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Are small business owners more successful in avoiding taxes: Evidence from Sweden

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Abstract

It is commonly argued that high tax rates motivate individuals to start a business as it is easier to avoid and evade taxes if self-employed compared to employed. If this is the case we would expect small business owners to be more responsive to tax rate changes than employees. This study investigates how responsive existing small business owners are to tax rate changes by estimating the elasticities of taxable income, gross income and reported income from business ventures for small business owners and contrast them to corresponding elasticities for employees. This is done by using a particularly rich Swedish data set and the 1990/91 Swedish tax reform as a “natural experiment”. I find that small business owners’ taxable income is about twice as responsive to tax rate changes than employees’. When it comes to reported income from business ventures the difference between small business owners and employees are even greater. For gross disposable income, however, business owners are not more responsive. This is consistent with the hypothesis that small business owners have greater means to shift income between different income sources in order to avoid taxation.

Keywords: Taxable income elasticities; tax avoidance

JEL classification: H24; J24, H26

1. Introduction

It is well known that those running a business have greater means to affect their taxable income and, hence, their tax burden. We also know from previous research that taxes play an important role for whether individuals *start* a business or not. We know much less about how sensitive those already running businesses are to tax rate changes, however. To determine how responsive small business owners are to tax rate changes is important. Entrepreneurs and small business formation is increasingly being credited for its positive impact on economic growth and employment opportunities, and as a consequence policy makers worldwide attempt to design public policies that stimulate individuals not only to start a business but to stay successful in their business ventures. One form of public policies frequently discussed is how to design business friendly tax policies. Before tax policies are designed, however, it is important to determine how sensitive business owners actually are to tax rate changes.

In this paper I estimate how responsive some important income measures are to tax rate changes for business owners. More specifically, I estimate how sensitive their taxable income, gross income, and income from business venture are to tax rate changes and contrast these estimates to corresponding estimates for employees. I do this by using a particularly rich data set and the 1990/91 tax reform that substantially reduced the marginal tax rates as a “natural experiment”. More specifically, I use a longitudinal data set that contains detailed tax-return information and allows me to compare over 80,000 individuals’ taxable income before and after the tax reform while simultaneously controlling for a large number of non-tax factors, including age, location, education, marital status, number of children, and changing macroeconomic environment.

I find that small business owners are about twice as responsive to tax rate changes compared to employees when it comes to taxable income. For gross income, small business owners are not more responsive to tax rate changes than employees, however. If anything they are less responsive. This indicates that they have larger means to shift income between different income sources in order to maintain their total income relatively intact. When it comes to income from business venture and employment, respectively, business owners are more than four times as responsive as employees.

The paper is organized as follow. The next section provides some background and a short discussion of the previous literature. The following section describes the 1990/91

Swedish tax reform that is used to identify tax rate changes and discusses the data used. Section 4 presents the estimation technique, while section 5 reports the results and section 6 concludes the paper.

2. Background

There is a growing body of literature estimating how income taxes affect individuals' propensity to *start* a business. This literature generally finds that taxes matter for the propensity to start a business and that it is not only the level of tax rates but also the degree of progressivity in the tax system and loss-offsetting rules that matter (see e.g., Bruce, 2000 & 2002, Gentry & Hubbard, 2003 & 2004 for the US, and Hansson, 2008, for Sweden). One conclusion from previous literature is that high taxes can be a motivation to start a business because the means to avoid taxation are greater for small business owners than employees. If individuals are driven to start businesses for tax reasons we would expect them to be more responsive to tax rate changes than employees.

We know much less about how taxes affect small business owners once they are self-employed. There are a few studies by Carroll et al., (2000a, 2000b, 2001) investigating how taxes affect profit, propensity to invest and hire an additional employee for those already in business using US data. They find, using the 1986 tax reform as natural experiment, that income taxes have a negative impact on all of these measures. Even if these results should be interpreted with care and be supported by results from studies using different tax rate changes than the 1986 tax reform, they indicate that taxes play an important role for many of the decisions that small business owners face. Studies based on other countries are surprisingly lacking despite the interest in, for example, the EU to stimulate entrepreneurship and small business activities in order to maintain a high level of welfare.¹

When it comes to reported income a number of studies have compared compliance rates of different groups of taxpayers and found large disparities between compliances rates between, for example, employees and self-employed (Lang et al., 1997). Most of the studies are based on the expenditure approach developed by Pissarides & Weber (1989) that compares expenditures and reported income of different groups. The hypothesis is that groups with low

¹ In the Lisbon strategy from 2000 it was stated that EU by 2010 should be the most dynamic and competitive knowledge economies in the world. To achieve this ambitious goal should EU, among other things, have the largest share of entrepreneurs in the world.

reported incomes but with expenditure patterns similar to high-income households are likely to underreport their income. Pissarides & Weber (1989) find that British self-employed underreport as much as 55 percent of their income using this approach. Other studies from the UK find similar numbers. Baker (1993), for example, estimates that actual self-employment income in the UK should be about 1.3 to 1.5 times larger than the reported income while Cullinan (1997) evaluated that self-employment income is underreported by as much as 19 to 37 percent. For Canada, Mirus & Smith (1994) and Schuetze (2002) report the amount of underreporting among self-employed and generally find smaller numbers. More precisely, Mirus & Smith estimate that the self-employed underreport 12.5 percent while Schuetze finds the underreporting to be between 11 and 23 percent.

One could expect the amount of underreporting to be more substantial in high-tax countries as the gains from underreporting increases with the tax rate, and numbers from Finland and Sweden seem to confirm that. For Finland, Johansson (2000) estimates that self-employed underreport about 16-40 percent of their income. For Sweden, Apel (1994) reports that income from the self-employed should be 1.35 times greater than what is reported. More recently, Engström & Holmlund (2006) find that households with at least one self-employed member on average underreport around 30 percent of household income or 35 percent of self-employment income.

That self-employed have greater means to adjust their taxable income and, hence, their tax burden suggests that they have larger elasticities of taxable income than employees who have limited means to affect their taxable income. The magnitude of these elasticities of taxable income and other measures of income for self-employed compared to employees are unknown, however. The purpose of this paper is to estimate their magnitude.

3. The Swedish tax reform and data used

The Swedish Tax Reform of 1990/1991

Prior to 1990, the Swedish tax system was complicated and characterized by high marginal tax rates combined with extensive deduction possibilities that encouraged widespread tax planning. Despite high marginal tax rates high-income earners were often able to report little or no taxable income. In 1990/91, Sweden implemented a major national tax reform which decreased marginal tax rates and broadened the tax base by reducing deduction and exclusion

possibilities. Moreover, the reform increased the uniformity of treatment of different forms of incomes, compensations, consumption, and savings. For instance, tax rates on different forms of savings were equalized; many deductions and exemptions for capital income were eliminated; and the five-bracket national tax system ranging from 0 to 42 percent was replaced with a two-bracket national tax system with 0 and 20 percent marginal tax rates (local tax rates were basically unchanged at about 30 percent); and value added taxes were standardized across goods and services. Following the reform, thus, most taxpayers enjoyed a lower marginal tax rate, although high-income earners benefited disproportionately more (see Figure 1).

Even if employees and self-employed were formally taxed uniformly prior to the reform, the generous deduction possibilities before the reform made it possible for self-employed to effectively lower their tax burden. After the reform, however, these deduction possibilities were limited resulting in a more evenly taxation of self-employed and employees.

The reform also included a shift to a dual tax system, in which unearned income was separated from earned income and taxed at a flat 30 percent rate. For most high-income earners, thus, the marginal tax rate on unearned income suddenly became lower than on earned income, providing an incentive to shift from earned to unearned income. In order to avoid especially self-employed to shift high taxed labor income into lower taxed capital income special rules (the so called 3:12 rules) were designed to limit the means to shift labor income into capital income.

The reform was intended to be distribution- and revenue-neutral. The effect of the decrease in the tax rates was to be offset by reduced allowances and restrictions on deductions and exemptions, by increases in consumption taxes, and through dynamic effects from lower marginal tax rates on labor and capital. To make the reform distributionally neutral, low-income earners were granted deductions that initially increased with taxable income (see Figure 1) and more generous housing and child allowances.

Unfortunately, the timing of the reform coincided with a serious macroeconomic weakening, so the tax reform was ultimately not revenue neutral over the short run. The reform was more successful in achieving distributional neutrality, however, and redistribution appears to have been as large after as before the reform (Agell et al., 1995). Because many of the benefits accrued to families with children, however, low-income families without children may have been adversely affected.

Data

I analyze data from LINDA, a large panel data set that follows over 300,000 individuals, selected to be representative of the Swedish population, and their household members (SCB, 2003). The data are compiled from various official sources, including the income and wealth registers and population census data, and are a rich source of reliable measurements of income, taxes, and wealth, as well as demographic information.

To estimate the elasticities I compare data from one year before the tax reform (1989) with data from two years after the tax reform (1992). This provides time for individuals to respond to lower marginal tax rates and is yet a short enough time span so that a large number of individuals are in the data set in both years. In addition, the time span is short enough to ensure that many non-tax factors affecting taxable income, for example jobs, and job experience, did not change substantially for most taxpayers.

I restrict the sample to include working individuals between 25 and 60 years of age in 1989 who reported positive taxable income in both 1989 and 1992 to minimize the effects of such factors as college attendance and retirement. In addition, I restrict the sample to include individuals with unchanged marital status and family size (number of children) to eliminate any effects these changes may have had on income. There are 82,670 individuals that meet these conditions and have valid data on a number of life-cycle dummies. The sample declines to 79,187 when additional variables such as education and measures of macroeconomic climate are included.

In order to estimate the tax responses of small business owners, it is required to first define what a small business owner is. The definition used here is that an individual is considered to be a small business owner if she receives at least half of her labor income from a business venture. Income from business venture includes income from sole proprietorship, trading partners, and limited partnership but not limited liability companies. As most small businesses belong to the former group, and 89 percent of all new start-ups in Sweden are sole proprietorship, failing to include income from limited liability companies is not a serious shortcoming. In the sample 3.6 percent or 2,821 individuals meet this definition of being a small business owner in both 1989 and 1992.

Table 1 presents some sample characteristics for small business owners and employees in Sweden, respectively. The small business owners had a substantially lower average taxable income than the employees in both years and consequently on average paid lower marginal tax rates. Thanks to the tax reform both groups' marginal tax rates were reduced by more than 10 percentage points (for the small business owners' from 43.4 to 33.2 percent and for employees from 50.1 to 36.4 percent). It is worth noticing that small business owners had substantially higher taxable wealth than employees in 1989, on average SEK 157,473 compared to SEK 92,300 for employees. That small business owners are wealthier than employees is consistent with the result that wealth is an important factor for starting a business. There is indeed an extensive literature documenting the importance of access to own capital for starting a business as high risk and asymmetric information make it hard to receive external financing (e.g., Lindh & Ohlsson, 1996, Blanchflower & Oswald, 1998, and Davidsson & Henrekson, 2002, and Nykvist, 2008). In addition, the average small business owner tend to be older, more likely be male and married than the average employee. There is no difference in number of children under the age of 16 among small business owners and employed individuals. However, small business owners tend to be less educated than employees. Among small business owners, 54 percent have less than a high-school degree compared to 29 percent among the employed, and 25 percent of the employees have a college degree compared to 7 percent of small business owners. This is in line with results from Blanchflower & Shadforth (2007) who found the level of education among the self-employed to be lower than among the employed in Europe. In the US the opposite holds, however.

4. Estimation of taxable income elasticities among small business owners

The Swedish tax reform of 1990/1991 provides, in many respects, a “natural experiment” with which to identify the responsiveness of small business owners and employees to changes in marginal tax rates. Specifically, by comparing pre-and post-reform incomes for a panel of individuals, the elasticity with respect to the net-of-tax rate (i.e., one minus the income tax rate) of taxable income, reported gross income, and reported business and labor income can be estimated for small business owners and employees, respectively.

The elasticity of taxable income is estimated by estimating:

$$\ln\left(\frac{TI_{i,t+1}}{TI_{i,t}}\right) = \gamma \ln\left(\frac{ntr_{i,t+1}}{ntr_{i,t}}\right) + X_{i,t} \beta' + \varepsilon_{i,t}, \quad (1)$$

separately for small business owners and employees, respectively. $TI_{i,t}$ is individual i 's taxable income at time t , $ntr_{i,t}$ is individual i 's net-of-tax rate at time t , $X_{i,t}$ a vector of explanatory variables explained below and $\varepsilon_{i,t}$ an error term. The parameter γ measures the elasticity of taxable income with respect to changes in the net-of-tax rate and the parameter of interest.

As the net-of-tax rate and taxable income is jointly determined and, hence, endogenous I follow Auten and Carroll's (1999) approach, and use an instrumental variables technique to estimate the elasticity of taxable income that controls for endogeneity. Specifically, Auten and Carroll suggest instrumenting the endogenous differences in the net-of-tax rate with the exogenous difference in a "synthetic" net-of-tax rate. This synthetic difference is defined as the actual net-of-tax rate prior to the reform, but post-reform is defined by applying post-reform tax laws to pre-reform incomes inflated to post-reform income levels. Intuitively, the instrument eliminates changes in income from changes in the net-of-tax rate, hence, leaving only the effect of the exogenous statutory change in the tax rate. Effectively, the first stage regresses the change in the actual net-of-tax rate on the change in the synthetic net-of-tax rate and the other exogenous variables, and then computes the predicted values. The second stage regresses the difference in taxable income on this predicted value and the other regressors.

Since I am interested in measuring how responsive taxable earned income and other income measures are to changes in marginal tax rates, I want to eliminate the effect of the tax base broadening from the tax rate effect. This is important as the rules concerning the tax base for especially the self-employed changed.² I do this by converting 1989 taxable income to correspond to 1992 tax rules using data on a host of disallowed deductions and correct for inflation and real wage increases. The richness of the data allows me to adjust for a large number of the changes that were made. In addition, I control for the switch to a dual tax system by subtracting unearned income from 1989 taxable income. The growth in taxable income between 1989 and 1992 is then calculated as the difference in the natural logarithms of taxable earned income in 1992 and in 1989.

In addition to the marginal tax rate, taxable earned income depends on numerous factors that are at least partly within the taxpayers' control – such as hours worked, forms of

² Indeed, failing to correct taxable income to 1992 tax rules change the results dramatically.

compensation, consumption and savings, and tax avoidance and evasion - and others that are not – such as business cycles, changing interest rates, demographic changes, and industrial shifts. In addition to the difference in the natural logarithm of the net-of-tax rate³ a number of other explanatory variables likely to influence the change in taxable earned income are thus included. Education is represented by dummy variables corresponding to high school degree, college degree, and graduate degree. Life-cycle factors are represented by age, a dummy for married, number of children younger than 16 years of age, and unmarried and younger than 28 years of age. Dummies for residence in each of Sweden's 24 regions as well as residence in one of the major cities in Sweden (Stockholm, Gothenburg, and Malmö) are also included.

Following Moffitt and Wilhelm (1998) and others, I also include the natural logarithm of taxable earned income in the base year (1989) to control for mean reversion, the tendency for transitory increases in income prior to the reform to be followed by decreases in the following years and vice versa. Failure to control for mean reversion generally induces correlation between pre-reform income and the regression error when the unobserved determinants of behavior are also affected by the transitory factors.

A consequence of the tax reform was a gap between tax rates on earned and unearned income, providing incentives for income shifting. Since the tax rate difference is endogenously determined with taxable income in 1992, I follow Aarbu and Thoresen's (2001) approach and construct an exogenous proxy, the tax difference between earned and unearned income in 1992, where the 1989 income is adjusted to 1992 levels by real wage growth in the period, and the actual 1989 tax rate gap (which was 0). I expect this variable to have a negative impact on taxable income growth as a larger discrepancy between the labor and capital tax rate provides incentives to shift from labor income to capital income.

As the timing of the reform coincided with a serious economic downturn that likely affected taxable earned income in 1992, and may very well have affected different income groups differently, I include a proxy for each individual's vulnerability to macroeconomic factors, namely the interest burden. To ensure that this proxy is exogenous, I use the difference in real interest rates between 1992 and 1989 multiplied by 1989 debt. If the economic

³ While the actual marginal tax rates are not included in the data set, they can easily be calculated with the information provided in LINDA. The tax rate includes national and local taxes.

downturn had a negative impact on income growth, I expect this variable to have a negative sign.

It is interesting to determine whether small business owners and employees differ in how their overall income responds to tax rate changes. To investigate this I estimate how sensitive small business owners and employees' gross income are to tax rate changes, respectively. Gross income includes all types of incomes from both labor and capital as well as deductions made that lowers taxable income but increases disposable income. The measure of gross income, hence, corresponds to gross disposable income (before taxes and transfers). More specifically, I estimate

$$\ln\left(\frac{GI_{i,t+1}}{GI_{i,t}}\right) = \gamma \ln\left(\frac{ntr_{i,t+1}}{ntr_{i,t}}\right) + X_{i,t}\beta' + \varepsilon_{i,t}, \quad (2)$$

where $GI_{i,t}$ is individual i 's gross income at time t . The other variables and parameters are defined as before. Instead of using the natural logarithm of taxable income I include the natural logarithm of reported gross income in 1989 to control for mean reversion, however.

Finally, I estimate the elasticity of reported business income with respect to the net-of-tax rate by estimating for small business owners,

$$\ln\left(\frac{BI_{i,t+1}}{BI_{i,t}}\right) = \gamma \ln\left(\frac{ntr_{i,t+1}}{ntr_{i,t}}\right) + X_{i,t}\beta' + \varepsilon_{i,t}, \quad (3)$$

where $BI_{i,t}$ is individual i 's business income at time t . Again the other included variables are defined as before, and the natural logarithm of business income in 1989 controls for mean reversion. In addition to the previously included variables I control for wealth as it has been found to be an important determinant of becoming and staying successful as self-employed and, hence may affect business income. I do this by including taxable wealth.

For the employees I estimate the corresponding elasticity of reported labor income with respect to the net-of-tax rate

$$\ln\left(\frac{LI_{i,t+1}}{LI_{i,t}}\right) = \gamma \ln\left(\frac{ntr_{i,t+1}}{ntr_{i,t}}\right) + X_{i,t}\beta' + \varepsilon_{i,t}, \quad (4)$$

where $LI_{i,t}$ is individual i 's labor income at time t . Again the other included variables are defined as before, and the natural logarithm of labor income in 1989 controls for mean reversion.

5. Results

Table 2 presents the estimated taxable income elasticities for the small business owners and employees, respectively. The regressions reported in the first columns (Ia and Ib) for each sample control only for the net-of-tax rate and mean reversion. The taxable income elasticities for the small business owners are quite large, around 0.7, and about twice as large as those for employees (0.3). The estimates for employees are in line with earlier estimates of taxable income elasticities based on all taxpayers in Sweden (see e.g., Selén, 2002, Ljunge & Ragan, 2005, Hansson, 2007, and Holmlund & Söderström, 2007). Log of pre-reform income is highly significant and negative, indicating that mean reversion is indeed occurring and of the same magnitude for small business owners and employees.

When it comes to the impact of the life-cycle control variables on taxable income there are no major differences between small business owners and employees (in columns IIa and IIb additional life-cycle factors are included and in columns IIIa and IIIb additional economic variables). Age and age squared have a positive and negative impact on taxable income growth for both small business owners and employees, respectively (though insignificant for small business owners) indicating that taxable income increase with age but at a declining rate. Being married tend to have a positive effect while having children under the age of 16 a negative effect on taxable income growth. Being unmarried and under the age of 28 has a negative influence on taxable income for the employees (dropped for small business owners).

Turning to the economic variables, however, some interesting differences between small business owners and employees emerge. For instance, the effect of income shifting has a negative (as expected) though statistically insignificant impact on taxable income growth for small business owners while a positive and statistically significant impact on employees' taxable income growth, indicating that small business owners have greater means to shift income than employees. Likewise, the macroeconomic downturn, measured as the change in interest burden, has a positive impact on employees' taxable income growth but a negative impact on small business owners'. This suggests that they are more sensitive to the economic climate. An alternative explanation is that those with debt worked harder and consequently increased their taxable income in attempts to decrease their debt level, and that small business owners are less likely to be burdened by heavy debt levels.

The impact of geographical location and level of education on taxable income growth differ for small business owners and employees as well. Living in a big city or in Stockholm has a negative, but insignificant impact on small business owners' taxable income growth, while a positive impact on employees' taxable income growth. Interestingly, education has a negative, though insignificant, impact on small business owners' taxable income growth but a positive and highly statistically significant impact on employees' taxable income growth. This result is consistent with results from Hansson (2008) suggesting that individuals that start a small business on average tend to have lower levels of education than employees.

The elasticities of taxable income for small business owners and employees, respectively, are quite robust to the inclusion of additional control variables; around 0.7 for small business owners and around 0.3 for employees. That small business owners' taxable income is more responsive to tax rate changes is not surprising. One obvious reason for this is that it is much easier for them to affect their taxable income, and, hence, their tax burden. Taxes paid by small business owners depend to a larger degree on "voluntary" compliances (as they can more easily affect their taxable income by deducting "business expenses") while taxes paid by employed individuals are withheld by their employers and incomes directly reported to tax authorities by employers and, hence, making it harder for them to avoid or evade taxes.

Table 3 reports the estimates for gross income for small business owners and employees with respect to the net-of-tax rate, respectively. Interestingly, these estimates are considerably lower for small business owners (0.03) than for the employed (0.08) suggesting that taxes have less impact on overall (disposable) income for small business owners than for employees. The tax effect is insignificant on small business owners' gross income, however. The other control variables have similar impact on gross income as they did on taxable income. However, age and age squared now have a negative and positive impact on gross income, respectively, even though the effects are statistically insignificant. Again, small business owners' gross income growth is more sensitive to the macro economy than employees'.

Finally, table 4 presents the elasticity estimates of reported business income for small business owners and employment income for employees, respectively. Small business owners' reported income from business venture is sensitive to tax rate changes. A one percent reduction in the tax rate increases reported business income with 0.6 percent. These estimates are similar to the taxable income elasticities reported in table 2 suggesting that changes in taxable income

to a large degree stem from changes in reported business income. The employees' reported income from employment is less responsive to tax rate changes. A one percent reduction in the tax rate increases reported employment income with about 0.12 percent. Compared to the elasticities of taxable income reported in table 2 the elasticity of reported employment income are about a third of the taxable income elasticities indicating that employees use addition means to change their taxable income, e.g. through exemptions and deductions.

It is also noteworthy that wealth has a positive and significant impact on reported income from business ventures. This is in line with results from previous literature suggesting that wealth matter not only for starting a business but also to stay successful (Holtz-Eakin et al., 1994). The other control variables have similar effects as previously.

6. Conclusions

Small business owners are more responsive to tax rate changes than employees. When it comes to taxable income their elasticities are about twice as high as those for employees (0.7 compared to 0.3). For small business owners the majority of this response in taxable income comes from changes in reported income from their business ventures. This is not surprising as small business owners have greater means than employees to change their reported income. For gross disposable income, however, small business owners are not more responsive to tax rate changes than employees indicating that the overall change in gross income stemming from tax rate changes are not greater for small business owners than for employees. This in turn, suggesting that the means they have to shift income between different income sources are indeed utilized and that they do engage in tax planning to reduce their tax burden and, hence, keep their gross disposable income more constant.

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Table 1. Summary Statistics

Variable	Mean	Standard deviation	N
Taxable income 1989			
Small business owners	84,480	188,037	2,821
Employed	119,435	77,883	76,366
Taxable income 1992			
Small business owners	94,740	70,787	2,821
Employed	160,021	94,585	76,366
Total marginal tax rate 1989			
Small business owners	43.4	9.47	2,281
Employed	50.1	10.19	76,366
Total marginal tax rate 1992			
Small business owners	33.2	6.03	2,281
Employed	36.4	8.80	76,366
Taxable wealth 1989			
Small business owners	157,473	251,211	2,281
Employed	92,300	478,206	76,366
Age 1989			
Small business owners	45.6	9.31	2,281
Employed	42.1	10.06	76,366
Sex*			
Small business owners	1.27	0.44	2,281
Employed	1.47	0.50	76,366
Married			
Small business owners	0.64	0.48	2,821
Employed	0.54	0.50	76,366
Number of children under			
Small business owners	0.44	0.90	2,821
Employed	0.46	0.88	76,366
Less than high-school degree			
Small business owners	0.54	0.50	2,281
Employed	0.29	0.46	76,366
High-school degree			
Small business owners	0.39	0.49	2,281
Employed	0.45	0.50	76,366
College degree			
Small business owners	0.07	0.26	2,281
Employed	0.25	0.43	76,366
Graduate degree			
Small business owners	0.0004	0.02	2,281
Employed	0.007	0.08	76,366

Note: Summary statistics correspond to the observations included in the full regression.

* Sex equals one if the individual is a man and two if the individual is a woman.

Table 2. Estimation of net-of-tax rate taxable income elasticity for self-employed and employees, respectively.

	Small business owners			Employees		
	Ia	IIa	IIa	Ib	IIb	IIIb
Net of tax rate	0.691 (0.150) ^{***}	0.738 (0.150) ^{***}	0.706 (0.148) ^{***}	0.302 (0.015) ^{***}	0.330 (0.016) ^{***}	0.366 (0.015) ^{***}
Log of pre-reform income	-0.428 (0.027) ^{***}	-0.435 (0.027) ^{***}	-0.427 (0.027) ^{***}	-0.453 (0.003) ^{***}	-0.454 (0.004) ^{***}	-0.514 (0.004) ^{***}
Age		0.025 (0.016)	0.020 (0.016)		0.011 (0.002) ^{***}	0.006 (0.002) ^{***}
Age squared		-0.0004 (0.0002) ^{**}	-0.0003 (0.0002) [*]		-0.0002 (1.87 10 ⁻⁵) ^{***}	-8.00 10 ⁻⁵ (1.81 10 ⁻⁵) ^{***}
Married		0.097 (0.040) ^{**}	0.104 (0.040) ^{**}		-0.024 (0.004) ^{***}	0.022 (0.004) ^{***}
Children		-0.025 (0.016)	-0.027 (0.0217)		0.003 (0.002)	-0.010 (0.002) ^{***}
Unmarried under 28 years		Dropped	Dropped		-0.226 (0.046) ^{***}	-0.180 (0.045) ^{***}
Income shifting			-0.009 (0.104)			0.377 (0.011) ^{***}
Macro economy			-0.0001 (8.08 10 ⁻⁵) [*]			0.0002 (1.74 10 ⁻⁵) ^{***}
Big city			-0.016 (0.097)			-0.015 (0.008) [*]
Stockholm			-0.092 (0.130)			0.026 (0.011) ^{**}
High school Degree			-0.010 (0.034)			0.047 (0.004) ^{***}
College Degree			0.163 (0.065) ^{**}			0.210 (0.005) ^{***}
Graduate Degree			0.994 (0.840)			0.365 (0.020) ^{***}
Constant	2.58 (0.164) ^{***}	2.20 (0.375) ^{***}	2.09 (0.393) ^{***}	3.22 (0.024) ^{***}	3.05 (0.038) ^{***}	3.31 (0.043) ^{***}
N	2,853	2,853	2,823	75,255	75,255	74,687

Numbers shown in parenthesis are robust standard errors.

* significant at the 10 % level, ** significant at the 5% level, *** significant at the 1% level

Also include dummies for region.

Table 3. Estimation of elasticities of gross income with respect to the net-of-tax rate for small business owners and employees, respectively.

	Gross Income					
	Small business owners			Employees		
Net of tax rate	0.089 (0.102)	0.088 (0.103)	0.028 (0.100)	0.051 (0.011)***	0.068 (0.011)***	0.081 (0.011)***
Log of pre-reform income	-0.292 (0.024)***	-0.290 (0.024)***	-0.266 (0.024)***	-0.298 (0.004)***	-0.296 (0.004)***	-0.344 (0.004)***
Age		-0.0139 (0.010)	-0.0147 (0.010)		0.0003 (0.0011)	-0.001 (0.001)
Age squared		0.0002 (0.0001)	0.0002 (0.0001)		2.20 10 ⁻⁵ (1.30 10 ⁻⁵)*	9.87 10 ⁻⁶ (1.26 10 ⁻⁵)
Married		0.032 (0.025)	0.037 (0.025)		0.018 (0.003)***	0.017 (0.003)***
Children		-0.0043 (0.014)	-0.0056 (0.014)		0.005 (0.002)***	-0.004 (0.002)**
Unmarried under 28 years		Dropped	Dropped		-0.1180 (0.032)***	-0.150 (0.031)***
Income shifting			-0.124 (0.065)*			0.141 (0.008)***
Macro economy			-0.0002 (5.07 10 ⁻⁵)***			7.14 10 ⁻⁵ (1.22 10 ⁻⁵)***
Big city			0.038 (0.061)			-0.009 (0.006)
Stockholm			-0.086 (0.081)			0.018 (0.008)**
High school Degree			-0.0002 (0.022)			0.029 (0.0028)***
College Degree			0.110 (0.041)***			0.156 (0.003)***
Graduate Degree			0.515 (0.526)			0.276 (0.014)***
Constant	2.02 (0.153)	2.29 (0.257)	2.13 (0.265)***	2.36 (0.023)***	2.36 (0.030)***	2.61 (0.032)***
N	2,853	2,853	2,823	75,255	75,255	74,687

Numbers shown in parenthesis are robust standard errors.

* significant at the 10 % level, ** significant at the 5% level, *** significant at the 1% level

Also include dummies for region.

Table 4. Estimation of net-of-tax rate reported business income elasticities for small business owners and employment income elasticities for employees, respectively.

	Reported income from			Reported income from		
	business income	business income	business income	employment	employment	employment
Net of tax rate	0.673 (0.133) ^{***}	0.717 (0.134) ^{***}	0.606 (0.137) ^{***}	0.095 (0.011) ^{***}	0.115 (0.011) ^{***}	0.129 (0.011) ^{***}
Log of pre-reform income	-0.509 (0.025) ^{***}	-0.520 (0.025) ^{***}	-0.503 (0.026) ^{***}	-0.313 (0.003) ^{***}	-0.311 (0.003) ^{***}	-0.362 (0.004) ^{***}
Age		0.034 (0.016) ^{**}	0.030 (0.016) [*]		0.021 (0.001)	-0.0001 (0.001)
Age squared		-0.0004 (0.0002) ^{**}	-0.0004 (0.0002) ^{**}		-3.81 10 ⁻⁵ (1.39 10 ⁻⁵) ^{***}	-2.52 10 ⁻⁶ (1.35 10 ⁻⁵)
Married		0.055 (0.038)	0.048 (0.039)		0.014 (0.003) ^{**}	0.013 (0.003) ^{**}
Children		-0.00003 (0.022)	-0.001 (0.022)		0.008 (0.002) ^{***}	-0.001 (0.002)
Unmarried under 28 years		Dropped	Dropped		-0.193 (0.034) ^{***}	-0.163 (0.033) ^{***}
Wealth			1.84 10 ⁻⁵ (9.04 10 ⁻⁶) ^{**}			
Income shifting			0.017 (0.113)			0.189 (0.009) ^{**}
Macro economy			-0.0002 (6.81 10 ⁻⁵) ^{**}			5.16 10 ⁻⁵ (1.30 10 ⁻⁵) ^{***}
Big city			-0.046 (0.084)			-0.005 (0.006)
Stockholm			0.0002 (0.110)			0.013 (0.008) [*]
High school Degree			-0.028 (0.034)			0.031 (0.003) ^{**}
College Degree			0.082 (0.058)			0.158 (0.004) ^{***}
Graduate Degree			-0.263 (0.689)			0.271 (0.015) ^{***}
Constant	3.31 (0.157)	2.72 (0.354)	2.71 (0.407) ^{***}	2.43 (0.022) ^{***}	2.41 (0.030) ^{***}	2.66 (0.034) ^{***}
N	1,995	1,995	1,967	75,248	75,248	74,680

Numbers shown in parenthesis are robust standard errors. * significant at the 10 % level, ** significant at the 5% level, *** significant at the 1% level Also include dummies for region.

Figure 1. Marginal tax rates in 1989 and 1992 as a function of taxable income (in nominal SEK)

