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Do Transfer Taxes Reduce Intergenerational Transfers?

Tullio Jappelli[*], Mario Padula[**] and Giovanni Pica[***]

Abstract

We estimate the effect of taxes on intergenerational transfers exploiting a sequence of Italian reforms culminating with the abolishment of transfer taxes. We use the 1993-2006 Survey of Household Income and Wealth, which has data on real estate transfers received and information on potential donors as well as recipients. Differences-in-differences estimates indicate that the abolition of transfer taxes increased the probability that high-wealth donors make a transfer by 2 percentage points and square meters transferred by 5.5 meters relative to poorer donors. Since we have data only on real estate transfers, we cannot rule out that the effect of the reform reflects also a change in the composition of transfers.

JEL Classification: H24, E21

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1. Introduction

Most developed countries, including the U.S. and the vast majority of European countries, tax intergenerational transfers. Two main taxes are levied on bequests and gifts: the estate tax, which is levied on the total estate of the donor, regardless of the characteristics and number of recipients, and the inheritance tax, which is levied on the share of transfers received by recipients. Even though in OECD countries the yield of transfer taxes hardly exceeds 1 percent of total government revenues, taxing intergenerational transfers is the subject of intense quarrels both in the U.S. and Europe because of the potential effects on capital accumulation and intergenerational wealth mobility (Gale and Slemrod, 2001). However, the policy debate lacks reliable estimates of the effect of transfer taxes on the propensity to bequeath, and therefore fiscal revenues, wealth transmission and intergenerational mobility.

Few empirical studies have attempted to estimate the tax elasticity of bequests. To our knowledge all focus on the U.S., see Kopczuk (2009) for a recent survey. Estimating the effect of taxes on bequests is difficult because suitable data are hard to find. Some studies use information provided by fiscal revenues, while others rely on microeconomic data on wealth accumulation. Time series studies encounter the problem that changes in fiscal revenues and tax rates tend to be correlated with other variables. In cross-sectional studies it is hard to disentangle the effect of taxes on bequests from potential confounding effects, including tax avoidance and unobservable preference traits (for instance, preference for thrift or work).

In this paper we estimate the effect of transfer taxes on bequests using Italian survey data and exploiting the variability in tax rates induced by a sequence of reforms which reduced substantially estate, inheritance and gift taxes in 1999 and ultimately abolished them in 2001. The cancellation of taxes did not affect all households equally, because the reform had no impact on relatively poor donors who were already exempt from estate taxation prior to the reforms. This allows us to cast our analysis in a quasi-experimental framework and to identify the effect of the reform comparing the change in transfers given by individuals affected by the reform with the change in transfers given by individuals unaffected by the tax change. Our analysis is particularly valuable because we rely on a large change in estate tax policy for identification. Indeed, recent

research by Chetty (2009) makes a strong case that behavioral elasticities estimated in response to subtle tax changes are likely to underestimate responses to taxes, because the utility loss from ignoring small changes is often negligible and the cost of understanding tax reforms may be large.

We use the 1993-2006 Bank of Italy Survey of Household Income and Wealth (SHIW), which is representative of the Italian population. The survey includes information on the number and size (in square meters) of real estates received at any time as inheritance and, for respondents and spouses, data on parents' education and occupation. Thus we can merge information on donors and recipients to study if the cancellation of estate taxation has affected intergenerational transfers. The availability of data on donors and recipients is crucial in this context, because the decision to transfer and how much to transfer is affected by both donors' as well as recipients' characteristics.

The richness of the data and the specific characteristics of the tax reform provide three advantages for spotlighting the effect of transfer taxes on the intergenerational transmission of wealth. First, the quasi-experimental setting allows us to estimate the causal impact of the cancellation of transfer taxation on bequests. Second, we analyze microeconomic data with information on both potential donors and recipients. Finally, our sample is representative of the Italian population at large. With the notable exception of Holtz-Eakin and Marples (2001), previous literature has relied on administrative data, and therefore focuses on a selected group of rich taxpayers.

We find that the relation between transfer taxes and the propensity to transfer real assets is negative and statistically significant. Difference-in-difference estimates suggest that after the reform the probability of observing real estate transfers increases by 2 percentage points. In most specifications the average effect of taxes on square meters transferred is also positive and statistically different from zero, and implies an average increase in the size of transfers by 5.5 square meters. Results from quantile regressions show that the effect of the reform is stronger in the upper tail of the distribution of transfers.[1]

[1] Kopczuk and Slemrod (2001) find an elasticity of -0.16 of reported transfers with respect to taxes for those who die with a will. They also find that the effect of taxes is stronger for those who die at more advanced ages. Their results are stronger when they use aggregate data and more fragile in their pooled cross-sectional analysis. Joulfaian (2006) uses federal government estate tax collections data and finds an elasticity of just below -0.1.

Our estimates share with existing studies also some drawbacks, chiefly that we cannot rule out that the reform has not only a genuine tax effect, but also a portfolio effect. In particular, since we have data only on transfers in the form of real estate (not on total transfers), we cannot rule out that after the reform donors are more willing to transfer wealth in the form of real estate, rather than in other forms, such as liquid assets.

The remaining of the paper is organized as follows. Section 2 reviews the theoretical and empirical literature on bequest taxation. Section 3 describes the Italian tax reform and Section 4 the data. The empirical strategy is discussed in Section 5, and the empirical results are presented in Section 6. Section 7 concludes and provides policy implications.

2. The effect of taxes on intergenerational transfers

Economists disagree on the appropriateness and efficiency of taxing intergenerational transfers, providing arguments in favor or against taxation. Some economists point out that transfer taxes inhibit capital accumulation and economic growth, threaten the survival of family businesses and depress entrepreneurial activities. Advocates of transfer taxes emphasize the positive effect on redistribution, and highlight the negative externality associated with wealth concentration. In this vein, Kopczuk (2009) argues forcefully that societies where people are too rich represent a danger for democracy, and that in family business beneficiaries do not always have the skills to handle the fortunes of the donors.

Despite the importance of this debate, in the paper we limit ourselves to a narrower issue, that is, whether transfer taxes affect the intergenerational transmission of wealth. While the effect of transfer taxes on wealth accumulation depends on individual's preferences and the particular bequest motive considered, the next section shows that the theoretical impact of transfer taxes on net bequests is unambiguously negative, except for the case of accidental bequests.

2.1. Transfer taxes and transfer motives

Bequests might be accidental, altruistic, strategic, and also arise when consumers derive utility from terminal wealth. The simplest case to be considered is one in which bequests result from people saving for retirement or for health-related expenditures. Since life is uncertain, people have positive assets when they die, even in the absence of explicit bequest motives, see Hurd (1989) or Hubbard, Skinner and Zeldes (1995). Neglecting the possibility that estate tax revenues are redistributed to future generations, in these models estate taxes mechanically reduce the inheritance left to future generations, but have no effect on parents' wealth accumulation and amount transferred. Thus, when bequests are accidental, the elasticity of bequests with respect to transfer taxes equals zero.

A second possibility is that potential donors derive utility from their own consumption and from terminal wealth, a situation that is known as "joy-of-giving". Carroll (2002) has proposed a variant of this approach, pointing out that at the top of the wealth distribution bequests may be motivated by a "capitalist spirit", so that wealth itself enters the utility function. In the Appendix we show that in this case, an increase in the transfer tax rate reduces bequests (net of taxes), as in Atkinson (1971) and Blinder (1975).

Gale and Perozek (2001) show that the negative effect of taxes on net bequests carries over to the case of altruistic donors who care about their own consumption and the utility of their children, and transfer wealth to their heirs until the marginal utility of their consumption equals the marginal utility of increasing children's consumption.[2] The negative effect of taxes on net bequests also arises when bequests are a payment for the services that donors receive from recipients, as in Bernheim, Shleifer and Summers (1985), because transfer taxes raise the pre-tax price of the services and lower their demand (Gale and Perozek, 2001).

Even though the effect of taxes on net bequests is not ambiguous, the sign of the effect on gross bequests depends on how parents' wealth accumulation decisions respond to estate taxes. In the joy-of-giving model, if the elasticity of the marginal utility of bequests is lower than the

[2] The altruistic model suggests that bequests should be directed to the less fortunate children, and that the division of consumption within generations should be independent of the division of income. In practice one observes very often that bequests are divided equally, and that the divisions of income and consumption are not independent (Altonji, Hayashi and Kotlikoff, 1992). Thus, empirically the altruistic model of bequests is not supported by the data.

elasticity of the marginal utility of consumption, consumption is a necessity while bequests are a luxury good. In this case an increase in taxes reduces gross bequests and increases consumption. Conversely, if bequests are a luxury good, the proportion of lifetime wealth spent on bequests increases with wealth. In this case an increase in taxes increases gross bequests and reduces consumption. More generally, as pointed out by Kopczuk (2009), the effect of transfer taxes depends on individual preferences and the particular bequest motive considered. The reason is that higher transfer taxes impose both substitution and income effects. While the former reduces the incentives to accumulate, the latter reduces households' consumption in all periods and therefore raises savings.[3]

2.2 Empirical evidence

There is relatively little empirical evidence on the effect of transfer taxes on intergenerational transfers. One crucial reason is the lack of data on donors. The few existing studies address the question of how taxation affects the overall size of bequests. Kopczuk (2009) points out that this question "while straightforward to ask, is extremely difficult to answer," and for two reasons. The first is to find a statistical design that is able to establish a causal link from transfer taxes to the size of intergenerational transfers. The second is that when taxes increase individuals' attempt to avoid taxes also increases, so that any estimate of a change in taxes on the size of intergenerational transfers reflects the impact of taxes on wealth accumulation but also that on tax avoidance.

Three studies attempt to estimate the relation between taxes and bequests. Holtz-Eakin and Marples (2001) use data from the Health and Retirement Survey (HRS) and construct separate tax calculators for the Federal Estate Tax and each of the 50 State Death Taxes. The calculators are then used to impute an individual measure of projected estate taxes, using total assets as the tax base. Net worth is then regressed on this measure of taxes, controlling for other determinants

[3] When bequests are altruistically motivated, the effect of trasnfer taxes on saving depends on the parents' ability to commit to the level of future transfers (Gale and Perozek, 2001), although some simulation analyses show that a transfer tax might reduce wealth accumulation and the capital stock (Caballè, 1995). When bequests are a payment for the services that the donor receives from the recipient, the effect of the tax on the size of transfers depends on the parent's price elasticity of demand for services and is in general ambiguous (Gale and Perozek, 2001).

of wealth accumulation. Holtz-Eakin and Marples recognize that their measure of estate taxes is endogenous, and use as instruments state of birth and state-by-state variation in the shape of the estate tax schedule. Even though the parameters estimates are sensitive to model specification, they find a negative relationship between wealth accumulation and the estate tax.

Kopczuk and Slemrod (2001) use estate tax return data from 1916 to 1996 to investigate the impact of the estate tax on reported transfers. They find that an aggregate measure of reported transfers is negatively correlated with summary measures of the level of estate taxation, holding constant other influences. As they note, the negative correlation reflects the impact of the estate tax on both wealth accumulation and avoidance, so the evidence is consistent with higher estate taxes increasing tax avoidance or reducing saving by the donor.[4] Joulfaian (2006) also uses US aggregate time series on federal revenues from the estate tax. His sample spans the 1951-2001 period, and also his findings suggest that estate taxes have a dampening effect on the reported size of taxable estates. From a quantitative point of view, all three papers reach fairly similar conclusion on a negative but small elasticity of transfers on estate taxes, between -0.2 and -0.1.[5] None of these papers, however, is able to distinguish the effect of transfer taxes on wealth accumulation from the effect on tax avoidance.

With respect to previous studies, our paper relies on microeconomic data with information on both donors and recipients. With the notable exception of Holtz-Eakin and Marples (2001), all previous studies rely on administrative data. This restricts the analysis to a selected group of rich taxpayers. Instead, our study is conducted on a sample that is representative of the whole Italian population. On the other hand, several caveats apply to our analysis. As in previous studies, we cannot distinguish the effect of tax avoidance from a genuine tax effect. We have information on the number and size (in square meters) of real estate transfers, but not on total transfers (including financial assets). This implies that we are not able to distinguish the effect of the reform on the size of transfers from the effect on the composition of transfers (real estate vs. financial wealth).

[4] They also show estate tax rates that prevailed at age 45 (or 10 years before death) are more clearly negatively associated with reported estate size than the rate prevailing in the year of death.

[5] This implies that if the marginal tax rate increases from 10 to 11 percent (a 10 percent increase) the size of bequests falls by between 1 and 2 percent.

3. The tax reform

Studying real estate intergenerational transfers in Italy is interesting for three reasons. First, in Italy the ratio of aggregate real estate wealth to total wealth is 86 percent for those aged 60 or above. Second, the largest portion of real estate is the house of residence: for those aged 60 or above the owner occupancy rate is 75 percent. Thus, many elderly transfer real estate, and it is of course an open issue to what extent these transfers are accidental or voluntary. Third, bequests and inter vivos transfers play an important role in the process of wealth accumulation. Our survey data (SHIW) indicate that about 40 percent of homeowners and at least one third of the population at large receives sizeable intergenerational transfers. Using data on reported transfers, Guiso and Jappelli (2002) estimate that the average transfer value is 26,000 euro, accounting for a share of intergenerational transfers in total wealth that varies between 25 and 35 percent, depending on whether the interest accrued on the transfer is included. In principle, transfer taxes might therefore affect substantially wealth inequality and intergenerational mobility.

As shown in Table 1, before the sequence of reforms that abolished transfer taxes, the Italian regime – regulated by law 346/1990 – consisted of two taxes. A first tax was levied on the total estate of the donor, with an exemption threshold of approximately 125 thousand euro (250 million lire). A second tax was levied on transfers received, provided recipients were not direct relatives of the donor or spouse. Both taxes were organized in several brackets with a highly progressive tax rate (from 3 to 27 percent). No transfer taxes were levied at the local level. Importantly for our analysis, there was a unified treatment (including exemption) for gifts and bequests combined. In practice, as in other OECD countries, despite relatively high tax rates, fiscal revenues from transfer taxes were rather low (less than 1 percent of total revenues), because of tax avoidance and evasion (OECD, 2000).[6]

Between 1999 and 2001 taxes were eliminated in three steps. The first reform was implemented in 1999, raising the exemption level that applied to the donors' total estate from 125 thousand euro to 175 thousand euro (350 million lire). In 2000, a second and more substantial

[6] That fiscal revenues from estate taxes are low in several OECD countries is not surprising. Though there is ample variation in the estate taxes legislation, exemptions are quite common. For instance, in the U.K. and Ireland as well as in the U.S. transfers between spouses are exempt. Deductions for family members are also available in the Netherlands, Switzerland and Spain, while Sweden abolished inheritance taxes in 2005.

reform ruled that the exemption applied to the share received by each recipient, and not to the total estate, effectively further raising the exemption. Moreover, above the exemption threshold, the tax became a flat rate of 4 percent for the spouse and direct relatives, 6 percent for relatives up to fourth degree, and 8 percent for other recipients. In the final step, the transfer tax was abolished at the end of 2001.[7] Each of the tax regimes and reforms treat equally bequests and gifts, except for a very small difference in tax rates in 2000.

The tax change induced by the 2000 reform was substantial, especially for households at the top of the wealth distribution. An example illustrates its effect. Consider the case of a donor transferring an estate valued 500 thousand euro to two siblings, corresponding to the top decile of the wealth distribution. Before 1999, the exemption was 125 thousand euro. Applying the relevant tax brackets to the total transfer, the tax due was $0.03\times(175-125)+0.07\times(250-175)+0.10\times(400-250)+0.15\times(500-400)=36.75$ thousand euro. In 1999, due to the increase in the exemption of 175 thousand euro, the tax due was 35.25 thousand euro. In 2000 the exemption applied to the inheritance received by each of the two recipients (see Table 1), and the estate was taxed at a lower rate, so that the resulting total tax due was reduced to $0.04\times(500-2\times175)=6$ thousand euro. After 2001 no tax was due on any transfer (bequest or gift).[8] The example shows that changes occurred in 1999, 2000 and 2001. Therefore in the empirical analysis the pre-reform tax regime spans from 1993 to 1998 and the post-reform period from 2002 to 2006, thus excluding the transitional years that are hardly attributable to any of the two groups.[9]

The tax reform affected a large fraction of the households population, essentially all those with estates above the exemption threshold of 125 thousand euro. In Figure 1 we plot the wealth distribution in 1998, the pre-reform year. Since median wealth was only slightly above the exemption level (158 thousand euro), the cancellation of transfer taxes benefited almost half of the population.

[7] Bertocchi (2007) notices that transfer tax revenues have been declining in all OECD countries for the past seventy years, and proposes a politico-economic model to explain this tendency. The cancellation of transfer taxes in Italy and Sweden is part of this general trend, as well as the recent policy debate and legislative proposals in countries such as the U.S., the U.K. and France.

[8] In 2007 transfer taxes were reinstated after the election of the Prodi government. The exemption levels in the reinstated taxes were quite large (one million euro per recipient), so they affected very few taxpayers. In any case, our sample ends in 2006.

[9] Given that the SHIW is conducted biannually this amounts to just eliminating the year 2000.

Given the change in the exemption threshold, the reform has a clear testable implication. The post-reform tax regime should have increased the propensity to transfer of the rich (those above the exemption level) relatively to the poor, who were already exempt before the reform. Therefore the differential impact of the tax reforms across the wealth distribution allows us to identify the impact of transfer taxation and to estimate the tax elasticity of intergenerational transfers in a standard difference-in-difference framework.

The only other paper that has looked at the consequences of the Italian cancellation of transfer taxes is Bellettini and Taddei (2009). Their analysis focuses on a rather different issue, namely the effect of the cancellation on house prices. In particular, the authors show that in an overlapping generations model with intergenerational altruism a decrease in transfer taxes can bring about an increase in real estate prices, and test this prediction using time series data on house prices and real estate transfers available in 13 Italian cities. They regress the change in house prices on city characteristics, a time trend and a post-reform dummy, and find that the reform has induced a sizeable appreciation of residential real estate prices.

4. The data

The Survey of Household Income and Wealth (SHIW) provides a unique opportunity to test the effect of the tax reform on the propensity to transfer. Conducted biannually by the Bank of Italy, the survey spans pre- and post-reform years and, in each year, it is representative of the population. Each survey includes about 8,000 households and has detailed data on economic and demographic characteristics of household members. The survey also provides information on dwellings owned by the household, how they were acquired (outright purchase, built to order by the household, inherited or received as a gift) and their size (in square meters). Since gifts and bequests are treated equally by the tax code, our definition of transfers includes both.[10] Most importantly for the present study, the survey includes selected characteristics (occupation,

[10] In the survey bequests and gifts are not easily distinguished in all years. Furthermore, in Italy intergenerational gifts in the form of real estate occur rarely through formal procedures. More common is that parents make a cash transfer to children, who then acquire a home.

education, year of birth, and whether the parents are alive) of the parents of the respondent and spouse. We assume that transfers originate from parents rather than from other relatives or donors, and merge information on transfers with the characteristics of donors and recipients.

In the empirical analysis we focus on the 1993-2006 period in which identical questions on transfers and the same information on respondents' parents are available. The data thus allow to focus on the short-run effects of the removal of transfer taxes on intergenerational transfers. We select all households in which at least one parent of the head of the household (or of his/her spouse) is not alive at the time of the survey.[11] Our sample includes data on 29,914 owners of real estate wealth and 120,686 potential donors.

A first inspection of the data reveals that the fraction of households ever receiving real estate as a bequest or gift was slightly below 30 percent in the pre-reform years (1993-1998), and increased to almost 35 percent in the post-reform period (2002-06), as shown in Figure 2. The rising trend in transfers agrees with a previous study by Cannari and D'Alessio (2008), who find that the share of intergenerational transfers in total wealth increased from 30 to 34 percent between 1991 and 2002.

The key feature of the reform that we exploit in the paper is that the elimination of transfer taxes did not affect all households equally, because donors with total estates below 125 thousand euro were already exempt before 2000, and therefore were not affected by the tax reform. Any impact of the reform on transfers should emerge in the group of potential donors whose estate was above the exemption limit.

Since potential donors' resources are not observed, we split the sample on the basis of the donors' occupation, which is arguably correlated with their lifetime wealth. We define as "High parental occupation" households where at least one potential donor was either entrepreneur, manager, professional or self-employed during his or her working life.[12] For instance, a married couple is classified as "High parental occupation" if any of the four potential donors is (or was at the time he or she was alive) in one of the four above mentioned occupations.[13] Although we do not observe the wealth distributions of donors, we can infer that it is correlated with the

[11] Prior to 1993 data on donors are not available.
[12] Our identification strategy requires that the occupation choices of parents do not depend on the bequest motives.
[13] Of course, other classifications are possible, and indeed we report sensitivity analysis on alternative group definitions (see section 6).

occupation split by inspecting the correlation between wealth and occupation for recipients (which instead is readily available). Indeed, in 1998 median wealth of recipients with high occupation is 183 thousand euro, as opposed to 143 thousand euro for those with low occupation. The difference is quite stable across years, lending support to our assumption that the sample split based on donors' occupation is strongly correlated with their unobserved resources.[14]

In Figure 3 we report a breakdown of the fraction of households receiving transfers from high- and low- occupation donors. In the pre-reform period (1993-1998), the fraction was, on average, 32 percent, vis-à-vis 26 percent in the low-occupation group. After the reform (2002-2006) the fraction increased to 41 percent in the high-occupation group, against 32 percent in the low-occupation group. Thus, the difference between high and low occupation donors increased by 2.5 percentage points after the reform.

In Figure 4 we report the number of square meters transferred, conditional on positive real estate transfer. Before the sequence of reforms, high-occupation donors transferred, on average, 156 square meters, while low-occupation donors 118 square meters. After the reforms, square meters transferred increased to 166 and 115 respectively. Thus, after the reforms the difference between the two groups increased by 11 square meters (about 7 percent of the pre-reform level). The descriptive analysis suggests that the tax change did not affect equally all potential donors, but seems to have affected high-occupation donors to a larger extent.

Table 2 provides summary statistics of the variables used in the estimation by donors' occupation: fraction of households ever receiving real estate transfers, square meters transferred, donors' and recipients' characteristics. Not surprisingly, high-occupation donors tend to have higher education as well, while donors' birth cohort does not differ significantly between high- and low-occupation groups. As for recipients' characteristics, the last rows of Table 2 show that households with high-occupation donors are more likely to be males, and have higher income and education. Thus, as expected, treatment and control groups differ along important characteristics, such as donor's education and recipients' gender, education and income. In the empirical analysis we will be able to control for differences in treatment and control groups due to time-invariant

[14] The assumption that transfers originates from parents may introduce some measurement error in transfers, but our estimates will still be valid if the error applies equally the two groups (high and low occupation).

variables, such as gender and education. The next section further discusses how we control for residual heterogeneity between the two groups in our difference-in-difference estimates.

5. The empirical framework

We assume that the transfer decision of parent *i* in period *t* depends on parent's lifetime wealth net of taxes $(1-\tau)w^p$, parent's characteristics x^p, children's lifetime wealth w^k, and children's characteristics x^k:

$$y_{it}^{*} = \alpha_0(1-\tau_t)w_i^p + \alpha_1 x_i^p + \beta_0 w_i^k + \beta_1 x_i^k + \delta_t + \varepsilon_{it} \quad (1)$$

The variable y_{it}^{*} reflects the difference between the indirect utility of transferring wealth and the utility of not transferring, and it is not directly observed. Instead, we have data on whether a real estate was transferred, the square meters transferred and the year in which the transfer was made.

As explained in Section 3, the reform provides an exogenous source of variation that we exploit to assess the causal link between taxes and intergenerational transfers in a quasi-experimental setting. Thus, we express equation (1) in a standard difference-in-difference framework, distinguishing between tax-payers affected by the reform (the treatment group that includes high-occupation donors) and unaffected taxpayers (the control group that includes donors with low-occupation). We assume that potential donors in the treatment group face an exogenous and unexpected reduction in transfer taxes, and check how their propensity to transfer changes relative to the donors in the control group. Our sample is relatively short, and the estimates are not able to capture the long-run (steady-state) effects of the tax reform.

We make equation (6) operational pooling data from pre- and post-reform periods and estimating the following equation:

$$y_{it} = \gamma M_i + \delta POST_t + \phi M_i \times POST_t + \alpha x_i^p + \beta x_i^k + \varepsilon_{it} \quad (2)$$

We estimate equation (2) using two outcome variables: a dummy variable equal to 1 if a real estate was ever transferred and the log of square meters transferred. The two outcomes capture the extensive and the intensive margins of our measure of transfers. On the right hand side, M_i is a dummy equal to 1 for high-wealth parents (measured as high occupation); *POST* is a dummy for the post-reform period; x^p includes time-invariant parents' characteristics (education and cohort dummies), and x^k recipients' characteristics (gender, area of residence, and education dummies).[15]

In equation (2) the coefficient γ measures the difference in the propensity to transfer between high and low-wealth parents. The coefficient δ measures the difference in the propensity to transfer after the reform for both groups. Our main coefficient of interest (ϕ) reflects the differential effect of the reform between the two groups. A positive ϕ reflects larger transfers from high-wealth parents after the reform, while a value of ϕ=0 indicates that the reform does not have any effect on transfers.

In order to evaluate the effect of the reform on the extensive margin, we estimate a linear probability model. The reason is that all covariates in equation (2) are dummy variables. It is well-known that in the case where all independent variables are discrete variables for mutually exhaustive categories, the linear probability model is completely general and the fitted probabilities lie within the interval [0, 1].[16] In addition to being completely general in this context, the linear probability model also has the advantage of allowing a straightforward interpretation of the regression coefficients.[17] Since the error term of the linear model is heteroskedastic, standard errors are computed using White (1980) heteroskedasticity-robust variance matrix.

As explained above, the diff-in-diff approach controls for any time-invariant differences between treatment and control groups. As discussed in Section 4, Figures 3 and 4 provide visual

[15] We disregard recipients' characteristics that are not observable by potential donors at the time of the transfer. For this reason, in our baseline specification we don't include recipients' resources.
[16] In this case, the fitted probabilities are simply the average of the dependent variable within each cell defined by the different values of the covariates (Angrist, 2001; Wooldridge, 2001).
[17] The results of probit and logit models are very similar (results are available upon request).

support for the assumption that pre-reform trends in outcomes are the same for treatment and control groups. Of course, we still need to assume that other time-varying factors that we have possibly omitted do not affect the two groups differentially, acting as confounding variables. For this reason, in some specifications we also include the (log) of recipients' disposable income. While this may be rightly criticized because recipients' income is likely to be endogenous with respect to the transfer decision, it is important to check that the results are robust to the inclusion of time-varying controls that are correlated with unobserved heterogeneity.

6. The effect of the tax reform on transfers

In this section we report regression results from the estimation of equation (2) to assess the effect of the sequence of tax reforms on whether any dwellings was transferred and on the size of the transfers measured in square meters. Our approach thus investigates both the extensive and the intensive margins through which the tax reforms might have affected donors' decisions.

6.1. Extensive margin

Table 3 reports the results from estimating the linear probability model for whether a dwelling was transferred. High-occupation donors are the treatment group, the group of households in which at least one parent of the head and spouse (if present) is an entrepreneur, manager, professional or self-employed. The first column of Table 3 reports the results for the baseline specification, where we condition only on donors' occupation, a full set of time-dummies, and the interaction between the treatment group dummy (dummy for high-occupation donors) and a dummy that is equal to one for 2002-06.[18]

Consistently with the evidence in Figure 3, the results show that the propensity to transfer real estate wealth is significantly higher for high-occupation donors. The coefficient of the

[18] Introducing a full set of time dummies in the estimation rather than the more restrictive dummy for post-reform years leave the results unchanged. The coefficients of the time dummies confirm the pattern of transfers apparent from Figure 3. The effect of time is non-linear and peaks in 2004, two years after the abolition of the estate tax.

interaction between the high-occupation dummy and the post-reform dummy shows that the probability of making a transfer increased by 2.5 percentage points for high- relative to low-occupation donors after the reform.[19] In the other columns of Table 3 we expand the baseline specification with additional variables. In particular, in column 2 we control for donors' characteristics (dummies , such as year of birth and education. In column 3 we further include recipients' characteristics, such as gender, area of residence and education, and in the final column we add the (log) of recipients' disposable income. Notice that current income is not observable by donors at the time of the transfer. Additionally, as discussed above, it is likely to be endogenous, as transfers may affect future recipient's income. For these reasons, we cautiously include income only in the last specification to capture unobserved recipients' characteristics that may affect donors' behavior. Our coefficient of interest is always positive and significant and is quite stable across specifications. The value ranges between 0.021 and 0.022.

One potential problem of our empirical strategy is the identification of the treatment group. Some donors might have been wrongly included (or excluded) from the treatment group, which might jeopardize our evidence and bias our estimates of the effect of the tax reform. To address the issue, we adopt a sharper identification of the treatment group in Table 4, where we interact the post-reform dummy with a dummy for "At least two high parental occupations", equal to one for households in which at least two parents of the head and spouse (if present) are entrepreneurs, managers, professionals or self-employed. In other words, we further split the high-occupation sample into two groups: "Exactly one high" and "At least two high parental occupations". As the incentive to transfer wealth after the reform is directly related to the level of donors' wealth, the effect of the reform should be larger for the latter group.

The results show that this is indeed the case. In the baseline specification, reported in the first column of Table 4, the coefficient of the interaction with the "Exactly one high occupation" dummy drops to 1.1 percentage points, while that of the interaction with the "At least two high parental occupations" dummy implies that for this group the propensity to transfer increases by 4.8 points. Controlling for donors' and recipients' characteristics does not alter the overall picture, and confirms the presence of a positive and statistically detectable effect of the tax changes on transfers. Additionally, including this finer classification of donors further

[19] Before the reform the probability of transferring real estate wealth for the high occupation donors was 32 percent.

corroborates our identification strategy, and agrees with the idea that the effect of the reform rises with donors' wealth.

6.2. Intensive margin

Table 5 measures the size of real estate transfers with the log of total square meters transferred, thus evaluating the effect of the reform on the size of the transfers conditional on a dwelling being transferred. The first column of Table 5 reports results from the baseline specification that shows the unconditional diff-in-diff coefficient as in the first column of Table 3. The coefficient on the high parental occupation dummy is positive, indicating that wealthier donors make larger transfers. The interaction between the post-reform and the high occupation dummy shows that after the reform the number of square meters transferred increased in the treatment relative to the control group by 7 percent. Adding donors and recipients controls in columns 2 and 3 of Table 5, reduces the effect of the treatment relative to the control group to 4 percent , which amounts to just below 5.5 square meters at the average of the square meters transferred ($5.47=136.88 \times 0.04$). Only in column 4, where we control also for the income of the recipients, the coefficient is not statistically different from zero. Thus, the abolition of estate taxes seems to have affected both the extensive and intensive margins of transfers.

Table 6 reports results splitting the treatment group into "Exactly one" and "At least two high parental occupations" groups. For the first group the effect of the reform is similar to that of Table 5, though less precisely estimated. Instead, for the "At least two high parental occupations" group the coefficient is slightly larger in the specifications in columns 1 and 3 (0.096 and 0.068 respectively). Only in column 4 the coefficient is not statistically different from zero. Overall, Table 6 shows that we cannot always distinguish statistically the effect between the two groups of donors, implying that the effect of the tax change on the intensive margin is more evenly spread across households who responded to the increased incentive to donate.

So far the analysis has focused on the impact of the reform on average transfer. However, the effect of the reform is likely to vary along the distribution of transfers. In particular, one would expect the effect to be larger in the upper part of the distribution, because higher transfers were taxed at increasingly higher rates due to the progressive structure of the pre-reform

legislation. Table 7 investigates this issue running quantile regressions and shows that the impact of the cancellation of transfer taxes increases along the transfer distribution. In particular, column 1 indicates no significant effect of the reform at the 25th percentile, while the impact shows up positive and significant at the 50th, with a coefficient of 0.055 (column 2), as well as at the 75th percentile, with a coefficient of 0.076 (column 3). Column 4 shows that the impact on the inter-quartile range is positive and significant.

These results imply an increase of 11.4 (0.076×150) and 5.5 (0.055×100) square meters transferred after the reform in the treatment relative to the control group at the 75th and 50th percentiles, respectively. Thus, the effect at the median is quantitatively similar to the effect at the mean of the distribution, while the effect at the 75th percentile is twice as large.

Overall, our econometric evidence suggests that the abolition of transfer taxes that took place between 1999 and 2001 has increased real estate transfers. The evidence, however, does not rule out completely that the increase in transfers reflects a change in the composition of transfers (a tax avoidance effect), a change in reported transfers, or a combination of the two. As for the tax avoidance effect, it might be that after the reform donors were more willing to transfer wealth in the form of real estate rather than in the form of financial wealth, which before the reform was more easily hidden to tax authorities. Since in Italy real estate assets represent 86 percent of total wealth for those aged 60 and above, we find it plausible that at least part of the increase in real estate transfers represents a genuine tax effect. Our estimates should be interpreted with care also because after the reform some recipients might be more willing to declare that they have received a real transfer in the past.[20] This might explain part of the general increase in real estate transfers visible in Figures 2 and 3, but we see no particular reason why changes in reporting should affect more than proportionally individuals who have received transfers from high-wealth donors.

[20] Gorodnichenko et al. (2009) report evidence from Russian survey data suggesting that people underreport income to survey takers for fear of tipping off the tax authorities.

7. Conclusions

In this paper we analyzes a sequence of Italian tax reforms that culminated with the abolishment of transfer taxes. Since before 2000 estate taxes applied only above a threshold of 125,000 euro, the reform provides a quasi-natural experimental framework that we exploit to assess the link between transfer taxes and intergenerational transfers. While about half of Italian households was already exempt before the reform, the richest segment of the population was exempt only afterwards. Besides the quasi-experimental design, our study has the further advantage that we combine data on the entire population of potential donors (not just those who make transfers or pay the tax) with information on potential recipients (not just those who received a transfer).

Regressions using information on real estate transfers indicate that the reform increased the probability that high-wealth donors make a transfer by 2 percentage points relative to poorer donors. We also find that after the reform real estate transfers by relatively rich donors increased on average by just below 5.5 square meters. Results from quantile regressions show that the effect is mostly concentrated in the upper part of the transfer distribution: the size of transfers increased by 5.5 and 11.4 square meters at the 50^{th} and 75^{th} percentile, respectively, with no effect at the 25^{th} percentile.

The effects are not directly comparable with previous empirical findings, but are broadly in line with the small average effect of estate taxes on transfers found in Kopczuk and Slemrod (2001) and Joulfaian (2006), also considering that part of the estimated effect may reflect a tax avoidance effect. Given that our sample is relatively short, it is quite possible that the small effect we find does not represent the long-run response, but the adjustment to a new equilibrium. In the long-run the response might be different, as people have longer time to adjust their transfer decision.

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Appendix

This appendix provides a simple model of intergeneration framework. The model illustrates the effect of estate taxes on transfer. We assume, as in Atkinson (1971) and Blinder (1975), that consumers maximize the following utility function:

$$U = \int_0^T \frac{c(t)^{1-\gamma}}{1-\gamma} e^{-\rho t} dt + \beta \frac{b_T^{1-\delta}}{1-\delta} e^{-\rho T} \tag{A1}$$

where ρ is the discount rate, γ the elasticity of the marginal utility of consumption, δ the elasticity of the marginal utility of bequests, β the intensity of the bequest motive, T the length of life and b_T bequests net of estate taxes; furthermore we assume $\gamma > 0$, $\delta > 0$, $\rho > 0$ and $\beta \geq 0$. The intertemporal budget constraint can be written as:

$$\int_0^T c(t) e^{-rt} dt + \frac{b_T}{1-\tau} e^{-rT} = W \tag{A2}$$

where r is the interest rate, τ the tax rate on bequests, and W the sum of initial wealth and the present discounted value of lifetime income. Maximization of equation (A1) subject to the intertemporal budget constraint (A2) delivers the following first order conditions:

$$c(t)^{-\gamma} e^{-\rho t} - \lambda e^{-rt} = 0 \qquad \text{for all } t$$

$$\beta b_T^{-\delta} e^{-\rho T} - \frac{\lambda}{1-\tau} e^{-rT} = 0$$

where λ is the Lagrange multiplier associated with the intertemporal budget constraint. If $\delta = \gamma$, we obtain the following expressions for $c(t)$ and b_T:

$$c_t = c(0) e^{\frac{(r-\rho)t}{\gamma}} \tag{A3}$$

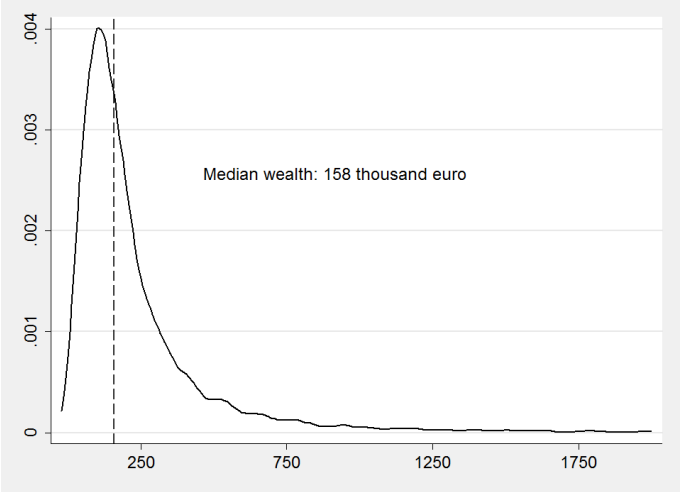
$$b_T = c(0) \left[\beta (1-\tau) e^{(r-\rho)T} \right]^{\frac{1}{\gamma}} \tag{A4}$$

and substituting in the budget constraint we obtain an expression for initial consumption:

$$c(0) = \frac{r - \frac{1}{\gamma}(r-\rho)}{1 - e^{-\left(r - \frac{1}{\gamma}(r-\rho)\right)T} \left(1 - \left(r - \frac{1}{\gamma}(r-\rho) \right) \beta^{\frac{1}{\gamma}} (1-\tau)^{\frac{1-\gamma}{\gamma}} \right)} W \tag{A5}$$

Combining (A4) and (A5) it is immediate to check that an increase in the estate tax rate τ reduces net bequests, i.e. $db_T / d\tau < 0$. Note that the negative effect of taxes on net bequests applies also if $\delta \neq \gamma$.

Figure 1
The wealth distribution of Italian households

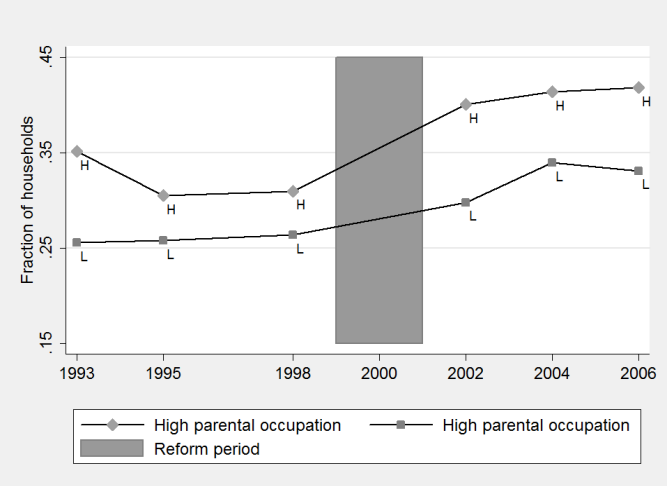


Note. Wealth is measured in thousand of euros. The wealth distribution refers to the year 1998 and is estimated using a Kernel density function.

Figure 2
Fraction of households receiving real estate transfers

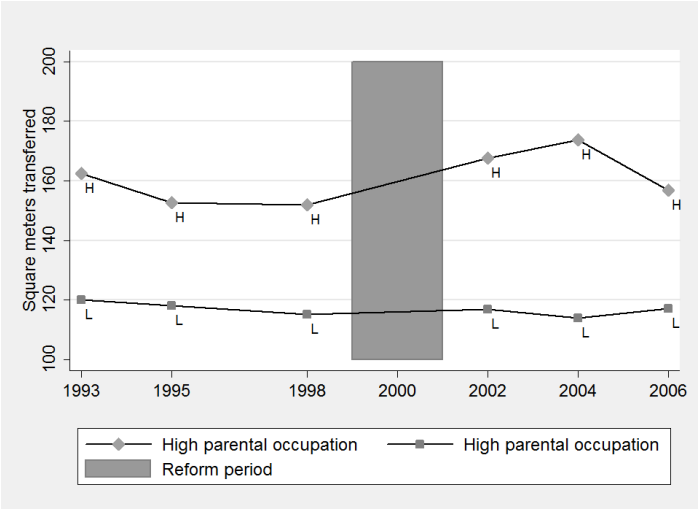
Note. Real estate transfers are defined as bequests or gifts received by the household head or spouse over their lifetime.

Figure 3
Fraction of households receiving real estate transfers, by parental occupation



Note. Transfers are defined as bequests or gifts received by the household head or spouse over their lifetime. The group "High parental occupation" (H) includes all households where at least one parent of the head and spouse (if present) is or was an entrepreneur, manager, professional or self-employed. The group "Low parental occupation" (L) includes households where none of the parents of the head and spouse (if present) is or was an entrepreneur, manager, professional or self-employed.

Figure 4
Square meters transferred, by parental occupation



Note. The figure refers to cumulative square meters transferred, defined as square meters received as bequests or gifts by the household head or spouse over their lifetime. The yearly averages are computed in the sample with positive square meter transferred. The group "High parental occupation" (H) includes all households where at least one parent of the head and spouse (if present) is or was an entrepreneur, manager, professional or self-employed. The group "Low parental occupation" (L) includes households where none of the parents of the head and spouse (if present) is or was an entrepreneur, manager, professional or self-employed.

Table 1
The reforms of transfer taxation in Italy

	Tax base	Exemption	Tax rate		Note
Law 346/1990	Total donor's estate	125.000 euro for total estate	**Bracket**s (‘000 euros) 125-175 175-250 250-400 400-750 750-1500 1500+	**Tax rate** 3 7 10 15 22 27	An additional progressive tax is levied on the share of the estate received by recipients who are not direct relatives of the donor or spouse. For gifts the same tax rates apply.
Law 488/1999	Total donor's estate	175.000 euro for total estate	**Brackets** (‘000 euros) 175-250 250-400 400-750 750-1500 1500+	**Tax rate** 7 10 15 22 27	An additional progressive tax is levied on the share of the estate received by recipients who are not direct relatives of the donor or spouse. For gifts the same tax rates apply.
Law 342/2000	Estate share received by each recipient	175.000 euro for each recipient	Flat tax rate: 4% for spouse and direct relatives, 6% for relatives up to fourth degree, 8% for others		For gifts: 3%, 5% and 7% respectively.
Law 383/2001	The inheritance tax was abolished	Abolished			
Law 296/2007	Estate share received by each recipient	1 million euro for each recipient	Flat tax rate: 4% for spouse and direct relatives, 6% for relatives up to fourth degree, 8% for others		For gifts the same tax rates apply.

Table 2
Sample statistics

	Low parental Occupation			High parental occupation			Total sample		
	Mean	s.d	*N*	Mean	s.d.	*N*	Mean	s.d.	*N*
Transfers									
Fraction of households ever receiving a real estate transfer	0.29	0.46	17,588	0.36	0.48	12,326	0.32	0.47	29,914
Square meters transferred (conditional on positive transfers)	116.59	89.63	5,187	160.72	178.29	4,415	136.88	139.41	11,201
Donors' characteristics									
High parental education	0.10	0.30	17,588	0.17	0.38	12,326	0.13	0.33	29,914
High parental occupation							0.41	0.49	29,914
Born before 1900	0.38	0.48	14,460	0.41	0.49	11,731	0.39	0.49	26,191
Born in 1901-20	0.41	0.49	14,460	0.39	0.49	11,731	0.40	0.49	26,191
Born after 1920	0.21	0.41	14,460	0.19	0.40	11,731	0.20	0.40	26,191
Recipients' characteristics									
Male	0.68	0.47	17,588	0.75	0.43	12,326	0.71	0.45	29,913
Log of HH income	10.16	0.60	17,588	10.32	0.64	12,326	10.23	0.62	29,899
High education of HH	0.31	0.46	17,588	0.41	0.49	12,326	0.35	0.48	29,914
North	0.44	0.50	17,588	0.44	0.50	12,326	0.44	0.50	29,913
Centre	0.23	0.42	17,588	0.22	0.41	12,326	0.22	0.42	29,913
South	0.33	0.47	17,588	0.35	0.48	12,326	0.34	0.47	29,913

Note: The group "High parental occupation" includes all households where at least one parent of the head and spouse (if present) is or was an entrepreneur, manager, professional or self-employed. The group "Low parental occupation" includes households where none of the parents of the head and spouse (if present) is or was an entrepreneur, manager, professional or self-employed. The group "High parental education" includes households where at least one parent of the head and spouse (if present) has (or had) high school or college education.

Table 3
Probability of receiving a transfer

	(1)	*(2)*	*(3)*	*(4)*
High parental occupation	0.063	0.065	0.065	0.068
	(0.007)***	(0.008)***	(0.008)***	(0.008)***
Post-reform dummy	0.064	0.071	0.067	0.068
	(0.007)***	(0.008)***	(0.008)***	(0.008)***
High parental occupation ×	0.025	0.022	0.021	0.022
post reform dummy	(0.011)**	(0.012)*	(0.012)*	(0.012)*
High parental education		0.044	0.039	0.046
		(0.009)***	(0.009)***	(0.009)***
Father born before 1900		0.005	0.006	0.003
		(0.008)	(0.008)	(0.008)
Father born 1901-1920		-0.014	-0.010	-0.009
		(0.008)*	(0.008)	(0.008)
Recipient resident in the Centre			0.013	0.012
			(0.007)*	(0.007)
Recipient resident in the South			0.030	0.019
			(0.007)***	(0.007)***
Male recipient			-0.038	-0.030
			(0.007)***	(0.007)***
High education of recipient			0.016	0.029
			(0.007)**	(0.007)***
Log income of recipient				-0.033
				(0.006)***
Constant	0.259	0.253	0.263	0.591
	(0.005)***	(0.008)***	(0.011)***	(0.058)***
Observations	29914	26191	26190	26177
R-squared	0.01	0.01	0.02	0.02

Note: The dependent variable is a dummy equal to one if a real estate was ever received as a transfer by the household head or spouse over their lifetime, and zero otherwise. Robust standard errors in parentheses. One star denotes significance at the 10 percent level; two stars at the 5 percent level, three stars at the 1 percent level.

Table 4
Probability of receiving a transfer.
Distinguishing between one and at least two high parental occupations

	(1)	*(2)*	*(3)*	*(4)*
Exactly one high parental occupation	0.057	0.059	0.057	0.059
	(0.009)***	(0.009)***	(0.009)***	(0.009)***
At least two high parental occupations	0.068	0.071	0.074	0.077
	(0.009)***	(0.010)***	(0.010)***	(0.010)***
Post-reform dummy	0.064	0.071	0.067	0.068
	(0.007)***	(0.008)***	(0.008)***	(0.008)***
Exactly one high parental occupation	0.011	0.007	0.007	0.008
× post reform dummy	(0.014)	(0.014)	(0.014)	(0.014)
At least two high parental occupations	0.048	0.046	0.043	0.045
× post reform dummy	(0.015)***	(0.016)***	(0.016)***	(0.016)***
High parental education		0.046	0.041	0.048
		(0.009)***	(0.009)***	(0.009)***
Father born before 1900		0.005	0.006	0.003
		(0.008)	(0.008)	(0.008)
Father born 1901-1920		-0.014	-0.011	-0.010
		(0.008)*	(0.008)	(0.008)
Recipient resident in the Centre			0.013	0.012
			(0.007)*	(0.007)
Recipient resident in the South			0.030	0.019
			(0.007)***	(0.007)***
Male recipient			-0.039	-0.031
			(0.007)***	(0.007)***
High education of recipient			0.016	0.030
			(0.007)**	(0.007)***
Log income of recipient				-0.034
				(0.006)***
Constant	0.259	0.253	0.263	0.600
	(0.005)***	(0.008)***	(0.011)***	(0.058)***
Observations	29914	26191	26190	26177
R-squared	0.01	0.01	0.02	0.02

Note: The dependent variable is a dummy equal to one if a real estate was ever received as a transfer by the household head or spouse over their lifetime, and zero otherwise. Robust standard errors in parentheses. One star denotes significance at the 10 percent level; two stars at the 5 percent level, three stars at the 1 percent level.

Table 5
Square meters transferred

	(1)	*(2)*	*(3)*	*(4)*
High parental occupation	0.188	0.174	0.157	0.128
	(0.018)***	(0.019)***	(0.018)***	(0.018)***
Post-reform dummy	0.013	0.007	0.008	0.002
	(0.015)	(0.017)	(0.017)	(0.016)
High parental occupation ×	0.073	0.042	0.043	0.026
post reform dummy	(0.024)***	(0.025)*	(0.025)*	(0.024)
High parental education		0.280	0.164	0.093
		(0.019)***	(0.021)***	(0.020)***
Father born before 1900		-0.049	-0.003	0.022
		(0.017)***	(0.017)	(0.017)
Father born 1901-1920		0.020	0.041	0.032
		(0.016)	(0.016)**	(0.016)**
Recipient resident in the Centre			-0.083	-0.070
			(0.016)***	(0.015)***
Recipient resident in the South			-0.118	-0.019
			(0.014)***	(0.014)
Male recipient			0.084	0.012
			(0.013)***	(0.013)
High education of recipient			0.192	0.082
			(0.015)***	(0.015)***
Log income of recipient				0.270
				(0.012)***
Constant	4.595	4.597	4.521	1.836
	(0.012)***	(0.018)***	(0.023)***	(0.119)***
Observations	9602	8439	8439	8432
R-squared	0.04	0.07	0.10	0.16

Note: The dependent variable is the log of total square meters transferred to the household head or spouse over their lifetime. The sample used in the estimation includes only households with positive square meters transferred. Robust standard errors in parentheses. One star denotes significance at the 10 percent level; two stars at the 5 percent level, three stars at the 1 percent level.

Table 6
Square meters transferred.
Distinguishing between one and at least two high parental occupations

	(1)	*(2)*	*(3)*	*(4)*
Exactly one high parental occupation	0.142	0.118	0.106	0.085
	(0.022)***	(0.023)***	(0.022)***	(0.022)***
At least two high parental occupations	0.236	0.230	0.208	0.173
	(0.023)***	(0.023)***	(0.023)***	(0.022)***
Post-reform dummy	0.013	0.007	0.008	0.002
	(0.015)	(0.017)	(0.017)	(0.016)
Exactly one high parental occupation	0.067	0.038	0.036	0.023
× post reform dummy	(0.030)**	(0.030)	(0.030)	(0.029)
At least two high parental occupations	0.096	0.062	0.068	0.043
× post reform dummy	(0.033)***	(0.033)*	(0.033)**	(0.031)
High parental education		0.287	0.170	0.099
		(0.019)***	(0.021)***	(0.020)***
Father born before 1900		-0.049	-0.003	0.021
		(0.017)***	(0.017)	(0.017)
Father born 1901-1920		0.017	0.039	0.030
		(0.016)	(0.016)**	(0.016)*
Recipient resident in the Centre			-0.085	-0.072
			(0.016)***	(0.015)***
Recipient resident in the South			-0.117	-0.019
			(0.014)***	(0.014)
Male recipient			0.079	0.009
			(0.013)***	(0.013)
High education of recipient			0.193	0.083
			(0.015)***	(0.015)***
Log income of recipient				0.267
				(0.012)***
Constant	4.595	4.596	4.524	1.869
	(0.012)***	(0.018)***	(0.023)***	(0.119)***
Observations	9602	8439	8439	8432
R-squared	0.04	0.07	0.11	0.17

Note: The dependent variable is the log of total square meters transferred to the household head or spouse over their lifetime. The sample used in the estimation includes only households with positive square meters transferred. Robust standard errors in parentheses. One star denotes significance at the 10 percent level; two stars at the 5 percent level, three stars at the 1 percent level.

Table 7
Square meters transferred. Quantile regressions

	(1)	*(2)*	*(3)*	*(4)*
	25^{th} percentile	50^{th} percentile	75^{th} percentile	$75^{th} - 25^{th}$ percentile
High parental occupation	-0.007	0.055	0.076	0.083
× post reform dummy	(0.025)	(0.019)***	(0.029)***	(0.029)***
Observations	8432	8432	8432	8432

Note: The dependent variable is the log of total square meters transferred to the household head or spouse over their lifetime. In all regressions we control for the post-reform dummy, parental occupation, parental education, parental decade of birth, geographical area of residence of the recipient, gender of the recipient, education of the recipient and log income of the recipient. The sample used in the estimation includes only households with positive square meters transferred. Bootstrapped standard errors in parentheses. One star denotes significance at the 10 percent level; two stars at the 5 percent level, three stars at the 1 percent level.