Appendices and online supplementary material

A The impact of transfers on wealth inequality: A selective review of the empirical literature

We review here the different approaches used in the recent literature to assess the impact of inter-generational transfers on wealth inequality. In particular we outline the different counterfactual benchmarks used – implicitly or explicitly – to assess the impact of transfers. We also connect classic Lerman-Yitzhaki decomposition analysis of the Gini coefficient by source (Lerman & Yitzhaki, 1985) to the condition recently proposed in Nekoei and Seim (2022). We then illustrate the empirical differences between the influence function approach advocated in the paper and the Lerman-Yitzhaki decomposition approach.

A.1 The counterfactual benchmarks of alternative methods

When analysing the impact of transfers on wealth inequality, analysts compare inequality observed in a cross-section distribution of wealth, $I(FW)$, with a counterfactual inequality that would be observed in the wealth distribution if no or differently distributed wealth transfers had taken place in the past, $I(FW^*)$. This counterfactual is however unobservable. The literature has therefore used alternative empirical counterfactual constructs, the exact definition of which is crucial to the interpretation of the empirical exercises that have attempted to assess the effect of transfers on inequality.

Classic decomposition methods

Much of the existing empirical literature has used what we call 'ascription' approaches. These are based on simulations or decomposition properties of inequality indices, which require one to determine the share of a household's total wealth that can be ascribed to some past wealth transfers. Any given current wealth W_i is thus described as the sum of component A_i due to 'accumulation' and savings, and T_i, linked to the receipt of wealth transfers. The contribution of $\{T_i\}_{i=1}^N$ to inequality in $\{W_i\}_{i=1}^N$ is then assessed.

For that assessment, a widely-used approach is to decompose summary wealth inequality measures into 'transfer' (T) and 'non-transfer' (A) components. Following from standard decomposition analyses of inequality indicators, $I(F)$, by factor components (Lerman & Yitzhaki, 1985; Shorrocks, 1982) :

$$I(F) = s^T I(F^T)\rho^T + (1 - s^T)I(F^A)\rho^A \tag{1}$$

The contribution of each factor f is a function of the share of each factor in total wealth, s^f, inequality in factor itself, $I(F^f)$, the correlation of each factor with total wealth ρ^f.

Using household survey data, Wolff and Gittleman (2014) and Wolff (2015) implemented such a decomposition analysis for the US employing the squared coefficient of variation, while Karagiannaki (2017) and Crawford and Hood (2016) did so for Great Britain employing the coefficient of variation and the Gini coefficient respectively. Bönke, Werder, and Westermeier (2017) use data from eight Eurozone countries to compare decompositions of the squared coefficient of variation with US results reported in Wolff (2015). These studies derive estimates of the wealth attributable to the receipt of inheritances and gifts based on the amounts reported in these surveys, usually capitalised to incorporate some rate of return since receipt. Inequality for wealth excluding this 'transfer wealth' is found to be higher than the observed inequality in total (net marketable) wealth, leading to the conclusion that wealth transfers are equalising. This arises because inheritances are larger for the wealthy in absolute terms but smaller relative to their non-transfer, 'self-made' wealth than is the case for the less wealthy, so absolute gaps are increased but relative inequality measures decline when 'transfer wealth' is included.

While appealing in terms of ease of implementation, such ascription approaches are subject to limitations. The first is the uncertainty about how much of current wealth can be satisfactorily attributed to past transfers. Such simple ascription approaches do not account for differential consumption and investment responses following the receipt of an inheritance. Such responses are likely to vary with the size of transfers and accumulated wealth from other sources as well as other characteristics. They also generally fail to take into account the fact that wealthier households can generate higher rates of return on assets on average (see Fagereng, Guiso, Malacrino, & Pistaferri, 2020). Furthermore, inequality decomposition techniques can only be implemented for a subset of inequality measures (notably the Gini and Generalised Entropy measures).

Nolan, Palomino, Van Kerm, and Morelli (2021) apply a similar 'ascription' approach and present decompositions of the Gini coefficient from household wealth surveys for Britain, France, Germany, Italy, Spain, and the US. They also derive an elasticity expression for the effect on wealth inequality of marginal change in the size of transfers within a Lerman-Yitzhaki decomposition using the expression from Stark, Taylor, and Yitzhaki (1986). As discussed in Nolan et al. (2021), the role of inheritances in shaping wealth inequality can be decomposed into three components: (a) the magnitude of inheritances relative to total wealth (s^I); (b) the inequality of inheritances (G^I); and (c) the (Gini) correlation of inheritances with total wealth (R^I). Correspondingly, the Lerman-Yitzhaki decomposition of the Gini coefficient of total net wealth including inheritances (G^W) is defined as

$$G^W = s^T \cdot G^T \cdot R^T + (1 - s^T) \cdot G^A \cdot R^A$$

where the terms G^A and R^A represent the inequality in non-transfer wealth and the Gini correlation between total net wealth (rank) and non-transfer wealth. R^T is a measure of correlation between transfers and ranks in the distribution of total wealth. An elasticity expression for the effect on wealth inequality of a marginal change in the overall size of inheritances was derived in Stark et al. (1986) as

$$E^T = s^T \left(\frac{G^T \cdot R^T}{G^W} - 1 \right). \tag{2}$$

Accordingly, inheritances are inequality-reducing if $E^I < 0$, that is, if $G^W > R^T \cdot G^T$: a ceteris paribus increase in their size relative to non-transfer wealth would reduce inequality. Note here the difference with the influence function marginal effect in which inequality effect is assessed by a ceteris paribus increase in the *share* of transfer recipients.

For the sake of comparison with the influence function regression results, Table A–1 reproduces estimates of Nolan et al. (2021) for the terms of a Gini decomposition and the estimated Lerman-Yitzhaki elasticity based on our data and definitions.[1] In line with the influence function regression results, the main results suggest a negative elasticity, except for Spain and Italy (where the elasticity is found to be indistinguishable from zero): a ceteris paribus increase in the size of transfers would reduce wealth inequality.

[1]Results are perfectly consistent with those of Nolan et al. (2021), even though the present paper uses individualised wealth and transfer amounts and even if we did not pursue any data trimming in the tails or capping for the cumulative transfer values so they do not exceed current wealth holding levels.

Table A–1 – Lerman-Yitzhaki decomposition of the Gini coefficient of net worth (NW) and Gini elasticity to transfers.

	Germany	Spain	France	Italy	Britain	United States
Gini coefficient of total wealth (G^W)	0.757	0.572	0.661	0.594	0.659	0.866
Share of inheritances in total wealth	0.26	0.13	0.25	0.30	0.13	0.09
Gini coefficient of inheritance (G^T)	0.881	0.915	0.923	0.873	0.912	0.958
Gini correlation of inheritances with total wealth (R^T) wealth with NW rank	0.793***	0.665***	0.612***	0.694***	0.626***	0.774***
Elasticity of G^W w.r.t. inheritances E^T with respect to transfer wealth	−0.020**	0.009**	−0.036***	0.006	−0.017**	−0.012***

Note: Stars mark statistical significance at 10% (*), 5% (**) and 1% (***) levels.

Rank-based and static 'tax-and-redistribute' simulations

By contrast, findings consistent with an *inequality-increasing* effect of wealth transfers were found using alternative counterfactual frameworks such as comparing the existing distribution with one where the rank in the wealth distribution would not depend on the receipt and size of an inter-generational transfer (Fessler & Schürz, 2018). Similarly, the fact that inheritances go predominantly to richer households and that households who do not receive inheritances have lower levels of wealth can inspire a different analytical approach in which the rank (and corresponding expected wealth) are not conditioned by the inheritance received (Palomino, Marrero, Nolan, & Rodríguez, 2021). In these scenarios, inter-generational transfers are found to make a significant contribution to wealth rank and to wealth inequality.

Feiveson and Sabelhaus (2018) compared the observed wealth distribution to one where all the wealth that is attributable to transfers is distributed equally across the population. One can view this setting as a static 'tax-and-redistribute' scenario, where counterfactual individual wealth $\tilde{W}_i$ is the result of taxing wealth transfers, T_i, under the function $t(.)$, and redistributing the tax collected uniformly μ_t. The tax function could take different forms, including a linear tax function $t(T_i) = \delta T_i$ or a liner tax function with exemption threshold, E (piece-wise linear), $t(T_i) = \delta \max(T_i - E, 0)$. The setting described in Feiveson and Sabelhaus (2018) can be seen as a special case, where $t(T_i) = T_i$ and $\mu_t = \frac{1}{N}\sum_i^N T_i$.[2] Such simulations are obviously static and not 'causal' since no behavioural response to the tax is assumed, but they serve as counterfactual benchmarks to assess how different the wealth distribution could look under a (radically) different distribution of transfers. Feiveson and Sabelhaus (2018) shows that wealth inequality in the US would be much lower were transfers redistributed uniformly.

[2] Such a framework can accommodate policies of taxes levied on wealth transfers or on wealth itself to fund direct transfers of wealth to households, on a universal or means-tested basis, to support accumulation of wealth. Atkinson (2015) advanced a proposal of universal inheritance payable on reaching adulthood. Piketty (2020) echoed it, proposing a substantial capital endowment of approximately 60 percent of average adult wealth (about € 120,000 in France) at the age of 25 to allow the bottom 50% of the wealth distribution "to acquire significant assets and participate fully in economic and social life". A recent paper by Morelli, Nolan, Palomino, and Van Kerm (2021) estimated how the distribution of wealth would be altered by a universal inheritance worth 10% of household's net wealth transferred to every 18-year-old every year, using Italian and US survey data and assuming that the policy was enacted retroactively in the past, starting in 1989. The policy is shown to reduce the share of households with zero or negative wealth and increase the aggregate wealth share of those who currently have little or none. This is a static exercise where the universal endowment generates no heterogeneous consumption or investment response by wealth or income level, and also ignores its funding (e.g., the transfers are not financed via additional taxes on wealth transfers). This setting could be summarized as $t(T_i) = 0$ and $\mu_t = \{\mu_t = 0.1 * \frac{1}{N}\sum_i^N W_{i,t} \; \forall age_{i,t} = 18, 0 \; \forall age_{i,t} \neq 18\}$.

Causal estimates and results from administrative records

A different, more recent, wave of studies have exploited administrative data on wealth and wealth transfers and quasi-experimental settings to estimate the causal effect of wealth transfers on wealth distribution. These studies use richer data on the history of both transfers and wealth to 'control' distributions of equivalent non-recipients and do not rely on ascribed past transfers nor on a reconstructed pre-transfer distribution of wealth. Crucially such studies are able to separate accurately pre-transfer wealth (observed at the moment of the transfer is received) from transfer wealth. Boserup, Kopczuk, and Kreiner (2016) use Danish data to follow the wealth evolution over time for people between 45-50 years old for whom a (single living) parent dies, and compare them with those where that does not happen in the time window. Elinder, Erixson, and Waldenström (2018) use data for Sweden to compare those receiving/not receiving inheritances in a similar cohort and with the same characteristics. Albeit different in methodology, these studies also find that inheritances reduce relative wealth inequality. Nekoei and Seim (2022), however, finds with Swedish data over a longer period that this immediate inequality-reducing effect does not last as wealthy heirs deplete their inherited wealth at a much lower rate compared to less wealthy heirs. This analytical approach represents a clear advance with respect to considering the behavioural responses of inheritors/transfer recipients along some dimensions (e.g., consumption, labor supply, investment decisions).

Nekoei and Seim (2022) also derive analytical condition for wealth transfers to reduce wealth inequality when the latter is measured as wealth share of the top θ group:

$$(1-\theta)(S^W-\theta) \quad > \quad (\alpha-\theta)(S^T-\theta) \tag{3}$$

where S^T is inequality in inheritance measured as the share of top θ in the distribution of inheritance (rank by inheritance). S^W is inequality in non-transfer wealth ('pre-inheritance wealth') measured as the share of top θ in the distribution of pre-inheritance (ranked by pre-inheritance wealth). The term α represents an 'immobility' measure – the proportion of top inheritors that are also in the top group of total pre-inheritance wealth. In this setting, inheritances decrease wealth inequality when inheritance inequality is lower than initial wealth inequality and when mobility is sufficiently low.

For completeness, Table A–2 provides a detailed review of the approaches and data used and the key results found in a selected number of recent studies.

Table A–2 – Summary review of existing literature on inter-generational transfers and wealth inequality

Reference	Country	Data collection period	Data	Inequality Metrics	Methodology	Counterfactual	Impact of intergenerational transfers on the wealth distribution	Sensitivity analysis	Captures heterogenous effect by inheritance size and estimates a threshold?
Wolf and Gittleman (2014)	USA	1989-2007	Survey of Consumer Finances (SCF) - Pre-transfer wealth reconstructed by substracting (capitalised) past reported transfers from current wealth	Coefficient of Variation // Gini Coefficient // Wealth Shares	Coefficient of Variation Decomposition by components (Net Wealth Before Transfers and Transfers). / Gini and Wealth Shares change between pre-transfer wealth and observed transfer wealth	A wealth distribution in which transfer wealth does not exist (eliminated from observed wealth)	Equalising (relative measures)	Qualitative result robust to using different capitalisation rates or different return to inheritance-gifts rates when reconstructing pre-transfer wealth.	No
Crawford and Hood (2016)	England	2012-2013	English Longitudinal Study of Ageing (ELSA) - Pre-transfer wealth reconstructed by substracting (capitalised) past reported tranfers from observed current wealth	Gini Coefficient // Wealth Shares	Gini and Wealth Shares change between reconstructed pre-transfer wealth and observed post transfer wealth	A wealth distribution in which transfer wealth does not exist (eliminated from observed wealth)	Equalising (relative measures)	Result robust to different capitalisation rates and savings elasticities to receipt (crowd-out effect) // When pension wealth is included in the wealth aggregate the equalising effect is much smaller	No
Karagiannaki (2015)	Great Britain	1995-2005	British Household Panel Survey (BHPS) - Pre-transfer wealth reconstructed by substracting (capitalised) past reported transfers from current wealth	Coefficient of Variation // Wealth Shares by quintiles // Absolute change by quintiles	Coefficient of variation of pre-transfer wealth and of post-transfer wealth // Wealth shares change and absolute average wealth share change by quintiles comparing reconstructed pre-transfer wealth and observed post-transfer wealth	A wealth distribution in which transfer wealth does not exist (eliminated from observed wealth)	Equalising for relative measures (wealth shares and coefficient of variation change) // Unequalising for absolute measures (wealth average change by quintiles)	Effect is small since the transfer component is small compared to overall wealth // Results robust across age groups	No
Boserup et al. (2016)	Denmark	2003-2013	Danish Administrative Records - Pre and post transfer (post event) wealth observed	Variance // Top Wealth Shares	Event study (death of single remaining parent) on adult children aged 45-50 years hold in the studied period. Analysis of changes in wealth between treated group (event occurs) and comparable control group.	A wealth distribution in which transfer wealth does not exist (event does not occur)	Equalising for relative measures (Top Wealth Shares) // Unequalising for absolute measure (Variance)	Effects measured in a three year period; the result holds also for a subsample followed for 6 years.	No
Bönke et al. (2017)	Austria, Belgium, Cyprus, France.Germany (West), Greece, Portugal and Spain	2009-2010	European Household Finance and Consumer Survey (HFCS) - Pre-transfer wealth reconstructed by substracting (capitalised) past reported transfers from current wealth	Coefficient of Variation	Coefficient of Variation Decomposition by components (Net Wealth Before Transfers and Transfers)	A wealth distribution in which transfer wealth does not exist (eliminated from observed wealth)	Equalising (relative measures)	Effect robust to excluding top 1% of wealth observations and different capitalisation rates of inheritances to reconstruct pre-transfer wealth.	No
Elinder et al. (2018)	Sweden	2002-2004	Swedish Administrative Records Database (Belinda) - Inheritance, Pre and post transfer (post event) wealth observed among heirs	Gini Coefficient // Wealth Shares	Direct Mecanichal Effect (DME) measured comparing the recipients distribution pre-transfer with that distribution adding the observed transfers // Behaviour-adjusted effect (BAE) measured by the differential evolution of inequality in a cohort that inherits, with an equivalent one that inherits one or two years later	For the direct effect: A wealth distribution in which transfer wealth does not exist (transfers not added) - For the behaviour-adjusted effect: A wealth distribution in which transfer wealth does not exist (event does not occur in counterfactual)	Equalising for relative measures (Gini, Wealth Shares, Wealth Shares Ratios) - Equalising effect larger in DME than BAE, but existing in both // Unequalising for absolute dispersion (P75-P25)	Full Inheritance tax with no redistribution reduces the equalising effect in relative measures (essentially same counterfactual as inheritances do not exist) - Inheritance tax with redistribution among heirs (note that not-hears are excluded in the analysis) increases the equalising effect	No
Feiveson and Sabelhaus (2018)	USA	2016	Survey of Consumer Finances (SCF) - Pre-transfer wealth reconstructed by substracting (capitalised) past reported transfers (inheritance and gifts) from current wealth	Wealth Shares	Redistribute transfer wealth equally among all individuals and add to reconstructed pre-transfer wealth. Then, compare that counterfactual distribution with the actual observed-post transfer wealth.	A wealth distribution in which transfer wealth (inheritance and gifts) is distributed equally among all households	Disequalising (relative measures)	Robust to different capitalisation rates assumed for reported past inheritance and gifts	No
Nolan et al. (2021)	Britain, France, Germany, Italy, Spain, US	2010-2012	Wealth and Assets Survey (WAS) for Britan, HFCS for France, Germany, Italy and Spain and SCF for the USA - Non-transfer wealth reconstructed by substracting the updated and capitalised past transfer wealth from observed wealth.	Gini Coefficient	Based on the Gini coefficient decompositon by sources (Lerman and Yithzaki, 1985), evaluate the effect of a marginal increase in intergenerational transfers on the Gini coefficient, while keeping the characteristics of the non-transfer wealth distribution and the transfers wealth distribution constant (their Gini coefficient and their Gini correlation).	Transfer wealth increases by 1% (keeping the characteristics of transfer wealth and non-transfer wealth distributions constant)	Equalising (relative measure) in Britain, Germany and the USA; Disequalising in France, Italy and Spain	Direction of the effect holds for all countries using different homogeneous capitalisation rates for past transfers and different homogenous assumption about transfer consumption.	No
Palomino et al. (2021)	Britain, France, Spain, US	2010-2016	Wealth and Assets Survey (WAS) for Britan, HFCS for France and Spain and SCF for the USA	Mean Logarithmic Deviation	Based on the ex-post inequality of opportunity framework. The population is divided in groups according to intergenerationals transfers receipt and size and socioeconomic background. A counterfactual distribution is built in which households in different inheritance-size groups but with the same within-group wealth rank have the same wealth (estimated non-parametrically)	A wealth distribution of the full population in which transfer receipt and size do not condition the wealth of the individual (controlling for age, gender and socioeconomic background)	Disequalising in all countries analised.	Effect is reduced but still disequalising and significant in all countries even when the interaction of inheritances and gifts with socioeconomic background variables is fully netted.	No
Salas-Rojo and Rodríguez (2022)	US, Canada, Italy, Spain	2014-2016	Luxembourg Wealth Study (LWS) database: SCF for the USA, SFS for Canada, SHIW for Italy, SHF for Spain	Gini Coefficient	Based on the ex-ante inequality of opportunity framework. The population is divided in the most meaningful groups using Machine Learning techniques according to inheritances receipt. A counterfactual distribution is built in which mean wealth is the same for different inheritance-size group.	A wealth distribution of the full population in which transfer receipt and size do not condition the mean wealth of the group (controlling for age, gender and education)	Disequalising in all countries analised.	Effect is still disequalising and significant in all countries even if the interaction of inheritances with education is controlled for. Effect is greater for financial wealth and when ML is use to make the groups compared with ad-hoc discretization.	No
Nekoei and Seim (2023)	Sweden	1999-2015	Swedish Administrative Records Matching several Databases - Information from parents and sons born after 1932, focusing on sons who lose a parent between 1999 and 2015, with the the son alive in 2014.	Wealth Shares	Event study (death of a parent) on adult children. Analysis of changes in wealth between treated group (event occurs) and comparable control group (controlling for birth cohort and education level) in which events ocurrs later in time. Short-run effect compares both distributions upon receipt; long-run effect compares them up to 7 years after receipt, and takes into account differentian depletion and return-to inheritance rates.	A wealth distribution in which transfer wealth does not exist (event does not occur)	Equalising upon receipt (short-run) // Disequalising 7 years after receipt (long-run)	Use of inter-vivos gifts seems unlikely to influence differential behavioural responses between tread and control group (analogous gift-tax was in place at the time, and behavioural depletion patterns seem to be similar between expected and unexpected deaths, hence discarding planning).	No

A.2 Linking Lerman-Yitzhaki decompositions and the Nekoei-Seim condition

In order to examine in Sub-Section A.3 the empirical connections between the influence function regression approach and the approach adopted in many of the leading studies, we first elaborate on the similarity between the Lerman-Yitzhaki decomposition approach and the Nekoei-Seim condition for transfers to be inequality increasing (Nekoei & Seim, 2022). To do so, we describe how one can generalise Nekoei and Seim's framework within a Lorenz setting and therefore with conditions applying to Gini and concentration coefficients. We show how this (modified) analytical condition expressed in Nekoei and Seim's work is related to that derived from the elasticity condition by Stark et al. (1986) within a Lerman-Yitzhaki decomposition framework.

To start, we note that the top wealth shares and the top inheritance shares that Nekoei and Seim focus on are each one point on the Lorenz curve of net worth or inheritance, denoted L^W and L^T. The inheritance share of the top θ can be written $S^T = 1 - L^T(1-\theta) = 1 - L^T(\tilde{\theta})$. The $S^T - \theta$ term in Nekoei-Seim condition (Eq. (3)) is the distance between the 45 degree line and the Lorenz curve of inheritance at θ. We can therefore rewrite Nekoei and Seim's condition as

$$(\tilde{\theta} - L^W(\tilde{\theta})) \quad > \quad \frac{\alpha - \theta}{1 - \theta}(\tilde{\theta} - L^T(\tilde{\theta})). \tag{4}$$

The choice of θ in Nekoei and Seim is somewhat arbitrary. To relax the dependence of the condition on θ, we consider an alternative condition obtained by integrating both sides of the condition over $\theta \in [0, 1]$

$$\int (\tilde{\theta} - L^W(\tilde{\theta}))d\theta \quad > \quad \int \frac{\alpha - \theta}{1 - \theta}(\tilde{\theta} - L^T(\tilde{\theta}))d\theta. \tag{5}$$

The modified condition can then be re-written in terms of the Gini coefficient of wealth, the Gini coefficient of transfers and a 'immobility' term

$$G^W > I(\alpha) \cdot G^T \tag{6}$$

where $I(\alpha) = \int_0^1 \frac{\alpha-\theta}{1-\theta} d\theta$.

Recall that the immobility measure α in Nekoei and Seim's setup represents the proportion of top inheritors that are also at the top of the (pre-inheritance) wealth distribution. Hence, the term $\frac{\alpha-\theta}{1-\theta}$ represents a measure of rank similarity between individuals within the distribution of inheritance and that of pre-inheritance wealth. One such measure is represented by the Gini correlation of inheritance T with total pre-inheritance wealth W, R^T, where $-1 < R^T < 1$.[3] The Gini correlation is the correlation concept entering Eq. (1) for the Lerman-Yitzhaki decomposition of the Gini coefficient by source. R^T is equal to zero if T and W are independent and equal to 1 (-1) if T is an increasing (decreasing) function of total pre-inheritance wealth W. Substituting R^T for $I(\alpha)$, a modified condition for wealth transfers to reduce inequality represented in (6) is

$$G^W > R^T \cdot G^T \tag{7}$$

If the Gini correlation between inheritances and total wealth, R^T, is negative or zero, an increase in inheritances necessarily decreases wealth inequality. If the Gini correlation is positive, a necessary condition for inequality to decrease is, as found in Nekoei and Seim (2022)

[3] The Gini correlation is defined as $R^T = \frac{Cov[T,F(W)]}{Cov[T,F(T)]}$ (see, e.g., Schechtman & Yitzhaki, 2003).

that the inequality of wealth must exceed the inequality of inheritances: $G^W > G^T$. The modified Nekoei and Seim's condition (7) is therefore closely related to the elasticity expression in equation (2) for the effect on wealth inequality of marginal change in the size of transfers within the Lerman-Yitzhaki's framework.

A.3 The empirical connections between Lerman-Yitzhaki-Nekoei-Seim conditions and the influence function approach

The influence function regression approach relies on quite distinct fundamentals from assessments based on decompositions of the Gini coefficient and on the correlation between transfers and total wealth are. Let us first intuitively give examples of where and why discrepancies arise. The differences are probably most evident when looking at how individuals with low wealth and low transfers are seen to individually contribute to the aggregate relationship between transfers and inequality. Given the U-shape of the influence function of inequality measures, individuals with low wealth (defined as net worth below the lower root of the functions shown in Figure **??** or approximately the 30th–40th percentile of the distribution) have a negative contribution to inequality. They are also often found to have accumulated none to small transfers (see Table B–5). These cases therefore contribute to an aggregate *negative* impact of transfers on inequality in the influence function framework. However the low wealth–low transfer pattern leads to a positive association between transfers and (ranks in) the wealth distribution. Since this correlation is the key determinant of the impact of transfers on wealth inequality in Gini decomposition methods, these cases contribute to an apparent *positive* impact of transfers on inequality in this alternative framework (and they make the modified Nekoei-Seim inequality-reducing condition less likely to hold). In sum, individual contributions to the aggregate inequality impact of transfers will vary with alternative wealth and transfer configurations and may be converging or diverging across frameworks.

We illustrate now the empirical differences of various individual wealth–transfer configurations to aggregate assessments of the impact of transfers on wealth inequality. Empirical connections are easy to make by noting the linearity of individual contributions both to the key β parameter in our influence function regressions and to Gini correlations. In the simplest specification – no covariates and a transfer dummy – the β coefficient of transfer receipts in the influence function regression equation (**??**) is given by

$$\hat{\beta} = \frac{1}{N-1} \sum_i \left(\frac{\mathrm{IF}(w_i; F, \upsilon) \cdot (T_i - \mu_T)}{\sigma_T^2} \right)$$

where w_i and T_i are net worth and cumulative transfers of individual i and μ_T and σ_T are the mean and standard deviation of transfers. A similar expression holds for the Gini correlation between transfers and wealth (ranks):

$$\hat{R^T} = \frac{12}{N-1} \sum_i \left(\frac{(F(w_i) - 0.5) \cdot (T_i - \mu_T)}{\sigma_T^2} \right).$$

The expressions use the fact that the expected influence is zero, the expected rank is 0.5 and variance of ranks is $\frac{1}{12}$.[4] The terms in both sums can be interpreted as the individual contributions to the impact of transfers on inequality according to the two approaches. We can therefore illustrate empirically the differences in contributions by looking at the correlations of these contributions across individuals.

[4] We introduce sampling weights in these expressions in all empirical calculations.

Table A–3 shows that the Pearson correlation of the contributions to the two measures of transfer impacts on inequality is generally high and positive – with large variations across countries (0.976 in Britain and 0.287 in the US). This explains why the conclusions of the two approaches generally agree in concluding to an inequality-reducing impact of transfers. However, the Spearman(rank) correlations and examination of the share of cases that have contributions of identical sign in both approaches highlight the distinctions of both empirical strategies. Only 1.2% of cases have contributions of equal sign in the US and 2.4% of cases in Germany, with a maximum at only 24% of cases in Spain.

Table A–3 – Empirical observation-level relationship between contributions to Gini correlations and influence function regression estimates of transfers' effect.

	Germany	Spain	France	Italy	Britain	United States
Pearson correlation of contributions to R^T and (unconditional) IF Gini regression coefficient (β)						
	0.891	0.396	0.742	0.586	0.977	0.283
Rank correlation of contributions to R^T and (unconditional) IF Gini regression coefficient (β)						
	-0.875	-0.697	-0.839	-0.745	-0.825	-0.907
Share with positive contributions to both measures						
	0.025	0.185	0.087	0.122	0.112	0.008
Share with negative contributions to both measures						
	0.012	0.058	0.021	0.058	0.028	0.011
Share with negative contribution to R^T and positive contribution to β						
	0.320	0.370	0.384	0.307	0.378	0.405
Share with positive contribution to R^T and negative contribution to β						
	0.644	0.387	0.509	0.513	0.483	0.577

These results show that although the influence function regression approach is related in many ways to Gini decomposition or to (modified) Nekoei-Seim conditions, these are clearly empirically different strategies, the conclusions of which may or may not agree as we show.

B Wealth and wealth transfers patterns in six countries: Descriptive statistics

Table B–1 – Means for Wealth, Income, and Inter-generational Transfers by country

	Germany	Spain	France	Italy	Great Britain	United States
Wealth	105601	127184	121353	107120	113633	211804
Income	25422	13880	20822	15803	21301	37164
Intergenerational Transfers	99805	85749	104033	133613	55217	135655

Note: Values measured per adult in real local currency (2010). Intergenerational transfers as average of positive transfers.

Table B–2 – Quantiles for Inheritance per Adult

Percentile	Germany	Spain	France	Italy	Great Britain	United States
P25	15 [13-17]	9 [7-12]	8 [7-9]	29 [26-32]	5 [4-5]	10 [7-12]
P50	41 [35-47]	31 [27-35]	23 [21-24]	65 [60-71]	15 [14-16]	30 [26-35]
P75	105 [91-119]	73 [62-81]	65 [61-71]	138 [125-150]	45 [42-48]	88 [78-100]
P90	216 [184-250]	172 [149-198]	170 [157-185]	244 [225-261]	103 [96-109]	238 [206-285]
P95	325 [264-385]	290 [236-356]	342 [297-394]	385 [343-448]	176 [160-196]	404 [333-510]
P99	739 [535-944]	807 [532-1085]	1419 [1190-1682]	1065 [849-1270]	566 [476-682]	1677 [1303-2170]

Note: Values obtained from the distribution of positive intergenerational transfers (inheritances and gifts). Values rounded in thousands of real local currency (2010). Confidence intervals obtained by bootstrap replications (499 rep)

Table B–3 – Share of Households Receiving Inter-generational Transfers by Age Group

Age Group	Germany	Spain	France	Italy	Great Britain	United States
18-35	18.94	15.65	21.99	17.95	33.58	8.00
36-50	36.96	23.31	31.16	29.28	31.01	14.92
51-65	45.54	37.31	44.97	38.47	40.31	25.81
65+	35.70	35.29	46.59	34.70	35.54	29.95
All ages	35.51	28.81	36.54	33.00	35.28	18.90

Note: Values expressed in percentage over the age group population in each country. Age refers to the head of the household. Inter-generational Transfers include inheritances and inter-vivos gifts.

Table B–4 – Inter-generational Wealth Transfers by Current Income

Percentage Receiving Transfers within Each Group

	Germany	Spain	France	Italy	Great Britain	United States
First Quartile	24.10	27.45	25.30	29.94	21.59	18.90
Second Quartile	33.00	28.41	32.00	29.79	31.75	14.60
Third Quartile	38.61	28.15	38.89	34.65	39.48	19.59
Fourth Quartile	46.25	31.11	50.04	37.53	48.21	22.50
Top Decile	48.41	32.85	54.03	39.14	50.29	27.90
Top 1%	42.50	56.93	64.43	40.26	54.56	32.26

Ratio of Median Amount Received by Group to Overall Median

	Germany	Spain	France	Italy	Great Britain	United States
First Quartile	0.75	1.06	0.69	0.62	0.89	0.98
Second Quartile	0.78	0.81	0.74	0.96	0.81	0.73
Third Quartile	1.28	0.91	1.00	1.21	1.04	0.83
Fourth Quartile	1.36	1.41	1.81	1.55	1.28	1.89
Top Decile	1.25	1.34	2.73	1.86	1.39	3.20
Top 1%	1.06	3.64	5.01	3.29	1.19	7.53

Share of Total Intergenerational Transfers Received by Each Group

	Germany	Spain	France	Italy	Great Britain	United States
First Quartile	10.95	14.75	15.74	9.03	11.17	19.99
Second Quartile	16.65	18.34	12.49	16.79	17.64	14.18
Third Quartile	25.25	21.49	16.83	25.96	22.51	19.91
Fourth Quartile	47.15	44.64	54.94	46.80	48.65	39.01
Top Decile	18.90	24.25	32.19	26.29	29.50	27.73
Top 1%	2.50	7.17	9.15	4.93	14.44	8.39

Note: Values calculated per adult for income and transfers.

Table B–5 – Inter-generational Wealth Transfers by Current Wealth

Percentage Receiving Transfers within Each Group

	Germany	Spain	France	Italy	Great Britain	United States
First Quartile	8.09	13.96	12.10	5.88	15.98	5.50
Second Quartile	24.36	25.90	29.93	37.37	30.37	12.15
Third Quartile	45.80	32.68	42.74	40.33	40.09	23.58
Fourth Quartile	63.79	43.31	61.50	48.46	54.70	34.38
Top Decile	65.56	52.95	69.15	51.09	60.95	41.39
Top 1%	67.03	61.58	71.22	57.70	69.21	45.57

Ratio of Median Amount Received by Group to Overall Median

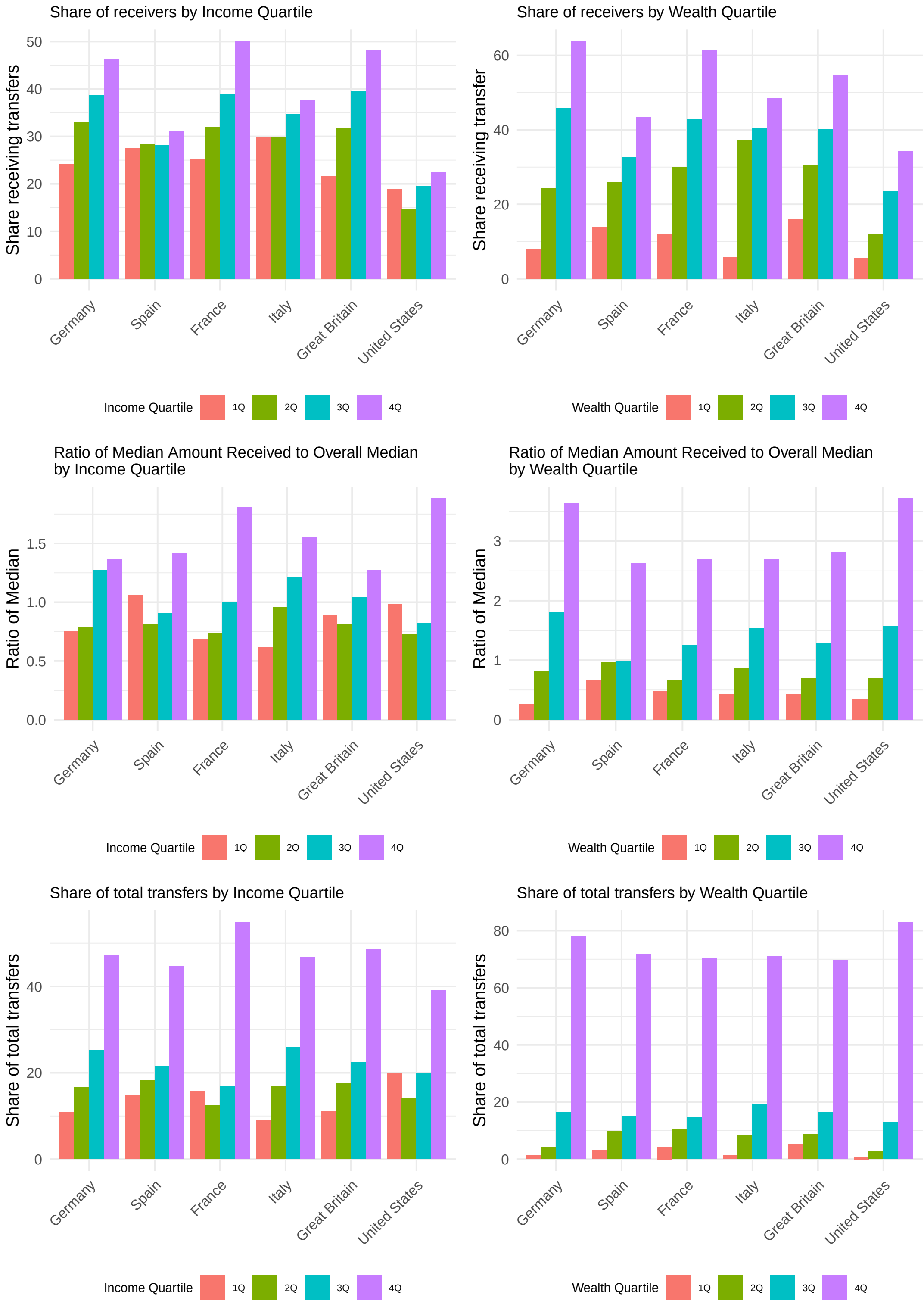
	Germany	Spain	France	Italy	Great Britain	United States
First Quartile	0.27	0.67	0.48	0.43	0.44	0.35
Second Quartile	0.82	0.96	0.66	0.86	0.70	0.70
Third Quartile	1.81	0.98	1.26	1.54	1.29	1.58
Fourth Quartile	3.63	2.63	2.70	2.69	2.82	3.73
Top Decile	5.88	4.15	4.33	3.56	3.79	7.07
Top 1%	10.74	6.06	10.88	7.54	2.12	12.20

Share of Total Intergenerational Transfers Received by Each Group

	Germany	Spain	France	Italy	Great Britain	United States
First Quartile	1.27	3.10	4.24	1.43	5.21	0.91
Second Quartile	4.13	9.94	10.60	8.42	8.78	2.93
Third Quartile	16.38	15.11	14.75	19.02	16.36	13.09
Fourth Quartile	78.10	71.85	70.40	71.13	69.65	83.07
Top Decile	52.47	54.66	48.52	48.18	48.83	60.01
Top 1%	17.03	14.83	14.76	13.18	18.51	18.31

Note: Values calculated per adult for wealth and transfers.

Figure B–1 – Receipt and amount of inter-generational transfers by income and wealth quartile of the recipient

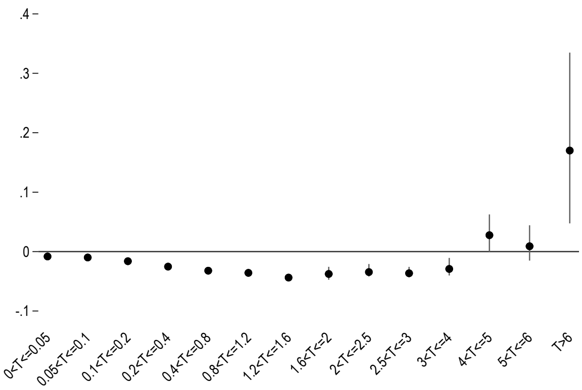


Note: Graphs based on Tables B–4 and B–5. Percentage of the population (households) receiving inter-generational transfers over lifetime at each income and wealth quartile (top left-top right); ratio of median amount received at each income or wealth quartile to overall median (medium left, medium right); share of total amount received by recipients at each income or wealth quartile (bottom left, bottom right). Income and wealth measured 'per adult'

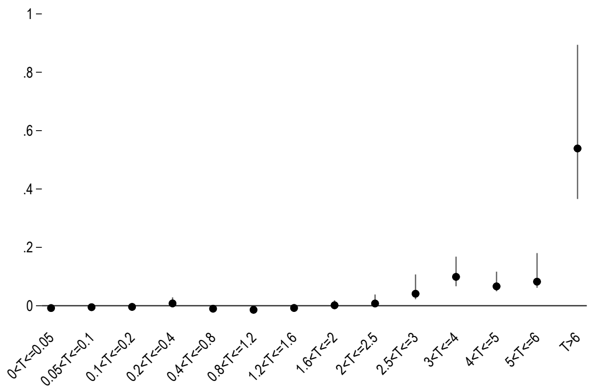
C Influence function regression estimates with fine grain classification and age group interactions as controls

Figure C–1 – The impact of wealth transfers on the Gini coefficient on net worth by transfer size. Influence function regression estimates with age group interactions.

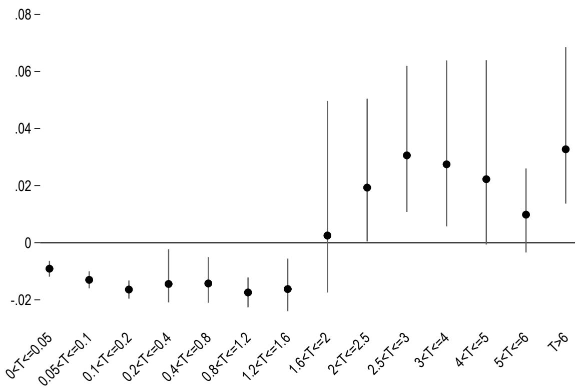
(a) Germany



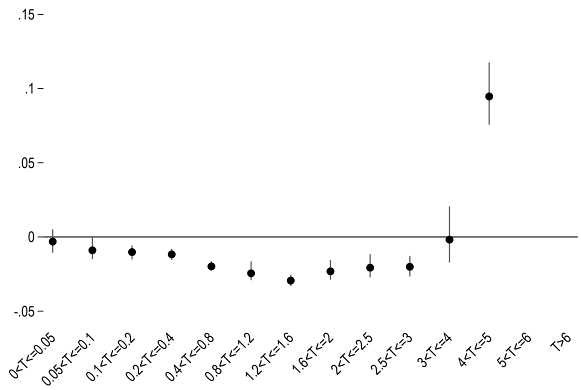
(b) Spain



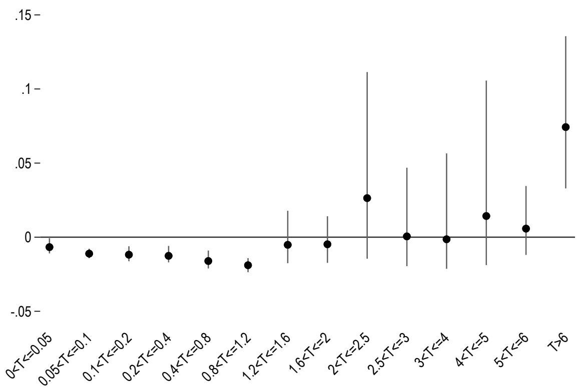
(c) France



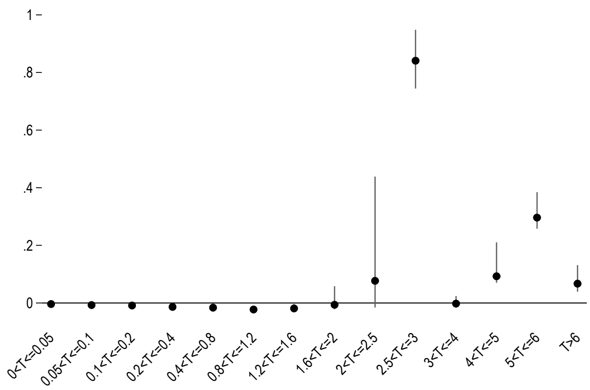
(d) Italy



(e) Great Britain



(f) United States



Note: Wealth transfers are classified into fourteen classes expressed as fractions or multiples of average net worth. Standard errors and confidence intervals (at 95% confidence level) are obtained by bootstrap replication.

D Key estimates with alternative transfer definitions and samples

We considered a range of alternative definitions for our sample and key variables. We report here on three alternative setups.

Sample selection and exclusion of extreme data To assess sensitivity of our key results to the presence of extreme data (on net worth and/or on transfers) we considered two alternative samples. In the baseline, all households available in the samples are included. In the variant, we excluded households with net worth in the top 0.1^{th} percent of the samples.[5] The variant is conservative and aims to assess sensitivity of estimates to a small number of extreme cases.

Total household wealth versus household wealth per adult We considered two versions of our analysis. In the baseline, total household net worth is divided (equally) across each adult household member. Each household is consequently weighted by the number of adult members. We therefore consider the distribution of per adult net worth among adults. In a household-level variant, we treat each household as unit of observation and consider total household net worth. This considers as key object of interest the distribution of net worth across households.

Valuation of transfer wealth Starting from the real values of transfers reported by respondents, we considered eight alternative definitions of the current value of past transfers.[6] The eight variants are based on choices regarding capitalisation and initial consumption of transfers. Regarding the former, we considered both no capitalisation and a fixed 3 percent capitalisation of transfers (from the year of receipt until the survey year). Regarding consumption we considered a scenario in which a fixed fraction of transfers are consumed at the time of receipt and therefore does not contribute to current wealth. This fraction was (arbitrarily) set at 25 percent. The baseline scenario assumes no such consumption. In addition we also considered imposing a restriction that the current value of past transfers is *no larger* than the total value of net worth. This implies capping the current value of transfers at the value of net worth. Combining specifications leads to eight variants. Our baseline variable uses no capitalisation, no immediate consumption and no cap.

The baseline results reported in the body of the paper are based on the full sample without outlier exclusion, per adult distribution and unadjusted transfer values. We report here influence functions regression results for the variations described in the following table. Additional results are available on request.

	Capitalisation (Tables D–1 and D–2)	Trimmed (Tables D–3 and D–4)	Household-level (Tables D–5 and D–6)
Sample	Full	Top 0.1% removed	Full
Household/adult	Ad.	Ad.	Hh.
Capitalisation	3%	No	No
Immediate consumption	No	No	No
Capping to net worth	Yes	No	No

[5]This selection is done separately on each implicate since the selection of the observations to be excluded are data dependent.

[6]Past transfers were uprated by the change in the CPI between the transfer year and the survey year.

Table D–1 – Influence function regression estimates of transfers on Gini coefficient: unconditional and conditional on age and for alternative transfer size classification. Transfers capitalised at 3% return rate and capped at current wealth.

	Germany		Spain		France		Italy		Britain		United States	
Age controls (yes/no)	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Transfer (Yes/No)												
$T > 0$	-0.020^{***}	-0.019^{***}	0.003	0.002	-0.012^{***}	-0.010^{***}	-0.013^{***}	-0.013^{***}	-0.009^{***}	-0.008^{***}	-0.010^{***}	-0.008^{***}
	(0.003)	(0.003)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Transfer size												
$0 < T <= P50$	-0.017^{***}	-0.016^{***}	-0.004	-0.003	-0.013^{***}	-0.010^{***}	-0.013^{***}	-0.012^{***}	-0.009^{***}	-0.009^{***}	-0.010^{***}	-0.008^{***}
	(0.002)	(0.002)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
$P50 < T <= P75$	-0.041^{***}	-0.040^{***}	-0.007	-0.006	-0.022^{**}	-0.022^{***}	-0.029^{***}	-0.028^{***}	-0.020^{***}	-0.019^{***}	-0.025^{***}	-0.022^{***}
	(0.002)	(0.002)	(0.005)	(0.006)	(0.004)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.001)	(0.001)
$P75 < T <= P90$	-0.049^{***}	-0.049^{***}	-0.017^{***}	-0.018^{***}	-0.029^{***}	-0.025^{**}	-0.031^{***}	-0.031^{***}	-0.025^{***}	-0.025^{***}	-0.028^{***}	-0.029^{***}
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.006)	(0.002)	(0.002)	(0.002)	(0.004)	(0.003)	(0.002)
$P90 < T <= P95$	-0.037^{***}	-0.040^{***}	-0.002	0.002	-0.025^{***}	-0.024^{***}	-0.013^{**}	-0.013^{**}	-0.027^{***}	-0.031^{***}	-0.006	-0.005
	(0.006)	(0.004)	(0.005)	(0.006)	(0.004)	(0.005)	(0.005)	(0.005)	(0.003)	(0.002)	(0.012)	(0.033)
$T > P95$	0.125^{***}	0.115^{***}	0.160^{***}	0.155^{***}	0.078^{***}	0.073^{***}	0.107^{***}	0.109^{***}	0.049^{***}	0.031^{***}	0.062^{***}	0.069^{***}
	(0.042)	(0.037)	(0.034)	(0.031)	(0.011)	(0.016)	(0.022)	(0.026)	(0.015)	(0.014)	(0.017)	(0.031)

Note: Stars mark statistical significance at 10% (*), 5% (**) and 1% (***) levels. Confidence intervals are obtained with a percentile bootstrap based on 499 replications.

Table D–2 – Estimated roots in relationship between expected influence on Gini coefficient of net worth and cumulative transfers.

	Germany	Spain	France	Italy	Britain	United States
Roots in the influence function to transfer size relationship in national currency units						
	EUR 334,439	EUR 219,954	EUR 318,360	EUR 327,975	GBP 284,541	USD 511,173
	[300,133 – 405,178]	[141,879 – 308,474]	[302,772 – 338,658]	[315,446 – 341,654]	[121,631 – 312,817]	[431,290 – 1288494]
Roots in the influence function to transfer size relationship expressed as percentile rank in the national wealth distribution						
	94.1	92.0	96.0	95.7	97.9	95.5
	[91.6 – 95.8]	[85.3 – 95.8]	[95.3 – 96.5]	[94.4 – 96.5]	[91.2 – 98.3]	[92.9 – 97.9]
National inheritance tax exemption thresholds in 2011						
... in national currency	EUR 400,000	EUR 15,956	EUR 159,325	EUR 1,000,000	GBP 325,000	USD 5,000,000
... as percentile rank	91.0	26.0	65.0	97.0	85.0	99.4

Note: Note: Amounts are in national currency units. Confidence intervals are percentile bootstrap estimates based on 499 bootstrap replications. Each replication is based on local linear estimates of the relationship between transfer size and average influence on net worth inequality with a unit bandwidth, averaged over multiple imputation implicates. Estate and inheritance tax exemption thresholds are from Morelli et al. (2023).

Table D–3 – Influence function regression estimates of transfers on Gini coefficient: unconditional and conditional on age and for alternative transfer size classification. Observations with highest 0.1% net worth excluded from sample.

	Germany		Spain		France		Italy		Britain		United States	
Age controls (yes/no)	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Transfer (Yes/No)												
$T > 0$	-0.020^{***}	-0.019^{***}	0.003	0.002	-0.012^{***}	-0.010^{***}	-0.013^{***}	-0.013^{***}	-0.008^{***}	-0.008^{***}	-0.010^{***}	-0.007^{***}
	(0.003)	(0.003)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Transfer size												
$0 < T <= P50$	-0.018^{***}	-0.017^{***}	-0.003	-0.004	-0.016^{***}	-0.013^{***}	-0.015^{***}	-0.014^{***}	-0.007^{***}	-0.008^{***}	-0.009^{***}	-0.006^{***}
	(0.002)	(0.002)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
$P50 < T <= P75$	-0.036^{***}	-0.035^{***}	-0.004	-0.002	-0.016^{**}	-0.015^{***}	-0.025^{***}	-0.025^{***}	-0.015^{***}	-0.014^{***}	-0.018^{***}	-0.015^{***}
	(0.002)	(0.002)	(0.005)	(0.006)	(0.004)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$P75 < T <= P90$	-0.039^{***}	-0.039^{***}	-0.010^{***}	-0.013^{***}	-0.015^{***}	-0.014^{*}	-0.023^{***}	-0.023^{***}	-0.017^{***}	-0.016^{***}	-0.019^{***}	-0.017^{***}
	(0.004)	(0.003)	(0.003)	(0.002)	(0.003)	(0.004)	(0.003)	(0.003)	(0.002)	(0.003)	(0.004)	(0.005)
$P90 < T <= P95$	-0.024^{***}	-0.028^{***}	0.001	0.002	0.013^{***}	0.019^{***}	-0.009	-0.013^{***}	-0.001	-0.009	-0.006	0.009
	(0.007)	(0.006)	(0.005)	(0.005)	(0.006)	(0.009)	(0.006)	(0.004)	(0.009)	(0.005)	(0.007)	(0.045)
$T > P95$	0.112^{***}	0.117^{***}	0.141^{***}	0.149^{***}	0.037^{***}	0.028^{***}	0.085^{***}	0.104^{***}	0.032^{***}	0.021^{***}	0.046^{***}	0.032^{***}
	(0.046)	(0.047)	(0.035)	(0.034)	(0.011)	(0.008)	(0.022)	(0.034)	(0.012)	(0.012)	(0.014)	(0.013)

Note: Stars mark statistical significance at 10% (*), 5% (**) and 1% (***) levels. Confidence intervals are obtained with a percentile bootstrap based on 499 replications.

Table D–4 – Estimated roots in relationship between expected influence on Gini coefficient of net worth and cumulative transfers.

	Germany	Spain	France	Italy	Britain	United States
Roots in the influence function to transfer size relationship in national currency units						
	EUR 300,440	EUR 125,080	EUR 217,371	EUR 345,810	GBP 238,439	USD 503,321
	[255,095 – 395,246]	[78,539 – 209,083]	[142,145 – 275,948]	[322,752 – 395,315]	[24,784 – 317,660]	[401,468 – 1106809]
Roots in the influence function to transfer size relationship expressed as percentile rank in the national wealth distribution						
	93.5	84.4	91.5	93.8	96.6	96.0
	[89.9 – 95.7]	[74.3 – 92.2]	[87.2 – 93.6]	[92.3 – 95.1]	[60.0 – 97.8]	[92.8 – 97.8]
National inheritance tax exemption thresholds in 2011						
... in national currency	EUR 400,000	EUR 15,956	EUR 159,325	EUR 1,000,000	GBP 325,000	USD 5,000,000
... as percentile rank	91.0	26.0	65.0	97.0	85.0	99.4

Note: Note: Amounts are in national currency units. Confidence intervals are percentile bootstrap estimates based on 499 bootstrap replications. Each replication is based on local linear estimates of the relationship between transfer size and average influence on net worth inequality with a unit bandwidth, averaged over multiple imputation implicates. Estate and inheritance tax exemption thresholds are from Morelli et al. (2023).

Table D–5 – Influence function regression estimates of transfers on Gini coefficient: unconditional and conditional on age and for alternative transfer size classification. Household-level analysis.

	Germany		Spain		France		Italy		Britain		United States	
Age controls (yes/no)	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Transfer (Yes/No)												
$T > 0$	−0.019***	−0.019***	0.002	0.001	−0.012***	−0.010***	−0.014***	−0.014***	−0.009***	−0.009***	−0.011***	−0.008***
	(0.003)	(0.003)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Transfer size												
$0 < T <= P50$	−0.016***	−0.015***	−0.001	0.000	−0.015***	−0.012***	−0.016***	−0.015***	−0.008***	−0.009***	−0.010***	−0.007***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
$P50 < T <= P75$	−0.038***	−0.037***	−0.009**	−0.010**	−0.016***	−0.014***	−0.026***	−0.026***	−0.015***	−0.014***	−0.018***	−0.015***
	(0.002)	(0.002)	(0.004)	(0.003)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$P75 < T <= P90$	−0.040***	−0.042***	−0.010**	−0.014***	−0.017***	−0.018***	−0.026***	−0.026***	−0.017***	−0.016***	−0.021***	−0.018***
	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.004)	(0.005)
$P90 < T <= P95$	−0.026***	−0.032***	−0.003	−0.002	0.007*	0.012**	−0.001	−0.002	−0.001	−0.009	−0.002	0.029
	(0.006)	(0.004)	(0.005)	(0.004)	(0.006)	(0.008)	(0.008)	(0.009)	(0.010)	(0.006)	(0.009)	(0.066)
$T > P95$	0.111***	0.114***	0.136***	0.141***	0.034***	0.028***	0.083***	0.095***	0.026***	0.015**	0.042***	0.023**
	(0.044)	(0.044)	(0.034)	(0.034)	(0.010)	(0.009)	(0.022)	(0.023)	(0.011)	(0.010)	(0.015)	(0.012)

Note: Stars mark statistical significance at 10% (*), 5% (**) and 1% (***) levels. Confidence intervals are obtained with a percentile bootstrap based on 499 replications.

Table D–6 – Estimated roots in relationship between expected influence on Gini coefficient of net worth and cumulative transfers.

	Germany	Spain	France	Italy	Britain	United States
Roots in the influence function to transfer size relationship in national currency units						
	EUR 550,309	EUR 455,696	EUR 398,497	EUR 670,966	GBP 394,453	USD 798,049
	[478,008 – 727,401]	[344,918 – 556,071]	[327,519 – 435,243]	[570,610 – 805,041]	[97,101 – 533,379]	[679,322 – 2089365]
Roots in the influence function to transfer size relationship expressed as percentile rank in the national wealth distribution						
	93.7	93.0	91.7	92.8	96.0	94.7
	[90.8 – 95.8]	[88.6 – 95.1]	[89.9 – 92.9]	[90.9 – 94.7]	[79.8 – 97.9]	[92.2 – 98.4]
National inheritance tax exemption thresholds in 2011						
... in national currency	EUR 400,000	EUR 15,956	EUR 159,325	EUR 1,000,000	GBP 325,000	USD 5,000,000
... as percentile rank	91.0	26.0	65.0	97.0	85.0	99.4

Note: Note: Amounts are in national currency units. Confidence intervals are percentile bootstrap estimates based on 499 bootstrap replications. Each replication is based on local linear estimates of the relationship between transfer size and average influence on net worth inequality with a unit bandwidth, averaged over multiple imputation implicates. Estate and inheritance tax exemption thresholds are from Morelli et al. (2023).

E Influence function regression estimates with Top5-to-Bottom95 wealth shares ratio

We replicated analysis of the Gini coefficient for the Top5-to-Bottom95 wealth share ratio. The index is given by the ratio $\frac{1-L(.95)}{L(.95)}$ where L is the Lorenz curve of the net worth distribution.

The influence function for the Top5-to-Bottom95 wealth shares ratio is

$$\mathrm{IF}(w; \mathrm{Top5Bot95}, F) = \frac{-1}{L(.95)} \left(1 + \mathrm{Top5Bot95}\right) \mathrm{IF}(w; L(.95), F)$$

with

$$\mathrm{IF}(w; L(.95), F) = L(.95)\left(1 - \frac{w}{\mu}\right) + \frac{.95Q(.95)}{\mu} + \frac{(w - Q(0.95))}{\mu}\,[w < Q(.95)]$$

(see, e.g., Essama-Nssah & Lambert, 2012).

The shape of the influence functions for the six countries examined are shown in Figure E–1.

Results of influence function regression analysis are similar to those obtained for the Gini coefficient.

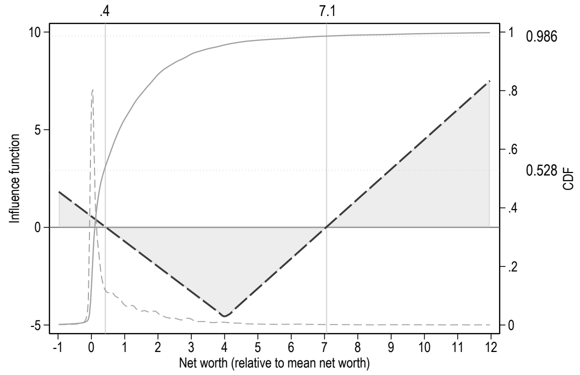
The impact in the Top5-to-Bottom95 ratio of our counterfactual 10 percentage point increase in transfer recipients changes is small for overall transfers in most countries except the US and Germany (see first row in Table E), but the equalising effect (negative sign) is nonetheless significant in all countries except Britain even when controlling for age. This relatively small equalising effect is not out of line with what has been found in the literature. Boserup et al. (2016) find for Denmark a change of -0.16 points in the ratio, while we find a -0.09 points change for the US or -0.06 for Germany.[7]

However, distinguishing by the size of the inter-generational transfers reveals a distinct disequalising effect of large transfers in the Top 5 to Bottom 95 ratio (see Table E). A 10 p.p. increase in recipients of very large transfers (greater than the 95^{th} percentile of the transfers distribution) would increase wealth inequality, while the estimated effect was equalising for all smaller amounts. The estimate is also significant in all countries and with magnitudes remarkably larger than the equalising impact of smaller size transfers. Including age controls, the inequality increase estimated in the Top 5 to Bottom 95 ratio ranges from about 0.1 points in Britain and France to about 0.9 points in Germany, with 0.5 in the US and around 0.3 and 0.4 points in Italy and Spain, respectively.

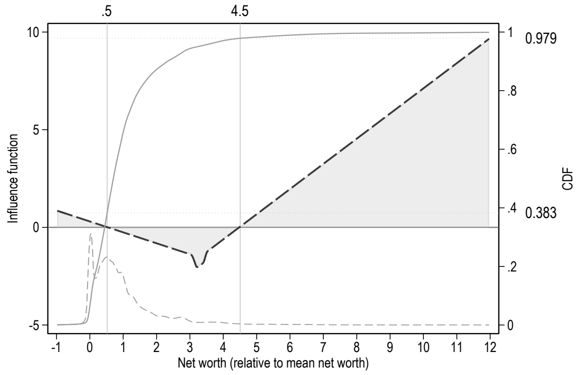
[7] The 0.16 points change (from 1.75 to 1.59) in the Top 5 to Bottom 95 ratio can be calculated from a change of 8.4 p.p. change in the Top 5 share, with a baseline of 61.4% (See Boserup et al., 2016, Table 2). Again, note that their counterfactual control group has inheritances completely switched off (during a 3 years time span), while we assess a 10 p.p. change in cumulative inheritances receipt.

Figure E–1 – Influence functions for the Top5-to-Bottom95 wealth shares ratio

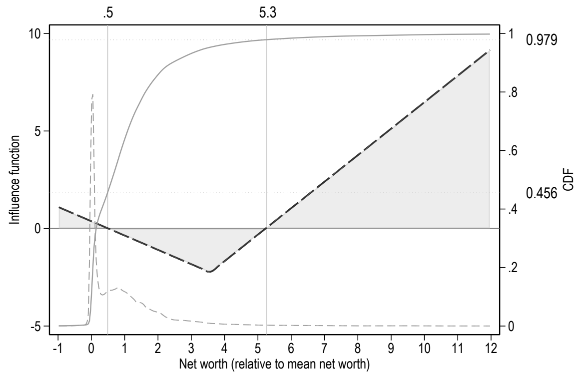
(a) Germany



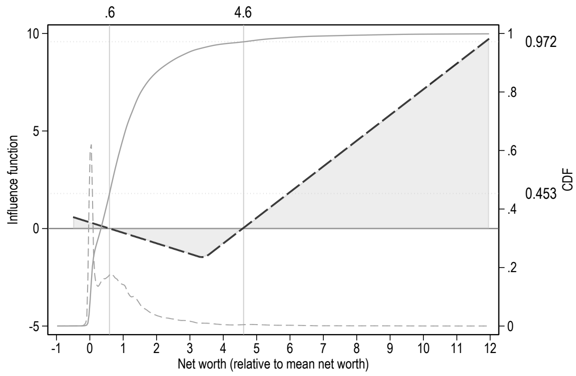
(b) Spain



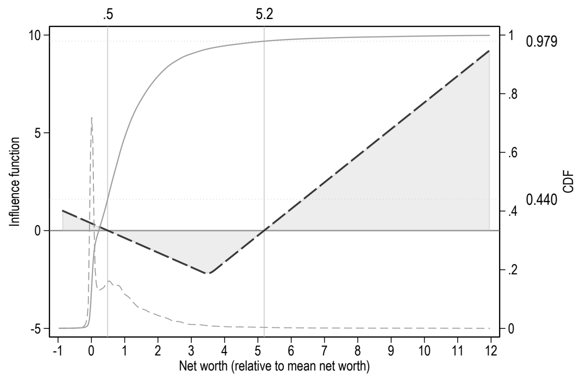
(c) France



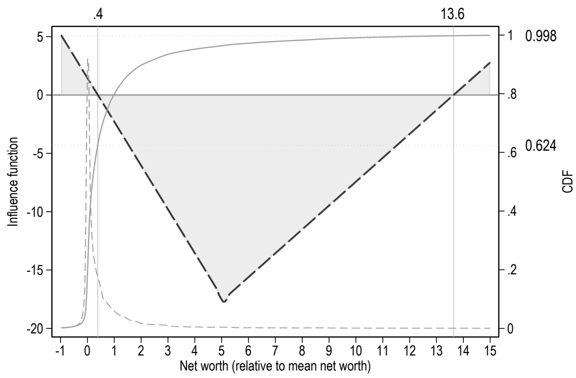
(d) Italy



(e) Great Britain



(f) United States



Note: Each panel shows the influence function for the Top5-to-Bottom95 coefficient (measured on the left axis) for the net worth distribution of individual adults. Household wealth is split equally among adult members. The panel also shows kernel density estimates and cumulative distribution estimates for net worth in light grey dashed and continuous lines respectively. The two vertical lines identify the net wealth range with negative influence (marked on the top of the graph) and two horizontal lightly marked dotted lines show the population fractiles corresponding to this range of the CDF lines (marked on the right y-axis). Data from first implicate samples.

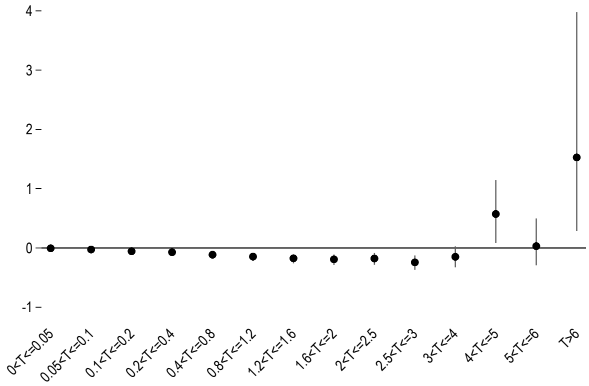
Table E–1 – Influence function regression estimates of transfers on Top5-Bottom95 Ratio: unconditional and conditional on age and for alternative transfer size classification.

	Germany		Spain		France		Italy		Britain		United States	
Age controls (yes/no)	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Transfer (Yes/No)												
$T > 0$	−0.055***	−0.057***	0.021***	0.017***	−0.009*	−0.008**	−0.008**	−0.007*	−0.004	−0.005	−0.129***	−0.088***
	(0.025)	(0.025)	(0.008)	(0.008)	(0.005)	(0.004)	(0.004)	(0.004)	(0.007)	(0.006)	(0.029)	(0.026)
Transfer size												
$0 < T <= P50$	−0.055***	−0.053***	0.001	0.000	−0.028***	−0.022***	−0.013***	−0.012***	−0.003	−0.005	−0.111***	−0.080***
	(0.017)	(0.017)	(0.010)	(0.008)	(0.003)	(0.003)	(0.003)	(0.003)	(0.008)	(0.008)	(0.023)	(0.019)
$P50 < T <= P75$	−0.132***	−0.122***	0.015*	0.020*	−0.018	−0.021	−0.024**	−0.023**	−0.023**	−0.021**	−0.232***	−0.168***
	(0.026)	(0.026)	(0.017)	(0.020)	(0.018)	(0.013)	(0.007)	(0.007)	(0.010)	(0.009)	(0.039)	(0.034)
$P75 < T <= P90$	−0.190***	−0.197***	−0.014*	−0.020***	−0.021	−0.018	−0.044***	−0.043***	−0.035***	−0.028*	−0.330***	−0.234**
	(0.039)	(0.040)	(0.010)	(0.007)	(0.012)	(0.017)	(0.008)	(0.008)	(0.011)	(0.013)	(0.106)	(0.107)
$P90 < T <= P95$	−0.160***	−0.191***	−0.020	−0.019*	0.078***	0.100***	−0.037	−0.050***	0.015	−0.011	−0.178	0.216
	(0.069)	(0.065)	(0.017)	(0.016)	(0.027)	(0.039)	(0.021)	(0.015)	(0.042)	(0.024)	(0.169)	(0.952)
$T > P95$	0.863***	0.907***	0.385***	0.406***	0.180***	0.122***	0.255***	0.322***	0.155***	0.113***	0.879***	0.526**
	(0.414)	(0.404)	(0.129)	(0.125)	(0.048)	(0.037)	(0.080)	(0.121)	(0.056)	(0.055)	(0.367)	(0.325)

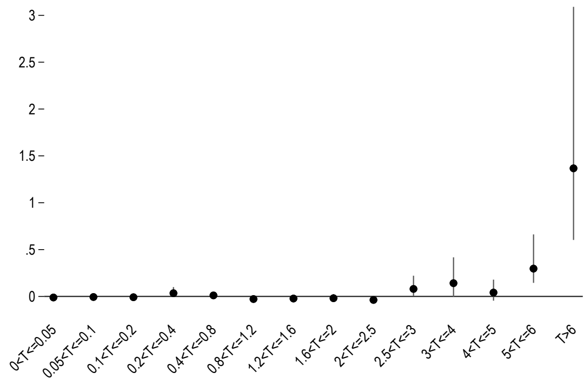
Note: Stars mark statistical significance at 10% (*), 5% (**) and 1% (***) levels. Confidence intervals are obtained with a percentile bootstrap based on 499 replications.

Figure E–2 – The impact of wealth transfers on the Top5-to-Bottom95 wealth shares ratio on net worth by transfer size. Influence function regression estimates without controls.

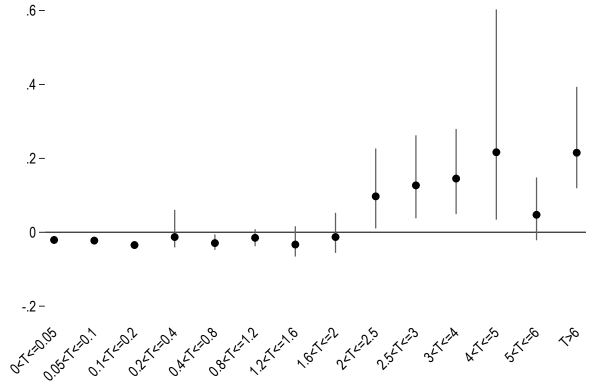
(a) Germany



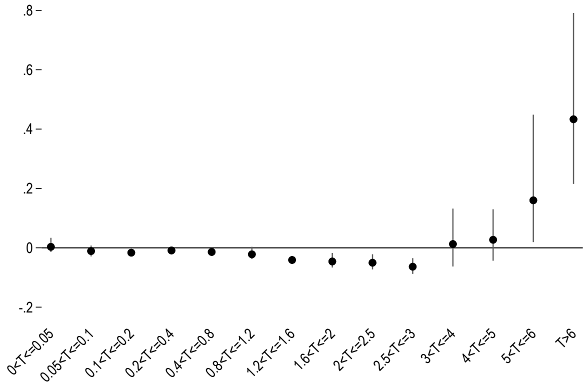
(b) Spain



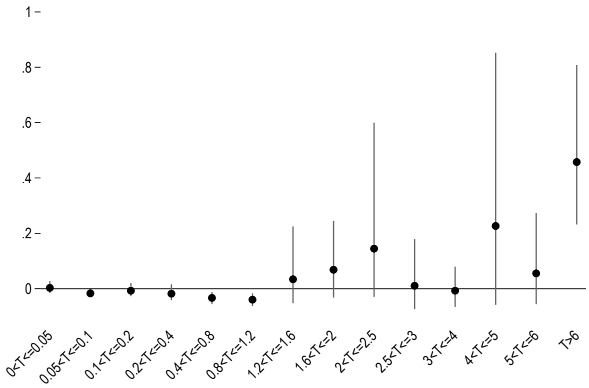
(c) France



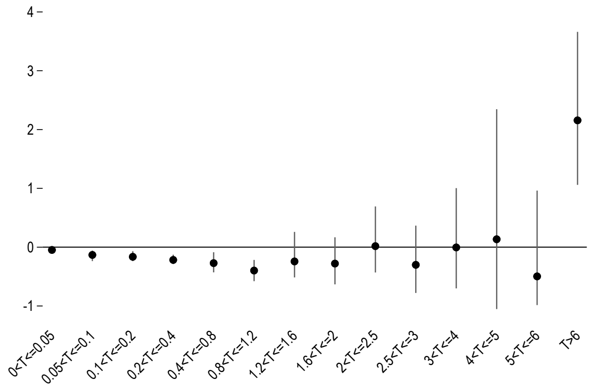
(d) Italy



(e) Great Britain

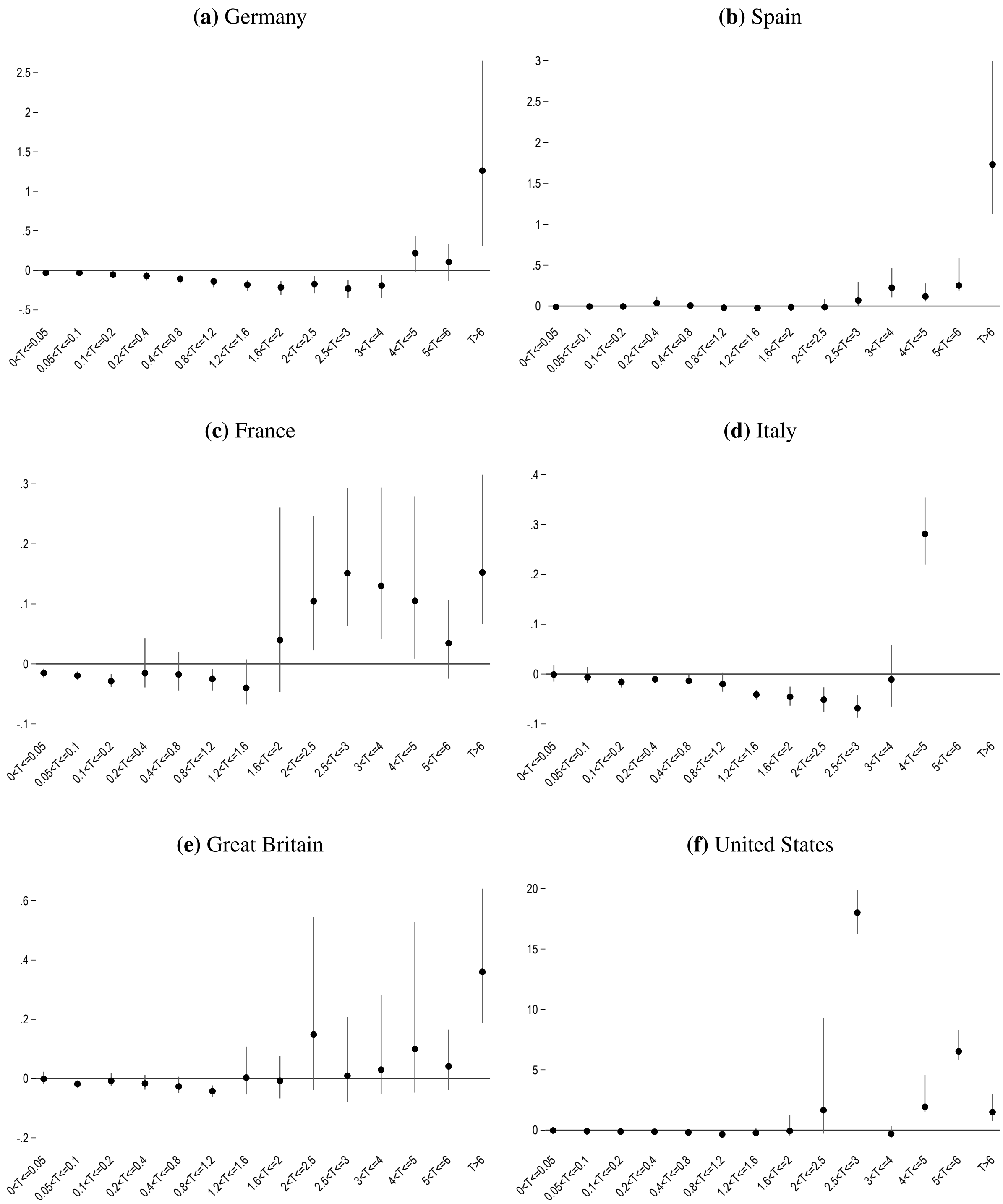


(f) United States



Note: Wealth transfers are classified into fourteen classes expressed as fractions or multiples of average net worth. Standard errors and confidence intervals (at 95% confidence level) are obtained by bootstrap replication.

Figure E–3 – The impact of wealth transfers on the Top5-to-Bottom95 wealth shares ratio on net worth by transfer size. Influence function regression estimates with age group interactions.



(a) Germany **(b)** Spain

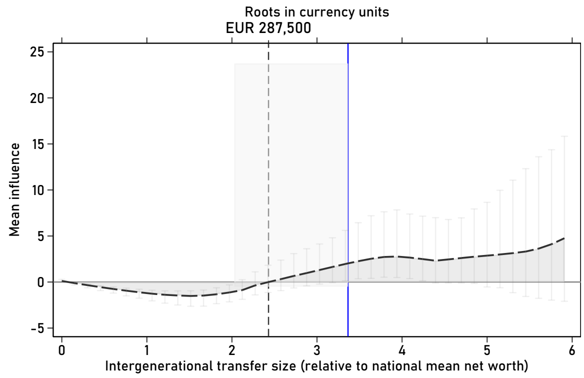
(c) France **(d)** Italy

(e) Great Britain **(f)** United States

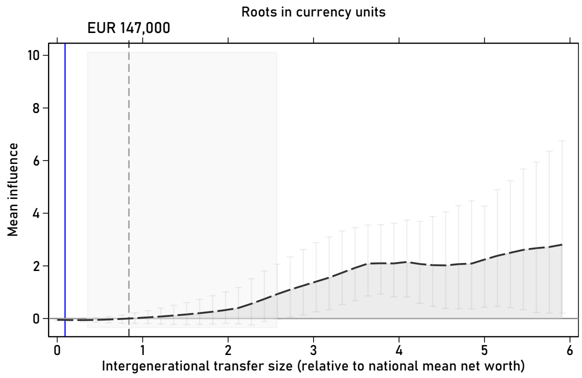
Note: Wealth transfers are classified into fourteen classes expressed as fractions or multiples of average net worth. Standard errors and confidence intervals (at 95% confidence level) are obtained by bootstrap replication.

Figure E–4 – Conditional expectation of influence on the Top5% to Bottom 95% wealth share ratio by transfer size

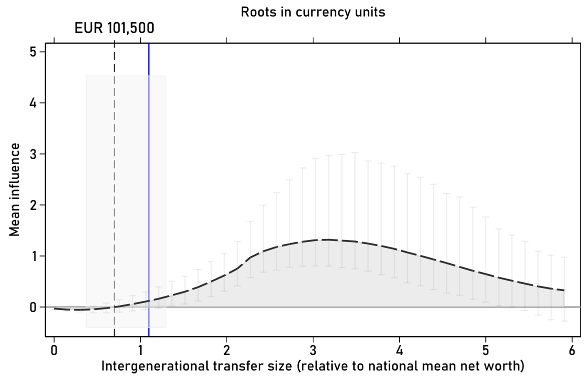
(a) Germany



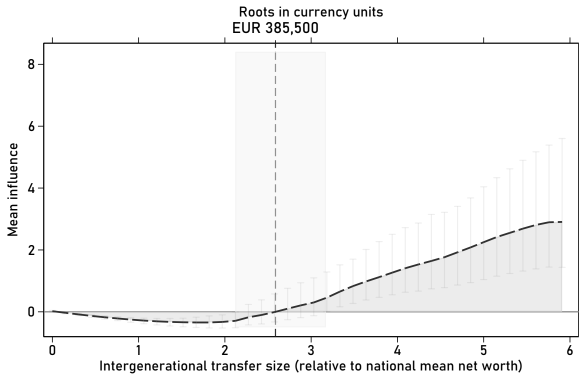
(b) Spain



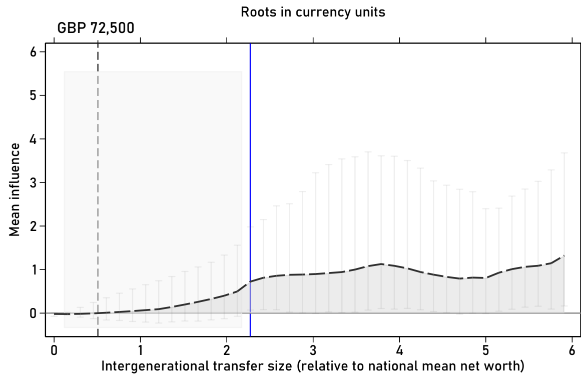
(c) France



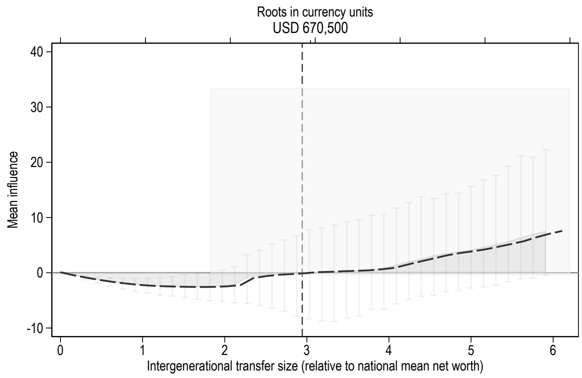
(d) Italy



(e) Great Britain



(f) United States



Note: Each panel shows the mean influence function for the top 5% and the bottom 95% wealth shares ratio for varying levels of transfers expressed in multiples of average annual net worth. Estimates obtained by locally weighted linear regression with Epanechnikov kernel and a bandwidth $b = 1$. Standard errors and confidence intervals are obtained by bootstrap replication. Vertical lines identify the thresholds when the function crosses the zero axis expressed in local currency at constant prices 'around 2010', (e.g., the root of the function). The exemption threshold for Italy and the U.S. does not show as it is off the x-axis scale.

Table E–2 – Estimated roots in relationship between expected influence on Top5-Bottom95 Ratio of net worth and cumulative transfers.

	Germany	Spain	France	Italy	Britain	United States
Roots in the influence function to transfer size relationship in national currency units						
	EUR 287,603	EUR 147,200	EUR 101,624	EUR 385,598	GBP 72,563	USD 670,475
	[240,035 – 398,324]	[61,231 – 451,890]	[53,482 – 188,744]	[316,053 – 472,877]	[16,276 – 311,816]	[415,429 – 1412915]
Roots in the influence function to transfer size relationship expressed as percentile rank in the national wealth distribution						
	93.3	87.5	81.8	94.8	82.8	96.9
	[89.1 – 96.2]	[67.7 – 97.6]	[68.6 – 90.2]	[92.5 – 96.2]	[56.2 – 97.5]	[94.6 – 98.7]
National inheritance tax exemption thresholds in 2011						
... in national currency	EUR 400,000	EUR 15,956	EUR 159,325	EUR 1,000,000	GBP 325,000	USD 5,000,000
... as percentile rank	91.0	26.0	65.0	97.0	85.0	99.4

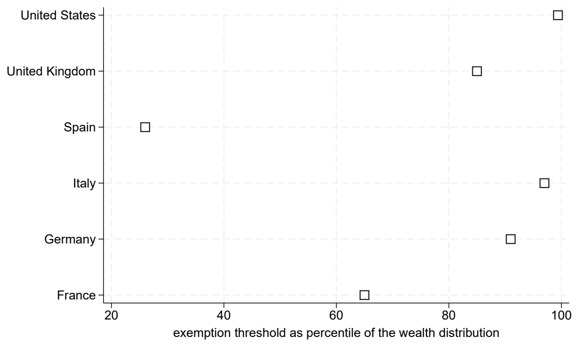
Note: Note: Amounts are in national currency units. Confidence intervals are percentile bootstrap estimates based on 499 bootstrap replications. Each replication is based on local linear estimates of the relationship between transfer size and average influence on net worth inequality with a unit bandwidth, averaged over multiple imputation implicates. Estate and inheritance tax exemption thresholds are from Morelli et al. (2023).

F Estate and inheritance taxation in six countries

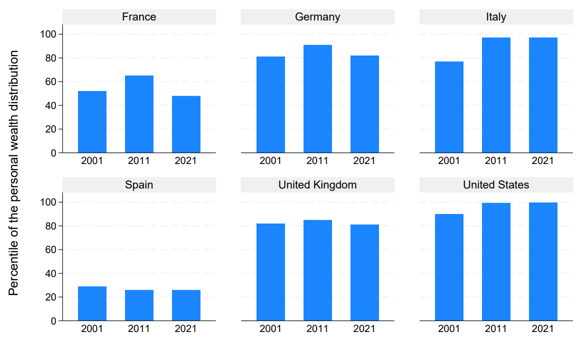
Figure F–1 and Tables F–1 and F–2 provide details on the estate and inheritance tax schedules in place in the six countries examined in the paper. Data are drawn from the GC Wealth Project (Morelli et al., 2023).

Figure F–1 – Estate and inheritance taxation

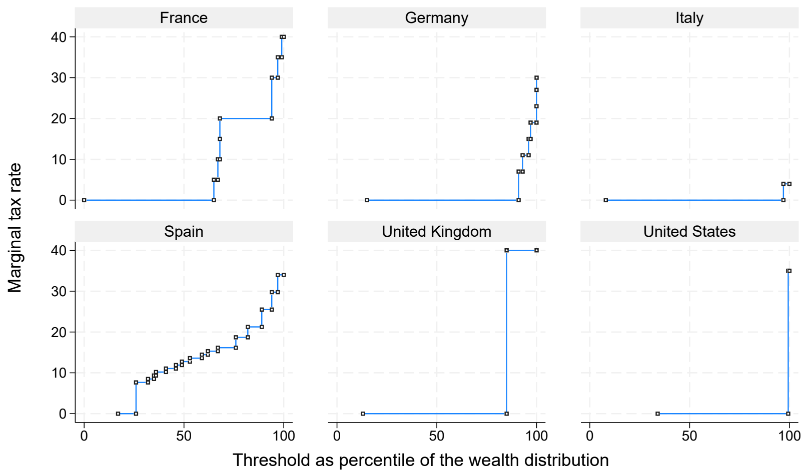
(a) Exemption thresholds of estate and inheritance taxes in 2011 as percentiles of personal wealth distribution



(b) Evolution of the exemption thresholds of estate and inheritance taxes as percentiles of personal wealth distribution: 2001-2021



(c) The progressive schedule of inheritance taxes (2011)



Note: The percentiles of the national personal wealth distribution are retrieved from the World Inequality Database. Information on the exemption thresholds related to direct descendants lineage are retrieved from the GC Wealth Project (Morelli et al., 2023)

Table F–1 – Main estate and inheritance tax features

Country	Year	Exemption Threshold (nominal national currency)	Top Marginal Tax Rate	Wealth Percentile
France	2001	60979.6	40	52
France	2011	159325	40	65
France	2021	100000	45	48
Germany	2001	204516.8	30	81
Germany	2011	400000	30	91
Germany	2021	400000	30	82
Italy	2001	180759.9	4	77
Italy	2011	1000000	4	97
Italy	2021	1000000	4	97
Spain	2001	15956	34	29
Spain	2011	15956	34	26
Spain	2021	15956	34	26
UK	2001	242000	40	82
UK	2011	325000	40	85
UK	2021	325000	40	81
US	2001	675000	55	90
US	2011	5000000	35	99.4
US	2021	11700000	40	99.6

Notes: The percentiles of the national personal wealth distribution are retreived from the World Inequality Database. Information on the exemption thresholds related to direct descendants lineage are retrieved from the GC Wealth Project (Morelli et al., 2023)

Table F–2 – Main estate and inheritance tax features for countries with progressive schedule: 2011

Country	Tax Bracket	Lower Bound Threshold	Upper Bound Threshold	Wealth Percentile (lower bound)	Tax Marginal Rate
France	1	0	159325	0	0
France	2	159325	167397	65	5
France	3	167397	171434	67	10
France	4	171434	175257	68	15
France	5	175257	711649	68	20
France	6	711649	1062163	94	30
France	7	1062163	1965002	97	35
France	8	1965002		99	40
Germany	1	0	400000	15	0
Germany	2	400000	475000	91	7
Germany	3	475000	700000	93	11
Germany	4	700000	1000000	96	15
Germany	5	1000000	6400000	97	19
Germany	6	6400000	13400000	99.97	23
Germany	7	13400000	26400000	99.97	27
Germany	8	26400000		99.98	30
Spain	1	0	15956	17	0
Spain	2	15956	23949.46	26	7.65
Spain	3	23949.46	31936.91	32	8.5
Spain	4	31936.91	39924.36	35	9.35
Spain	5	39924.36	47911.81	36	10.2
Spain	6	47911.81	55899.26	41	11.05
Spain	7	55899.26	63886.72	46	11.90
Spain	8	63886.72	71874.17	49	12.75
Spain	9	71874.17	79861.62	53	13.60
Spain	10	79861.62	87849.07	59	14.45
Spain	11	87849.07	95836.52	62	15.30
Spain	12	95836.52	135713.67	67	16.15
Spain	13	135713.67	175590.83	76	18.70
Spain	14	175590.83	255345.13	82	21.25
Spain	15	255345.13	414733.53	89	25.5
Spain	16	414733.53	813511.06	94	29.75
Spain	17	813511.06		97	34

Notes: The percentiles of the national personal wealth distribution are retreived from the World Inequality Database. Information on the exemption thresholds related to direct descendants lineage are retrieved from the GC Wealth Project (Morelli et al., 2023)

G Unconditional influence function regression vs. reweighting

Influence function regression coefficients provide linear approximations of the impact of a compositional change in the population on the functionals of interest. In this Appendix we provide assessment of the quality of the linear approximation in the unconditional case – when the composition shift does not hold any other covariates constant (as per Eq. (**??**)). We also contrast the influence function regression counterfactual to one that would hold the total stock of transfers and wealth constant.

G.1 Linear approximation accuracy

Under the maintained assumption that the outcome function does not respond to the change in population composition, the exact impact of a composition change is easy to calculate and can be compared to the linear approximation obtained from the influence function regression. We obtain the exact impact of a uniform a $t = 0.1$ increase in the proportion of transfer recipients by calculating the Gini coefficient in each dataset with the following observation-level weight

$$\omega_i = \begin{cases} \left(\frac{p+t}{p}\right) s_i & \text{if } T_i = 1 \\ \left(\frac{1-(p+t)}{1-p}\right) s_i & \text{if } T_i = 0 \end{cases}$$

where s_i is observation i's original sampling weight and p is the baseline proportion of transfer recipients $p = N^{-1} \sum_{i=1}^{n} s_i T_i$ and $N = \sum_{i=1}^{n} s_i$.

The difference Δ between the Gini coefficient obtained with the unadjusted sampling weights and the modified weights

$$\Delta = \text{Gini}\left(\{\omega_i, W_i\}_{i=1}^{n}\right) - \text{Gini}\left(\{s_i, W_i\}_{i=1}^{n}\right)$$

is a measure of how the Gini coefficient would change with the t change in the proportion of transfer recipients, holding everything else constant. The product $\tilde{\Delta} = t \cdot \hat{\beta}$ where $\hat{\beta}$ is obtained by the Influence function regression a per Eq. (**??**) is the IF-based linear approximation of Δ.

G.2 Holding total transfers and total wealth fixed

In the composition change simulations, an increase in the share of transfer recipients mechanically increases the overall size of transfers since we simulated under the assumption of no change in the probability distribution of transfers conditional on receipt (nor in the distribution of wealth conditional on transfers).[8]

We assess here a variant of the simulation in which the size of transfers and wealth is held constant. This is obtained by rescaling both transfer and non-transfer wealth values by, respectively, $\frac{\sum_{i=1}^{n} s_i T_i}{\sum_{i=1}^{n} \omega_i T_i}$ and $\frac{\sum_{i=1}^{n} s_i (W_i - T_i)}{\sum_{i=1}^{n} \omega_i (W_i - T_i)}$. This rescaling ensures that, even after the increase in the proportion of transfer recipients, total transfers and total wealth are held unchanged. Comparing these estimates with the baseline and adjusted estimates gives indication of how much the inequality reducing effect of the increase in transfer recipients is driven only by the association between transfer and wealth and how much is due to increase in total transfer size.

More formally, Δ' corresponds to a simulated impact on the Gini coefficient of an increase of t in the proportion of transfer recipients, but holding total wealth and transfers fixed:

$$\Delta' = \text{Gini}\left(\left\{\omega_i, \tilde{W}_i\right\}_{i=1}^{n}\right) - \text{Gini}\left(\{s_i, W_i\}_{i=1}^{n}\right)$$

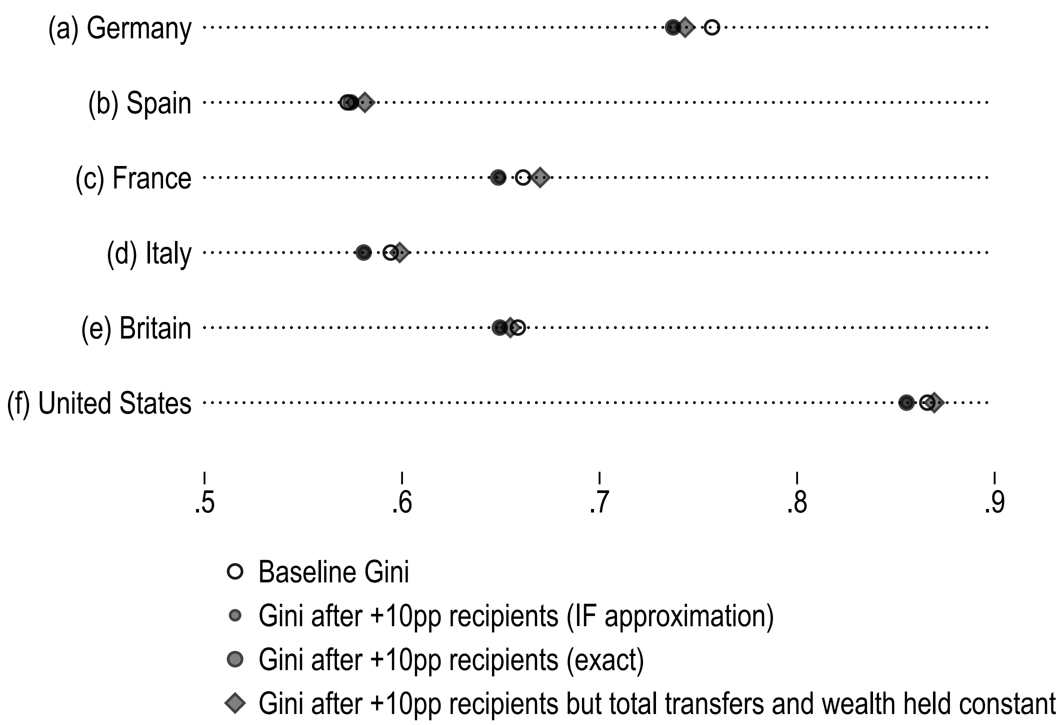
[8] We thank the co-editor David Seim for raising this point and suggesting the assessment presented here.

with $\tilde{W}_i = T_i \left(\frac{\sum_{j=1}^{n} s_j T_j}{\sum_{j=1}^{n} \omega_j T_j} \right) + (W_i - T_i) \left(\frac{\sum_{j=1}^{n} s_j (W_j - T_j)}{\sum_{j=1}^{n} \omega_j (W_j - T_j)} \right)$.

G.3 Results

Figure G–1 displays four statistics for each country and implicate considered in the paper: (i) estimates of the Gini coefficient of net worth, (ii) estimates of the Gini coefficient of net worth after a 10 percentage point increase in the proportion of transfer recipients as obtained from Influence function regressions, (iii) estimates of the Gini coefficient of net worth after a 10 percentage point increase in the proportion of transfer recipients as obtained from reweighting the data, and (iv) estimates of the latter holding total transfers and wealth unchanged. The difference between (ii) and (i) is as shown in Section **??** (Figure **??**).

Figure G–1 – Estimates of Gini of net worth: baseline and after a projected 10 percentage point increase in the proportion of transfer recipient (Influence function regression (linear approximation), reweighting estimates (exact predictions), reweighting with transfer and wealth size adjustments



The first results is that the predictions of the Gini coefficient after a 10 percentage point increase in the share of transfer recipients based on the exact reweighting and based on the influence function regression approximation are practically indistinguishable.

The additional step of scaling down the size of total transfers after the increase in the share of transfer recipients has mixed impacts. In the case of Germany, results suggest that the bulk of the reduction in the Gini coefficient of wealth is the result of the changes in the distribution of transfers. For countries like the US and Britain, the reduction in the Gini coefficient of wealth is confirmed even in this scenario, although the magnitude of such reduction becomes smaller. In France, Italy, and Spain, instead, the increase in the share of recipients, keeping the mean of transfer wealth as well as the wealth distribution unchanged, no longer brings about a reduction in wealth inequality. The overall negative effect is overturned into a positive one. Such results mean that the estimated distributive impact of transfers acts both through the relative position of recipients and the added amount of wealth that past transfers bring into the current distribution.

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