves the estimation of the share of the financial wealth held offshore that remains undeclared and therefore unaccounted in tax administrative data and the national accounts. The third step requires the estimation of how undeclared financial wealth held offshore is distributed among wealth holders.

The investigation by Alstadsæter et al. (2019) matched individual tax records on income and wealth to records obtained from tax amnesties in Denmark and Norway as well as recent random leaks from offshore financial institutions (e.g. Panama Papers in 2016 and the "Swiss Leaks" from HSBC Switzerland). The investigation suggests that the 90 to 95% of total wealth held off shore is evading taxes as it goes unreported to tax authorities. Moreover, their findings suggest that off-shore wealth is highly skewed at the top of the wealth distribution being concentrated almost entirely (up to 95%) to the top 1 percent (50% of which being allocated to the richest top 0.01% group alone).

works by García Luna and Hardy (2019) who found that at end-March 2019, households (including non-profit institutions serving households) accounted for 51% of Switzerland banks' cross-border liabilities. In the same work, if considering all the countries in the sample, households accounts for only 14% of banks' cross-border liabilities.

We consequently assume that 95% of offshore wealth is undeclared, this high share is also consistent with data of financial wealth abroad declared to Italian tax authorities in the context of the stamp duty (*IVAFE - Imposta sul Valore delle Attività Finanziare all'Estero*): reported financial wealth held in "black listed" countries in tax year 2016 was only 2.9 billion euros over a total of 114 billion euros of financial wealth held in all foreign countries (source: Italian Ministry of Economy and Finance). Applying the same distribution described above to the Italian data reveals that wealth concentration is even more concentrated than what tax data alone imply. The level of the share of total net wealth held by the richest one percent of the adult population increases by approximately 2 percentage points throughout. This is a sizeable effect that becomes even more visible at the very top of the distribution. The richest one in one thousand individuals saw its share of total net personal wealth increasing by 65% in 1995 (from 1.9 to 3.2 percent) and by 15% in 2016 (from 7.3 to 8.4 percent). The inclusion of unreported offshore financial wealth, however, does not appear to substantially affect the trend of the wealth concentration over the period of investigation.

It would be interesting to observe the future trends of wealth hidden in offshore accounts in the light of the recent achievements in terms of new standards of global exchange of information among tax authorities. While **Johannesen and Zucman (2014)** find that total bank accounts in International Financial Centers (IFCs) had not declined significantly since the expansion of exchange of information in 2008, more recent OECD work (**O'Oreilly, Parra Ramirez and Stemmer, Exchange of information and bank deposits in international financial centres, OECD Taxation Working Papers no. 46, 2019**) show a significant decline associated to exchange of information on request, automatic exchange of information and FATCA (the US Foreign Account Tax Compliance Act). In particular, automatic exchange of information commencement in 2017 and 2018 is associated with a reduction in IFC bank deposits of 22%. This virtuous process of exchange of information at the international level in the near future might render wealth declared on inheritance tax returns closer to the actual wealth. Further information on this domain can be found on the OECD website[36].

[36] www.oecd.com/tax/exchange-of-tax-information/