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Tax avoidance - a natural experiment

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Tax avoidance – a natural experiment*

Henry Ohlsson

20 February 2007

Abstract

The objective of this paper is to empirically study if and to what extent people legally reduce their tax payments. There are few empirical studies of tax avoidance although avoidance may seriously affect the possibilities to raise tax revenue. I use a sample of Swedish siblings receiving inheritances in 2004. These children of deceased had the opportunity to avoid inheritance taxes by partly or fully ceding their inheritances to the grandchildren. My first main result is that almost two thirds of the children avoid taxes. The likelihood of avoiding taxes decreases with age. The more of the taxes a child potentially can avoid, the more she avoids. Second, only one out of four minimize their tax payments. The more of the taxes a child potentially can avoid, the more likely he is to minimize taxes. And third, siblings tend to make the same choices whether or not to avoid taxes and to minimize taxes.

Keywords: tax avoidance, inheritances, cede to children

EconLit subject descriptors: H240, H260, D100

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1 Introduction

Is it true that people do not pay taxes unless they have to? This paper is about whether people avoid taxes, to what extent they avoid taxes, and about what determines tax avoidance. Economic theory predicts that people, if possible, will change their behavior to avoid paying taxes. It is an empirical question if this is true.

The Swedish inheritance tax gave children the possibility to partly or completely cede the received inheritance to the grandchildren.¹ The tax bill could this way be reduced as each grandchild was given an additional basic exemption from paying the inheritance tax.

Example. Suppose that a child inherited SEK 280,000. The inheritance tax on this amount was 10 percent of the amount exceeding the basic exemption of SEK 70,000, or SEK 21,000.² However, the child has two children of her own. It was, therefore, possible for her to partly cede the inheritance to the grandchildren. If the child ceded SEK 70,000 to each grandchild, the tax bill was reduced to SEK 7,000. The two grandchildren did not have to pay any taxes as they did not inherit more than the basic exemption.

The present paper exploits the fact that the design of the Swedish inheritance tax system with its rules for ceding inheritances to grandchildren created a natural experiment. First, each child of a deceased parent receives an exogenously determined (predetermined) amount. Second, this amount is usually the same for all siblings. It is unusual that bequests are unequally shared. Third, the choice set (the budget constraint) of the child is exogenously determined and independent of other economic choices. It is predetermined by the number of grandchildren.

I have access to a unique data set based on the estate reports of 230 deceased from the city of Stockholm. The data set has information on the inheritance of each child (sibling) and how much the child (sibling) has ceded to each grandchild. Siblings might differ in their choice sets and background characteristics but they have the same parent. I can, therefore, control for fixed family effects when studying differences in if and how much siblings differ in how they have ceded to the grandchildren, as I have information for all children of the deceased. Finally, I can compute the choice set as I know the number of grandchildren.

In a theoretical framework, the child's choice of whether to avoid taxes and how much taxes to avoid is a tradeoff between the benefits of minimizing taxes on the one hand and the cost of the losing control over funds on the other hand. The child's degree of altruism will affect these choice. It should

¹The Swedish inheritance tax was repealed from 2005.

²The basic exemption corresponded to USD 9,500, EUR 7,700, or GBP 5,200 using the 2004 exchange rates.

be pointed out that ceding an inheritance meant loss of control over funds even if the grandchildren were minors. If the child ceded an inheritance, an official legal guardian with the mandate of protecting the grandchildren's financial interests had to be appointed. Furthermore, there is not a single example in the data of ceding of inheritances among those not paying taxes.

It should be stressed that this is an example of tax avoidance, not of tax evasion. Reducing taxes by ceding inheritances was legal.³ Still, it can be argued that this was an unintended consequence of the design of the inheritance tax. Sandmo (2005) points out that the difference between tax avoidance and behavioral responses of demand and supply to price changes because of taxes is not clearcut. Slemrod and Yitzhaki (2002) defines tax avoidance as actions that do not change the consumption basket of the individual.

Stiglitz (1985) is a seminal paper on tax avoidance. He distinguishes between three basic principles of tax avoidance:

- postponement of taxes
- tax arbitrage across individuals facing different tax brackets
- tax arbitrage across income streams facing different tax treatment

The tax avoidance I study in this paper is of the second type. Stiglitz writes that this “is particularly effective method of reducing taxes within a family”. Slemrod and Yitzhaki (2002) also includes a review of the small empirical literature on tax avoidance. Nordblom and Ohlsson (2006) discuss avoidance of the third type in the context of gift and inheritance taxes.

My three main conclusions from the discussion in the paper are:

- Almost two thirds of the children avoid taxes. The likelihood of avoiding taxes decreases with age. The more of the taxes a child potentially can avoid, the more she avoids.
- Only one out of four minimize their tax payments. The more of the taxes a child potentially can avoid, the more likely he is to minimize taxes.
- Siblings tend to make the same choices whether to avoid taxes and to minimize taxes.

The paper is structured as follows: I discuss the descriptive facts in Section 2. Section 3 presents the empirical evidence. Section 4 concludes. There are two appendices, Appendix A reports the design of the Swedish inheritance tax in 2004. An example of a ceding document can be found in Appendix B.

³Although some people evading inheritance taxes or other taxes might have feared that the tax authorities would use inheritance tax avoidance as a screening device for selecting who to pick for more general tax audits.

2 Descriptives: data and rules

The focus in this paper is on the choice of the children (siblings) on how much of the inheritance to cede to the grandchildren. In a related paper using the same data set, Ohlsson (2007), I study the choice of the parent on how to divide the estate between the children. The sister paper includes an extensive presentation of the estates and the parents, I will only summarize the main facts here.

2.1 The sample, the parents, and the estates

The number of inhabitants in the City of Stockholm, capital of Sweden, was 765,000 at the end of 2004. Slightly less than 7,500 inhabitants had died during that year.

I have, together with a research assistant, selected a sample from the Swedish Tax Authority's Inheritance Tax Register. This register has information on all estate reports of deceased in Sweden.⁴ Each file contains an estate report but also several other documents concerning the estate and the related transfers. When drawing the sample we have proceeded in the sequence:

1. deceased during 2004
2. registered in the City of Stockholm
3. there is a will
4. the estate is positive
5. there is no surviving spouse – the deceased was a widow, widower, divorced, or unmarried
6. the deceased has two or more children

A few comments: The wills can be of any type. Some stipulate unequal sharing between heirs, others stipulate that property received should be separate property. Many wills are joint and concern the property rights of a surviving spouse.

A few cases when the actual taxable estate is zero but there are positive gifts and life insurance payments are included. There are also a couple of cases where there is a partners but no marriage.

There are 232 deceased people in the sample. Their estates are divided up in 820 lots. Blood is thicker than water! Very few lots go outside the family; to other people and charities. The lots are transferred to:

- 573 children, 10 of the children are, however, deceased
- 176 grandchildren and great grandchildren, 16 of these are legal heirs because of their parent is deceased

⁴It has been compulsory to file estate reports since 1734. The Tax Authority is responsible for keeping the register since 2001.

- 8 partners, 45 relatives, 11 other people, and 7 charities

The average age of the deceased parents was 85.7 years. More than two thirds of the deceased parents, 69 percent, were women. Concerning marital status, 82 percent of the deceased parents were widows or widowers, while 17 percent were divorced, while 1 percent were unmarried. 1 percent were foreign citizens.

The number of children of the deceased varies between 2 and 5. Almost two thirds of the deceased, 63 percent, had two children. The average number of children is 2.48, 1.15 sons and 1.33 daughters.

The average value of the estates of the deceased is almost SEK 1 million.⁵ Taxable gifts and life insurance add almost SEK 100,000 to this amounts. This is based on the tax values of the different assets and debts. The tax values are sometimes lower than the market values.

But the total estate might be larger than the estate of the deceased. This is because the bequest of a deceased spouse has not previously been transferred to the heirs. Instead these funds have been at the disposal of the surviving spouse for all economic choices except the bequest division. The reason for this arrangement might be a will by the deceased spouse or simply that the heirs did request to get their inheritances. The present law is that the estate of a deceased spouse always will be at the disposal of the surviving spouse even without a will. The total estates are almost SEK 1.4 million on average. Taxable gifts and life insurance add almost SEK 100,000 to this amounts.

The distributions of the different measures of the estates are very skewed. The medians are only half the means. The Gini-coefficients are all around 0.6.

The sample captures the upper half of the estate distribution. I have compared with all positive estates of not married deceased 2003 in the Stockholm region with two or more children. This comparison shows that the value at the tenth percentile (P10) of my sample is approximately the same as the median of the total. The median of my sample corresponds to the value at P80 of the total.

2.2 The children, the inheritances, and the ceding of inheritances

The average age of the children is 54.9 years. Women are in majority among the children, 53 percent. 3 percent of the children are twins. Concerning marital status, 58 percent of the children are married, while 20 percent are divorced, 18 percent are unmarried, and 2 percent are widow or widower.

The number of grandchildren varies between 0 and 7. More than four out of ten children, 42 percent, have two children of their own. The average

⁵This corresponds to USD 135,000, EUR 109,000, or GBP 74,000 using the 2004 exchange rates.

Table 1: Potential tax avoiders.

	legal heirs, children	legal heirs, grandchildren	total	n of families	n of families affected
legal heirs	563	16	579	232	
	-29	-4	-33		25
n of grandchildren ^a available	534	12	546	231	
	-73	-8	-81		69
n of grandchildren ^a > 0	461	4	465	224	
	-75	-2	-77		38
has inheritance taxes to avoid	386	2	388	189	

Note. ^a great grandchildren for grandchildren who are legal heirs.

number of grandchildren is 1.95, 1.02 sons and 0.92 daughters. Many of the children, 19 percent, live in the Stockholm city center, 13 percent live in the southern parts and 11 percent in the western parts. 15 percent live in neighboring municipalities south of Stockholm and the same share lives in neighboring municipalities to the north, while 20 percent of the children live in the rest of the country and 7 percent live abroad.

The average value of the inheritance from the deceased to the children is SEK 365,000, while the total inheritance is SEK 510,000 on average. Taxable gifts and life insurance add almost SEK 40,000 to these amounts. The distributions of the different measures of the inheritances are very skewed. The medians are only half the means.

It is required that the ceded amount should be equally shared between the grandchildren. The child may choose to also cede to conceived but not born grandchildren. Appendix B gives an example of how simple a ceding document is.

Table 1 reports how I have calculated the group that potentially could have avoided paying inheritance taxes. There are 579 legal heirs in 232 families in the sample. For 33 of these legal heirs I do not have any information about the number of grandchildren. The reason in most cases is that the child lives abroad. Among the remaining 546 legal heirs in 231 families, 81 do not have any children of their own. There are 465 legal heirs in 224 families that I know have children of their own. Some of the legal heirs inherit so small amounts that they did not pay any taxes even if they did not cede to the grandchildren. Excluding these, I end up with 388 legal heirs in 189 families. The number of grandchildren is 886. Figure 1 summarizes.

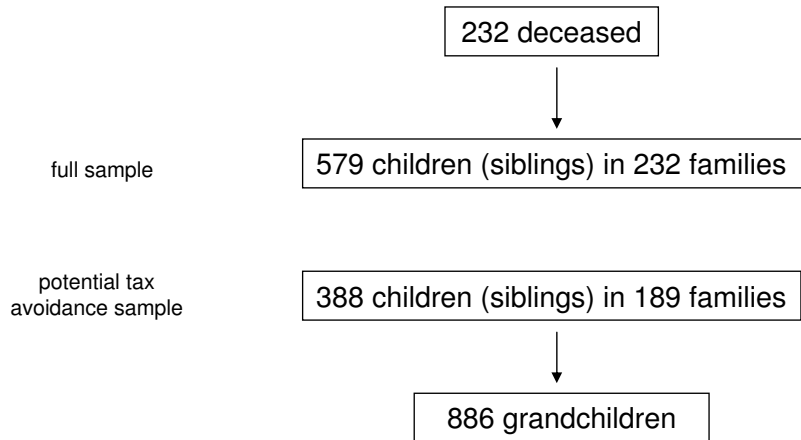


Figure 1: The parents, the children (the siblings), and the grandchildren.

Table 2 shows the number of siblings in each family. There is only a single sibling in 44 families in the potential tax avoidance sample. Most legal heirs can be found in two-sibling-families.

The majority of the children in the potential tax avoidance sample have ceded to the grandchildren. The incidence of ceding is 59.0 percent. The average amount ceded is almost SEK 110,000, whereas the average amount ceded per grandchild is slightly more than SEK 50,000. The magic number is, however, SEK 70,000. This is the tax exempt amount for each child. It is clear from Figure 2 that there is distinct peak in the distribution at SEK 70,000.⁶

Some children inherit both their parents at the same time because the estate of the first deceased parent was left at the disposal of surviving parent. The peak at SEK 140,000 has probably to do with that there in these cases are two basic exemptions for each child and for each grandchild.

So which are the tax consequences of the ceding of inheritances? Appendix A describes the Swedish inheritance tax 2004. I have computed taxes as a function of inheritance ceding (the budget constraint) for each child taking all relevant factors such as number of grandchildren, taxable gifts, taxable life insurance payments, previously used exemptions etc. into account.

⁶I have estimated the distribution using the `kdensity` command in the Stata package.

Table 2: The number of siblings in the samples.

number of siblings	number of children		number of families	
	potential tax avoidance sample	full sample	potential tax avoidance sample	full sample
1	44	0	44	0
2	208	294	104	147
3	90	177	30	59
4	36	88	9	22
5	10	20	2	4
total	388	579	189	232

Note. Grandchildren who are legal heirs are included among the children.

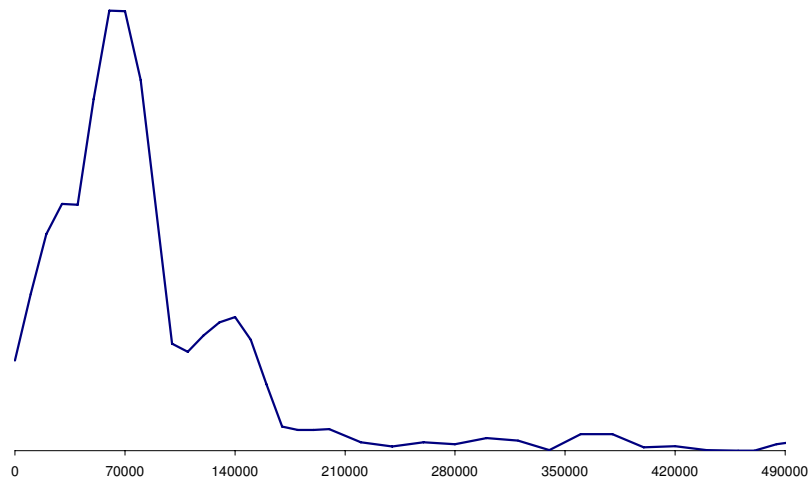


Figure 2: The distribution of ceded inheritance per grandchild, SEK.

In absolute numbers, the average tax reduction per child because of ceding is SEK 15,000. The highest tax reduction in the sample is SEK 225,000. It is also possible to calculate the tax amount avoided as a share of the tax amount that would have been paid without ceding.

$$A^1 \equiv \frac{T_{max} - T}{T_{max}} \quad (1)$$

where T_{max} is the tax amount without ceding, T is the actual tax amount, and A^1 is the tax amount avoided as a share of the tax amount that would have been paid without ceding. I have suppressed the child index i to save space. The children have, on average, avoided 31 percent of the tax amount that would have been paid without ceding.

But far from all tax minimize, only 25.5 percent do. The amount that potentially can be avoided is SEK 40,000 on average. The maximum amount that can be avoided as a share of the maximum tax amount can be calculated as

$$A_{pot}^1 = \frac{T_{max} - T_{min}}{T_{max}} \quad (2)$$

where T_{min} is the tax amount when ceding is chosen to minimize taxes. The potential tax avoidance is 70 percent on average when measured in this way.

We can also look at the actual tax reduction as a share of the potential tax reduction.

$$A^2 \equiv \frac{A^1}{A_{pot}^1} \equiv \frac{T_{max} - T}{T_{max} - T_{min}} \quad (3)$$

This share is 46 percent on average.

Figure 3 shows the distribution of actual tax avoidance as measured by A^1 (thin line) and the distribution of potential tax avoidance as measured by A_{pot}^1 (thick line). It is clear from the figure that a considerable share of the children potentially could have avoided all taxes. Many of the others could have avoided half the tax bill. The distribution of actual tax avoidance is, however, very different. Almost a third of the children do not avoid at all. There is also general tendency that the actual frequency of avoidance decreases as we move to right in the graph.

Dropping those who do not avoid at all gives the distributions reported in Figure 4. The potential avoidance distribution as measured by A_{pot}^1 (thick line) has two peaks; at 50 percent and 100 percent. The actual distribution as measured by A^1 (thin line) has a distinct peak at 30 percent and a smaller peak at 100 percent.

If all children minimized their taxes the two distributions would have coincided. The shift to the left of the actual distribution compared to the potential suggests the degree at which the children avoid taxes. Figure 5

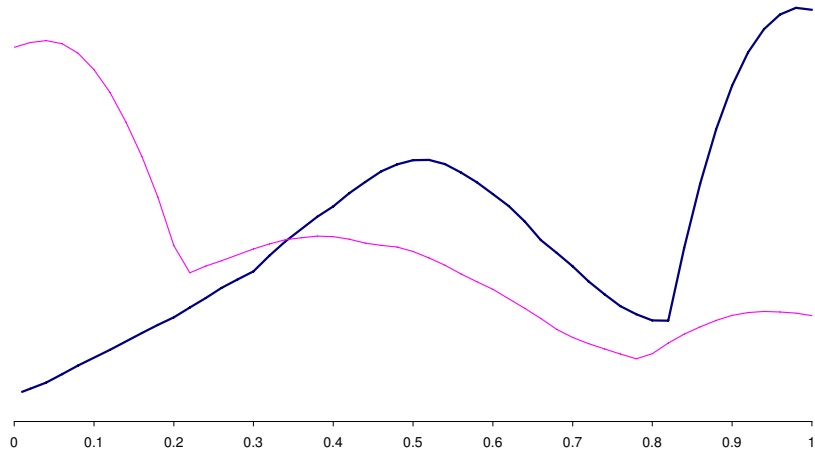


Figure 3: Distributions of potential (thick line) and actual tax avoidance (thin line), share of tax without avoidance.

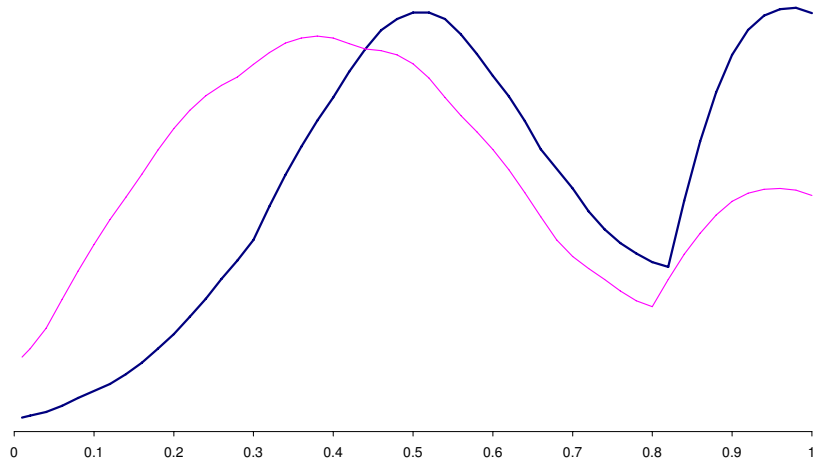


Figure 4: Distributions of potential (thick line) and actual tax avoidance (thin line) for those avoiding taxes, share of tax without avoidance.

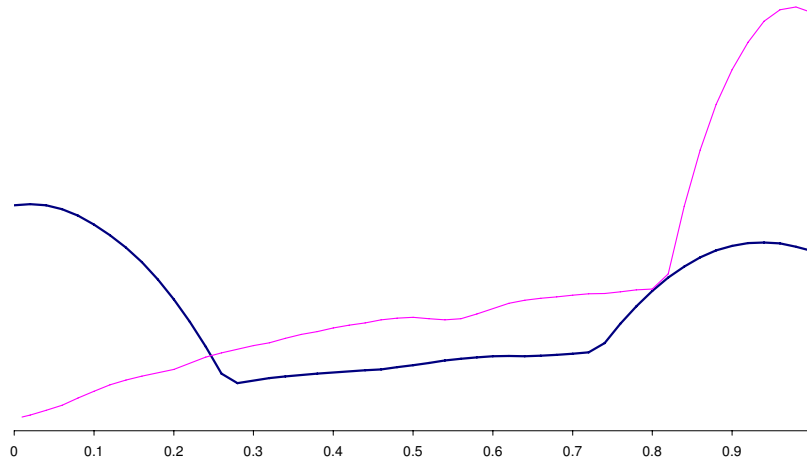


Figure 5: Distribution of actual tax avoidance for all (thick line) and for those avoiding taxes (thin line), share of potential tax avoidance.

provides a more detailed description of the share of actual avoidance compared to potential avoidance as measured by A^2 .

The distribution of the avoidance share for all (thick line) has two peaks; at 0 and 1. People either do not avoid or they tax minimize. Dropping those who do not avoid gives the distribution of the conditional avoidance share (thin line). This distribution has a very distinct peak at 1, confirming that many people who avoid minimize their taxes.

What about sibling effects? Do siblings make the same choices? Table 3 provides descriptive statistics.

In about half of the families all children avoid taxes, in slightly less than a third of the families no one avoids. It is only in one out of five families that some siblings avoid while others do not.

The lower part of Table 3 concerns whether siblings minimize taxes. Only including families in which at least some of the siblings avoid taxes, all siblings tax minimize in slightly less than 30 percent of the families. In about half of the families no one minimizes taxes. It is only in one out of five families that some sibling minimize while others do not.

The conclusion is that siblings do the same! Is this because of (social) norms within the family? Or is it a question of sibling pressure arising because the choices made are common knowledge among the siblings? A third possibility is that the children have the same advisors preparing the estate report. It remains to be determined what determines that siblings make the same choice.

Table 3: Tax avoidance by siblings.

siblings	children		families	
	number	share, %	number	share, %
no one avoids	102	29.7	46	31.7
some avoid	66	19.2	25	17.2
all avoid	176	51.2	74	51.0
conditional at least some of the siblings avoid taxes:				
no one minimizes	121	50.0	51	51.5
some minimize	57	23.6	19	19.2
all minimize	64	26.4	29	29.8

Note. 44 people in the sample do not have any siblings.

3 Empirical evidence

3.1 The determinants of tax avoidance

This subsection reports the estimation results for tax avoidance. Table 4 concerns the probability of avoiding taxes, the dependent variable is a dummy variable taking the value 1 if the child cedes any of the inheritance, thus avoiding taxes, and 0 otherwise. Table 5 reports estimations for the amounts avoided.

Probability. The first three estimations in Table 4 are logit models for all children in the tax avoidance sample. The remaining two estimations in the table are fixed effect logit models. In these cases it is only possible to include the families where the siblings make different choices whether to avoid or not.

The first explanatory variables have to do with how much of the taxes the child could potentially avoid. I try several different measures of potential avoidance. The first measure is A_{pot}^1 , the maximum amount that can be avoided as a share of the maximum tax amount. This amount is predetermined and is not affected by the present choices of the child. The second measure is the logarithm of the difference between the maximum and minimum tax amounts, $A_{pot}^3 \equiv \log (T_{max} - T_{min})$.

Table 4: The probability of tax avoidance, logit models.

model:	logit		logit		logit		FE logit		FE logit	
<i>potential avoidance:</i>										
share, A_{pot}^1	-0.54	(1.48)								
log amount, A_{pot}^3			0.37	(4.57)						
1 grandchild					ref		ref		ref	
2 grandchildren					0.46	(1.46)	1.72	(1.83)	1.71	(2.52)
3 grandchildren					-0.20	(0.58)	0.16	(0.19)		
4+ grandchildren					-0.46	(0.95)	-0.82	(0.75)		
<i>demographics:</i>										
age	-0.045	(3.15)	-0.037	(2.51)	-0.037	(2.47)	-0.086	(1.49)	-0.076	(1.42)
twin	0.23	(0.41)	0.33	(0.57)	0.24	(0.41)				
woman	0.28	(1.31)	0.28	(1.25)	0.33	(1.49)				
married	ref		ref		ref					
unmarried	-0.38	(1.04)	-0.30	(0.79)	-0.27	(0.72)				
divorced	-0.08	(0.30)	-0.02	(0.07)	-0.03	(0.12)				
widow(er)	0.01	(0.02)	-0.18	(0.27)	-0.11	(0.17)				
number of obs	377		377		377		66		66	
number of groups							25		25	
$LR, \chi^2()$	15.53		37.00		22.63		11.52		10.65	
$prob > \chi^2$	0.030		0.000		0.007		0.021		0.005	
pseudo R^2	0.030		0.072		0.044					
log likelihood	-248.6		-237.3		-237.3		-18.2		-18.6	

Note. z-values within parentheses.

My third measure is a set of dummy variables for the number of grandchildren. The reference category is having one grandchild. The number of grandchildren is an instrument for how much of the taxes that the child potentially can avoid. This number affects the budget constraint but is not necessarily correlated with other factors that might affect avoidance.

The other explanatory variables are demographic. Age, twin, gender, and marital status are included as explanatory variables. I do not, unfortunately, have access to information on income, wealth, education, occupation, etc.

The point estimate for potential avoidance as measured by the share variable, A_{pot}^1 , is negative but insignificant in the logit model. It is positive and significant when measured as the log amount, A_{pot}^3 . The estimated coefficients for the grandchild dummy variables are not significant in the logit models.

Age has a negative and significant impact on the probability of avoidance in the logit models. There is a hypothesis in the tax evasion literature that evasion decreases with age. The reason is that the cost of being detected is higher when you are old as evasion in the past might also be detected. But avoidance is legal, so this is not the explanation in this case. Alm and Torgler (2006), however, find that tax morale increases with age which is consistent with the findings reported here. It is, however, an open question if this is a pure age effect or a cohort effect.

There is no difference between women and men. The avoidance likelihood of unmarried, divorced, and widow(er)s do not differ from that of married in the reference category.

There are only 66 observations in the fixed family effects logit reported in the last two columns in Table 4. I have, therefore, tried to find a parsimonious specification. Potential avoidance is far from significant when measured as the share and the log amount. Using the number of grandchildren as instrument, however, yields some significant results. Having two grandchildren increases the likelihood of tax avoidance. Age has a negative point estimates but they are not significant.

Amount. Table 5 reports estimations of conditional fixed family effects models for the amounts avoided. The models are conditional in the sense that only children who do avoid are included. I have tried two different specifications of the endogenous variable; the logarithm of the actual amount, $A^3 \equiv \log(T_{max} - T)$, and the actual amount avoided, $A^4 \equiv T_{max} - T$. I have also tried different specifications of the potential avoidance variable; the the potential amount that can be avoided as a share of the maximum tax amount, A_{pot}^1 , the logarithm of the potential amount, A_{pot}^3 , the potential amount, A_{pot}^4 , and the number of grandchildren.

Table 5: The tax amount avoided, conditional fixed effects models.

dependent variable:	log amount, A^3		amount, A^4		log amount, A^3		amount, A^4		log amount, A^3		amount, A^4	
<i>potential avoidance:</i>												
share, A^1_{pot}	1.61	(5.70)	45320	(4.77)								
log amount, A^3_{pot}					0.93	(5.81)						
amount, A^4_{pot}							0.59	(9.73)				
1 grandchild									ref		ref	
2 grandchildren									0.46	(3.61)	12805	(3.16)
3 grandchildren									0.64	(4.61)	21825	(4.96)
4+ grandchildren									0.74	(3.78)	24700	(4.00)
<i>demographics:</i>												
age	0.005	(0.52)	456	(1.52)	0.005	(0.62)	438	(1.86)	-0.002	(0.23)	202	(0.67)
twin	-0.05	(0.25)	1232	(0.19)	-0.13	(0.68)	-2034	(0.40)	-0.05	(0.26)	1866	(0.30)
woman	0.09	(1.13)	1366	(0.52)	0.08	(1.07)	3079	(1.48)	0.08	(0.97)	1241	(0.48)
married	ref		ref		ref		ref		ref		ref	
unmarried	0.11	(0.78)	-1508	(0.31)	0.08	(0.54)	354	(0.09)	0.22	(1.42)	1627	(0.33)
divorced	-0.01	(0.12)	815	(0.24)	-0.03	(0.29)	-522	(0.20)	0.01	(0.05)	1915	(0.58)
widow(er)	0.26	(1.16)	12411	(1.65)	0.37	(1.68)	14922	(2.52)	0.43	(1.79)	17938	(2.37)
number of obs	218		218		218		218		218		218	
number of groups	117		117		117		117		117		117	
$F()$	5.22		4.54		5.41		15.62		3.21		4.47	
$prob > F$	0.000		0.000		0.000		0.000		0.002		0.000	
R^2 : within	0.280		0.253		0.287		0.538		0.239		0.304	
between	0.284		0.138		0.832		0.545		0.000		0.000	
overall	0.210		0.087		0.804		0.569		0.010		0.006	

Note. t -values within parentheses.

Potential avoidance has a positive and significant impact on actual avoidance regardless of the specification. The estimated avoidance elasticity (estimation 3) is 0.93, while the estimated avoidance share (estimation 4) is 0.59. The number of grandchildren has a positive impact on the amount actually avoided. The amount avoided is, for example, almost 50 percent higher for those with two grandchildren compared to those with only one grandchild.

The estimates of the demographic variables are not significant with very few exceptions. There is, for instance, no significant effect on the avoided amount of the age of the child.

3.2 The determinants of tax minimization

Table 6 reports estimations of logit models for the probability that the child minimizes taxes. When estimating the logit models I only include children who do avoid taxes. The dependent variable is a dummy variable taking the value 1 if the child minimizes the tax amount and 0 otherwise.

Tax minimization is increasing in potential avoidance when it is measured as a share, A_{pot}^1 . The higher share of the maximum taxes a child might avoid, the more likely the child is to minimize taxes. But if potential avoidance is measured as the log amount, A_{pot}^3 , the result is reversed. The higher amount a child might avoid, the less likely the child is to minimize taxes.

Very few of the demographic variables are significant, but unmarried and divorced children are less likely to tax minimize than married children. There is no significant age effect.

Unfortunately, no exogenous variables are significant in the fixed family effects logit models. This is probably because the sample becomes too small. I, therefore, do not report any results from estimating fixed family effects logit models.

4 Concluding remarks

The objective of this paper is to empirically study if and to what extent people legally reduce their tax payments. There are few empirical studies of tax avoidance although avoidance may seriously affect the possibilities to raise tax revenue. I use a sample of Swedish siblings receiving inheritances in 2004. These children of deceased had the opportunity to avoid inheritance taxes by partly or fully ceding their inheritances to the grandchildren.

My first main result is that almost two thirds of the children avoid taxes. The likelihood of avoiding taxes decreases with age. The more of the taxes a child potentially can avoid, the more she avoids.

Second, only one out of four minimize their tax payments. The more of the taxes a child potentially can avoid, the more likely he is to minimize

Table 6: The probability of tax minimization, logit models.

potential avoidance:

share, A_{pot}^1	1.30	(2.29)				
log amount, A_{pot}^3			-0.98	(5.43)		
2 grandchildren					0.13	(0.30)
3 grandchildren					0.55	(1.10)
4+ grandchildren					0.35	(0.48)

demographics:

age	-0.001	(0.06)	-0.011	(0.55)	-0.002	(0.10)
twin	1.32	(1.69)	0.91	(1.22)	1.18	(1.56)
woman	-0.37	(1.25)	-0.42	(1.31)	-0.47	(1.63)
married	ref		ref		ref	
unmarried	-1.27	(2.20)	-1.80	(2.79)	-1.30	(2.25)
divorced	-0.64	(1.68)	-0.99	(2.39)	-0.59	(1.58)
widow(er)	-0.15	(0.17)	-0.50	(0.51)	0.22	(0.25)

number of obs	218		218		218	
$LR, \chi^2()$	19.04		57.10		15.46	
$prob > \chi^2$	0.008		0.000		0.079	
pseudo R^2	0.064		0.191		0.052	
log likelihood	-139.8		-120.8		-141.6	

Note. z -values within parentheses.

taxes.

And third, siblings tend to make the same choices whether or not to avoid taxes and to minimize taxes. Is this because of (social) norms within the family? Or is it a question of sibling pressure arising because the choices made are common knowledge among the siblings? A third possibility is that the children have the same advisors preparing the estate report. It remains to be determined what determines that siblings make the same choice.

Appendix A: The Swedish inheritance tax 2004

The focus in this appendix is on the Swedish inheritance tax 2004. The tax function can be written

$$\begin{aligned} T = & t_1 \max(b - d - n i_p, 0) + \\ & + t_2 \max(b - d - n i_p - T_{20}, 0) + \\ & + t_3 \max(b - d - n i_p - T_{30}, 0), \end{aligned} \quad (4)$$

where T is total transfer taxes paid, b is the sum of taxable transfers, d is the basic deduction, n is the number of children, i_p is the inheritance ceded to each child, t_i are the tax rates, and T_{i0} are the lower limits of the tax brackets. The sum of taxable transfers is

$$b = i_r + g_r + li_r, \quad (5)$$

where i_r is the inheritance received, g_r are gifts received from the same donor during the previous ten years (in excess of annual exemption SEK 10,000), and li_r are life insurance payments from the same donor during the previous ten years (in excess of an exemption of six basic price amounts corresponding to SEK 235,800 in 2004). All three components in (5) are nonnegative, $i_r \geq 0, g_r \geq 0, li_r \geq 0$. Inheritances ceded cannot exceed the inheritance, $n i_p \leq i_r$. The basic exemption can only be made against inheritances received less ceded inheritance and life insurance received, $d \leq i_r - n i_p + li_r$.

All three tax rates are 10 percent. This means that the top marginal tax rate is 30 percent.

Things become more complicated if a share of the estate is from a previously deceased parent. The inheritance tax is calculated separately for the two inheritances. The basic deduction might already partly or fully be consumed if the child received a share of the inheritance already when the first parent died. If the child at that time ceded to grandchildren their basic deductions might also be consumed.

The division of inheritances from the now deceased parent and the previously deceased parent will affect which inheritance it is considered that the ceding is done from.

Example. The first parent died some years ago. The only child's share of the deceased parent's estate was SEK 100,000. The total estate of both parents (SEK 200,000) was equally shared between the parents. However, the child received SEK 50,000, the rest was kept at the disposal of the surviving parent. The child did not pay any inheritance taxes as the exemption was SEK 70,000.

When the second parent dies the estate is SEK 300,000. It is now considered that SEK 100,000 is from the first parent and SEK 200,000 from the

second parent. The basic exemption in the first case is SEK 20,000 as SEK 50,000 was already used. The second exemption is SEK 70,000.

The child cedes SEK 210,000 to the single grandchild. Keeping the 2:1 relation it is considered that SEK 70,000 is from the first inheritance and SEK 140,000 is from the second.

Total taxes will be SEK 8,000 divided on:

child's tax on first inheritance	$0.1 (100,000 - 20,000 - 70,000)$	$= 1,000$
child's tax on second inheritance	$0.1 (200,000 - 70,000 - 140,000)$	< 0
grandchild's tax on first inheritance	$0.1 (70,000 - 70,000)$	$= 0$
grandchild's tax on second inheritance	$0.1 (140,000 - 70,000)$	$= 7,000$

Appendix B: A hypothetical inheritance ceding document

Ceding of inheritance

Undersigned, who is a legal heir in the estate after N. N. (social security number) who died (date), hereby, without any preconditions, cedes

SEK xx,xxx

of my inheritance to my legal heirs:

M. M. (social security number if underaged)

Z. Z. (social security number if underaged)

(Date and place)

(Signature)

Y. Y.

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