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THE COMPLIANCE COST OF ITEMIZING DEDUCTIONS: EVIDENCE FROM INDIVIDUAL TAX RETURNS

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ABSTRACT

The resource cost of operating the income tax system is large, totalling as much as seven to eight percent of revenue raised. One source of this cost is the system of itemized deductions, which can require extensive record keeping and calculation.

This paper estimates the resource cost of itemizing deductions. In contrast to previous studies of compliance cost which rely on survey evidence, we infer this evidence from data reported on tax returns which suggest that there exists taxpayers who would save money by itemizing but who choose not to.

We find that in 1982 the private cost of itemizing totalled $1.44 billion, or $43 per itemizing taxpayer. The compliance cost dissuaded from itemizing over 650,000 taxpayers who would have thereby saved taxes, causing an extra tax liability of nearly $200 million. Increasing the standard deduction by $1,000 would save $100 million in resources that would otherwise have been devoted to itemizing.

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The Compliance Cost of Itemizing Deductions: Evidence from Individual Tax Returns

1. Introduction

The resource cost of operating the income tax system is large. Although economists have traditionally focused on the allocative effects of taxation, Slemrod and Sorum (1984) recently estimated the direct cost of collecting individual income taxes in 1982 to be between $30 and $35 billion, or seven to eight percent of revenues raised. They found that the time spent by taxpayers in complying with the tax law (approximately two billion hours, or twenty hours per tax year and one hundred million taxpayers) is equivalent to a hidden bureaucracy of one million full-time civil servants. Approximately three-fourths of this cost was borne directly by taxpayers (as opposed to the Internal Revenue Service) in the process of record keeping, researching the tax law, and preparing the tax return itself. This high cost is widely perceived, as evidenced by the emphasis in the recent tax reform effort on simplification, which presumably is related to reducing the resource cost of operating the system. The Tax Reform Act of 1986 reduced marginal tax rates, increased the standard deduction, and eliminated some itemized deductions, all of which arguably could reduce the cost of collection. However, the econometric analysis presented in Slemrod (1985) could find no support that reducing marginal tax rates would reduce compliance cost. It did, though, suggest that reducing the fraction of taxpayers that itemize deductions would reduce compliance cost significantly.

This paper provides further evidence about the compliance cost of itemizing deductions and the determinants of the cost. In contrast to all previous studies which rely on survey evidence, we infer this evidence from data reported on tax returns, which of course contain no direct information on compliance costs. We do, though, observe enough information about itemizing and

nonitemizing taxpayers to suggest that there exist taxpayers who would save money by itemizing but do not choose to. We postulate that they so choose because the compliance cost of itemizing exceeds the tax saving that can be obtained. This allows us to estimate the magnitude and determinants of the cost of itemizing deductions. We find that in 1982 the private cost of itemizing totalled $1.44 billion, or $43 per itemizing taxpayer.

That legitimate reductions in tax liability are frequently foregone by taxpayers has been recognized in the past. Perhaps the most striking example of this was documented by Steuerle, McHugh, and Sunley (1978), who found that only 31.3% of those eligible (and who therefore could have saved money) for income averaging did so in 1971. Eligible non-electors on average passed up potential savings of $114 (1971 dollars). They noted that the fraction of those eligible using income averaging increased substantially with adjusted gross income.

The phenomenon of non-participation in apparently rewarding government programs has been observed in other contexts. Moffitt (1983) noted that, in 1970, only 69% of families eligible for A[illegible] to Families with dependent children participated in the program, while the food stamp participation rate was only 38%. Moffitt modeled this behavior as resulting from "stigma," the disutility arising from participation in a welfare program per se. However, he remarks in a footnote that

> "Another possible explanation is that the costs of applying for the program and of complying with the myriad program regulations make the benefit not worth the effort in obtaining and keeping it; that is, the transaction costs may be too high. This phenomenon is almost impossible to distinguish from stigma, so it is ignored here."

There is no stigma attached to itemizing one's deductions on a tax form. We conclude that it is the transactions cost of itemizing that causes some taxpayers who could pay less in taxes by itemizing to choose instead to us the standard deduction.

Section 2 of the paper describes the empirical model that underlies the analysis. The data are described in Section 3. The econometric results are presented in Section 4, along with the estimates of the costs of compliance and tax saving foregone by not itemizing for various groups of taxpayers. In addition, the model is used to predict the effect of alternative minimum standard deduction levels. Section 5 offers some concluding remarks.

2. The Empirical Model

At the beginning of the tax year, taxpayers are assumed to know their income, marginal tax rate, and other factors that influence the dollar amount of deductible activities that will be undertaken during the tax year. In addition, they know all factors that affect the "cost of itemizing." This cost may include actual and imputed compliance costs such as the value of time required to collate receipts and fill out forms and the costs of purchased accounting services. In addition, the private cost of itemizing includes the psychic costs (or benefits) related to the compliance activity. The cost of itemizing for some may include fear of complicating one's relationship with a powerful agency of the state--this cost may not be entirely psychic, as the probability of audit may depend on the itemization decision. On the other hand, one might obtain psychic satisfaction from reducing tax payments in excess of the resource costs of compliance at the margin. For example, it might be that a taxpayer values dollars paid to the state in a way that reflects his political or other judgments concerning its expenditure or other policies. Alternatively, one might simply enjoy the activity of minimizing tax payments.

The alternative to itemizing deductions is to take the standard deduction, which is a known amount depending only on marital and household status. The taxpayer will itemize only if the tax saving from itemizing (TS_i)--defined as

the tax bill if the minimum standard deduction is chosen less the tax bill if itemizing is chosen--exceeds the (private) cost of complying with the requirements of itemization. The tax savings from itemizing depends on the demand for deductible items by the ith taxpayer and the tax function. Tax savings, TS_i, is modeled as a linear function of a vector of observable exogenous variables (X_i) which may affect both the demand for deductible items and the tax function conditional on this demand. Formally,

$$(1) \qquad TS_i = X_i\beta + u_i,$$

where u_i is an error term summarizing all the unobservable influences on TS_i including preference heterogeneity, and β is a vector of unknown parameters. The cost of compliance (C_i) is similarly modeled as a linear function of a set of observable exogenous regressors (Z_i) and an error term (v_i)

$$(2) \qquad C_i = Z_i\gamma + v_i.$$

The errors u_i and v_i are assumed to be distributed as joint normal with zero means and covariance matrix

$$\Sigma = \begin{vmatrix} \sigma_u & \sigma_{uv} \\ \sigma_{uv} & \sigma_v \end{vmatrix}.$$

Taxpayers will itemize only if $TS_i > C_i$. Define a dummy variable I_i such that

$$(3) \qquad I_i = 1 \text{ iff } TS_i > C_i$$

$$I_i = 0 \text{ otherwise.}$$

It is clear that TS_i is only observed when $I_i = 1$ and that C_i is never observed. We do know if $TS_i < C_i$ and can write the probability of this event as

$$(4) \qquad \text{Prob}(TS < C) = \Phi\left(\frac{Z\gamma - X\beta}{\sigma}\right)$$

where $\Phi(\ )$ is the standard normal cumulative function and $\sigma = (\sigma_u^2 + \sigma_v^2 - 2\sigma_{uv})^{\frac{1}{2}}$ is the standard deviation of $(u - v)$. Defining $f(u, v)$ as the bivariate normal density of u and v, then the likelihood function is

$$(5) \qquad L(\beta, \gamma, \Sigma) = \prod_{I=1} \int_{-\infty}^{TS - X\beta} f(TS - X\beta, v)dv \prod_{I=0} \Phi\left(\frac{Z\gamma - X\beta}{\sigma}\right)$$

This model corresponds to the censored regression model with an unobserved stochastic censoring threshold considered by Gronau (1974), and Nelson (1977). Nelson demonstrated that identification requires that either $\sigma_{uv} = 0$ or that at least one variable in X_i is not included in Z_i. The zero error covariance restriction, requiring that unobservables that influence tax savings are orthogonal to unobservables influencing compliance cost, does not have clear justification. Fortunately, a strong case can be made that not all variables in X_i which influence tax savings also influence compliance cost. These restrictions arise from the belief that compliance cost depends on the complexity of the itemization process but not on the dollar value of the individual deductions, so that variables which affect dollar values and not complexity are sources of identifying restrictions. The actual identifying restrictions used are described below.

3. Data

The data used for this study are drawn from the 1982 Treasury Tax File. This is a stratified random sample of individual income tax returns which heavily oversamples high income tax returns. Although the 1982 sample contains over 116,000 records, for computational economy we work with a one-in-four sample of the original file, totalling 29,407 tax records. The sample used in the

estimation contained only those tax returns for which adjusted gross income lay in the interval $5,000 to $100,000 and which were not excluded for certain other reasons described below. The sample used in the estimation totalled 13,409 tax returns.

There are four classes of taxpayers who were required to itemize deductions even if these deductions sum to less than the standard deduction. Clearly the model described above does not apply to these taxpayers. These classes are (i) married taxpayers who file separate returns, (ii) individuals with earned income less than the standard deduction claimed as a dependent on their parents' return, (iii) nonresident alien individuals, and (iv) U.S. citizens who exclude income from sources in U.S. possessions. We deal with class (i) by eliminating from the sample all married taxpayers filing separately, and deal with class (ii) by eliminating all single taxpayers with earned income less than the standard deduction. We do not have the information required to identify taxpayers who are in categories (iii) and (iv). We rely on the fact that these situations are rare.

The dependent variable in the tax savings equation is scaled as $\ln(TS_i + 1700)$. This form restricts predicted tax savings to be no less than minus $1,700, which is the lowest possible potential tax saving, occurring when potential itemized deductions are zero and the marginal tax rate is 0.5, the statutory maximum. Hence this functional form restricts potentially deductible expenses to be non-negative. The unobserved dependent variable in the associated cost of itemizing equation becomes $\ln(C_i + 1700)$, thus preserving the taxpayer's decision rule (equation 3).

The explanatory variables in X_i and Z_i are described in Table 1. The taxpayer characteristic variables (age status, marital status, number of personal

Table 1

Explanatory Variables

In both X_i and Z_i:

Mar:	= 1 if married, 0 otherwise
AGI:	natural logarithm of adjusted gross income
AGISQ:	squared natural logarithm of adjusted gross income
Business:	= 1 if farm or business income, 0 otherwise
Aged:	number of aged exemptions taken
Exempt:	number of taxpayer exemptions

In X_i only (identifying):

Invinc:	logarithm of positive investment income
Statetax:	the average rate of state income and sales tax in 1982 at $40,000 (1979 dollars) of adjusted gross income times AGI[1]
Proptax:	the average affective rate of property taxes in the taxpayer's state times AGI, 1982[2]
Medcost:	index of state medical costs[3]

Sources:
1. Tax rates taken from Feenberg and Rosen (1985), Table 4.2a, Column 13.
2. Tax rates taken from Advisory Commission on Intergovernmental Relations (1985), p. 106.
3. Expense per day of care at community hospitals. From Levit (1985), p. 23, Column 3.

exemptions and business status) are assumed to potentially affect both the cost of compliance and the amount of itemizable deductions. Adjusted gross income represents both its important effects on the tax function and income effects on the demand for deductible items of expenditure. The identifying variables include investment income and three indices of the "price" of deductible expenses. We posit that various rates of taxation in a state and the prices of medical services affect the level of deductible expenses of otherwise identical taxpayers but do not affect the cost of compliance, which depends on the complexity of the itemization process and not on the dollar value of the individual deductions. For example, the resource cost of deducting a $1,000 hospital bill is equal to the resource cost of deducting a $2,000 hospital bill for the same set of hospital services. (Hospital services are particularly attractive in this regard, since it seems unlikely that the complexity of deductible expenses is responsive to this price.) Likewise, the complexity of deducting a property tax bill does not seem likely to depend on its magnitude.[1] Prices of certain itemizable deductions and tax rates affect only dollar values of deductions and not the complexity of itemizing them. Investment income is also excluded from the cost of itemizing equation with similar reasoning. Investment income generates deductible interest expenses of greater value but not greater complexity than ordinary consumer credit.[2]

4. Results

The itemization decision model described by equations 1 and 2 was estimated by maximizing the likelihood given in expression (5). Parameter estimates and t-ratios are presented in Table A-1 in the Appendix. If compliance costs are identically zero for all taxpayers our stochastic censoring threshold model would collapse to a standard Tobit model. A likelihood ratio test strongly

rejects the hypothesis that compliance costs are identically zero ($\chi^2(9) = 59.4$). Furthermore, the cost of compliance is confirmed to vary with taxpayer characteristics, since a test of the null hypothesis that the slope parameters of the estimated stochastic cost of compliance equation are jointly zero is also rejected ($\chi^2(6) = 21.0$). Similarly, the null hypothesis that tax saving does not vary with taxpayer characteristics is also conclusively rejected ($\chi^2(10) = 20309$). Finally, a test of the null hypothesis that the identifying variables in the tax savings equation are jointly zero is rejected ($\chi^2(4) = 750.2$).

Because the parameter estimates are difficult to interpret directly, Table 2 presents the implied impact effects of each variable, when evaluated at the mean characteristics of each of three income classes. These are changes in the unconditional expectations of potential tax saving and the cost of itemizing.

Each of the statewide indicators of the "price" of itemizable deductions has the expected positive sign in the tax savings equation. An increased price of hospital services, a higher level of state income taxes, and a higher level of property taxes all are positively related to tax savings. Increasing the average rate of state income and sales tax by 0.01 (compared to a state average of .050) increases the potential tax saving from itemization by $23 for someone in the $10,000-$15,000 income range, by $54 for someone in the $20,000-$25,000 range and by $158 for someone in the $50,000$-75,000 income range. Increasing the average effective property tax by .01 (compared to a state mean of .013) increases potential tax saving due to itemization by $33, $78, and $229 for these three income classes. An increase of $100 in hospital expense per day (with a state averge of $327), increases potential saving by $115, $205, and $490 for the three income classes. Over most of its range, higher income is associated with higher tax saving, as are more personal exemptions and the

Table 2

Effects of Changes in Exogenous Variables on Tax Saving and the Cost of Itemizing

Tax Savings

	AGI Class		
	$10,000-14,999	25,000-29,999	50,000-74,999
ΔAGI = $1,000	38.67	60.78	99.72
ΔInvest = $1,000	36.00	47.66	35.65
ΔExempt = 1	52.09	92.97	221.74
ΔBusiness = 1	166.43	297.07	708.51
ΔMar = 1	-29.21	-52.14	-124.35
ΔAged = 1	-100.31	-179.05	-427.04
ΔStatetax = .01	22.86	53.89	158.20
ΔProptax = .01	33.02	77.96	229.16
ΔMedcost = $100	115.13	205.49	490.09
Cost of Itemizing			
ΔAGI = $1,000	1.21	2.03	1.69
ΔExempt = 1	2.44	2.47	2.54
ΔBusiness = 1	-10.97	-11.11	-11.45
ΔMar = 1	-19.82	-20.06	-20.69
ΔAged = 1	-8.53	-8.64	-8.91

Note: These are changes in the unconditional expectations of tax saving and the cost of itemizing. The ΔAGI calculations do not include the effect of changes in AGI on the variables Statetax or Proptax. The ΔStatetax and ΔProptax calculations refer to changes in the tax rates, holding AGI constant.

presence of business or farm income. Being married or having an aged exemption is each associated with lower tax savings, other factors being held constant.

The explanatory variables in the cost of itemizing equation were not as successful as in the tax saving equation. The presence of a farm or business reduces the cost of itemizing by about $11, presumably because detailed records need to be kept even in the absence of itemizing, so that the incremental cost is lower than otherwise. Increased income increases the cost of itemization over most of its range (the cost of itemization is at a minimum at $9,568 of adjusted gross income), although a $1,000 increase raises cost only by a dollar or two. The impact of personal and aged exemptions is not significantly different from zero, although being married is associated with a significant decline in cost of about $20.

The estimated private cost of itemizing deductions, by adjusted gross income class, is presented in Table 3.[3] These conditional expectations were calculated by applying the mean vector of characteristics of itemizers within a class to the estimated equation of Table A-1. The average cost of itemizing for all itemizers is estimated to be $43.00, which implies an aggregate compliance cost of $1.44 billion in 1982.

Except for the lowest income class, the average cost of itemizing increases monotonically with income.[4] This reflects predominantly the positive direct effect of income on cost, where income undoubtedly proxies for the value placed on an individual's time.

Table 4 shows the tax savings that are foregone because some taxpayers are dissuaded from itemizing by the transaction cost. The first column indicates that there are 679,300 taxpayers who chose not to itemize given the current cost of itemizing (so that $TS_i < C_i$) but who would have itemized if the cost were zero ($TS_i > 0$). The second column of Table 4 shows that the foregone tax

Table 3

Estimated Cost of Itemizing
by Adjusted Gross Income Class, 1982

Adjusted gross income class	Number of itemizers (thousands)	Average cost of itemizing for itemizers ($)[a]	Total cost of itemizing for itemizers ($ millions)
Less than 5,000	690	23.95	16.52
5,000-9,999	1,700	15.77	26.81
10,000-14,999	2,745	12.26	33.66
15,000-19,999	3,219	16.33	52.57
20,000-24,999	4,228	25.08	106.02
25,000-29,999	4,706	33.02	155.40
30,000-39,999	7,657	45.01	344.63
40,000-49,999	4,217	62.10	261.89
50,000-74,999	2,871	86.43	248.15
75,000-99,999	677	126.89	85.90
100,000 and above	723	146.93	106.23
Total	33,433	43.00	1,437.78

[a] $E(C_i | I_i = 1) = Z_i\hat{\gamma} - \sigma_{uv}\left[\frac{\phi_i(x_i\hat{\beta} - Z_i\hat{\gamma})/\sigma)}{\Phi((x_i\hat{\beta} - Z_i\hat{\gamma})/\sigma)}\right]$

Table 4

Number of Additional Itemizers and
Tax Saving if Itemizing was Costless

Adjusted gross income class	Additional itemizers if cost of itemizing = 0 (thousands)	Total tax saving ($ millions)
Less than 5,000	38.7	1.90
5,000-9,999	60.5	1.53
10,000-14,999	60.4	12.43
15,000-19,999	74.1	43.61
20,000-24,999	108.7	51.00
25,000-29,999	115.8	53.98
30,000-39,999	153.3	14.64
40,000-49,999	54.8	6.14
50,000-74,999	12.8	7.99
75,000-99,999	0.2	1.60
100,000 and above	0.1	1.36
Total	679.3	196.18

saving of these taxpayers amounts to $196.2 million. This is the revenue loss that the Treasury would suffer if the itemization process were costless. This highlights that the general goals of a tax system can conflict. In this case making the tax system less costly to comply with compromises the revenue collection objective of the tax system.

Finally, we calculate the impact of increasing the minimum standard deduction allowed for all taxpayers, as was legislated in the Tax Reform Act of 1986. This policy change has progressive implications for vertical equity, as it eliminates all tax liability for many low-income households. Presumably it also has a deleterious effect on horizontal equity, as it limits the applicability of a case-by-case standard for allowing deductions from taxable income. It also eliminates the tax incentive for increased charitable contributions and other deductible activities for those taxpayers who no longer itemize. Our analysis allows us to measure another impact of increasing the standard deduction, the reduction in the aggregate cost of compliance. Table 5 shows how, as the standard deduction is increased, the number of itemizing households declines and the total cost of itemizing declines. An across-the-board increase of $2,000 in the standard deduction reduces the cost of compliance from $1.44 to $1.07 billion, or by $370 million. Note also that the average cost of those households who remain itemizers increases. This occurs because the increased standard deduction reduces itemizing predominantly among lower income taxpayers, who on average have a lower private cost of itemizing.

The Tax Reform Act of 1986 contains several changes which affect the extent of itemization, including the disallowance of the sales tax deduction, phaseout of the deduction for personal interest, and a floor on the deductability of miscellaneous expenses. It also substantially increased the standard deduction for each category of taxpayer, by less than $1,000 for singles and

Table 5

Number of Itemizers and
Cost of Itemizing for Different Levels of
the Standard Deduction

	1982 level of standard deduction	Standard deduction increased by $1,000	Standard deduction increased by $2,000
Number of itemizers (millions)	33.4	26.6	20.0
Total cost of itemizing ($ billions)	1.44	1.26	1.07
Cost per itemizing taxpayer ($)	44.0	47.4	53.5

more than $1,000 for married couples filing jointly and single heads of households. Our estimates suggest that this latter provision will reduce the private cost of complying with the tax law by approximately $0.18 billion.

All of the foregoing estimates apply to the privately borne cost of itemization, as valued by the taxpayers. The social cost of compliance may, though, differ from the private cost. Most significantly, for monetary expenditures the social cost exceeds the privately-borne cost due to the deductibility of these expenses. The social cost of these expenditures is thus approximately $1/(1 - t)$ times the privately borne cost, where t is the marginal tax rate.

5. Conclusions

The U.S. income tax system allows taxpayers to deduct certain expenses from taxable income in order to improve horizontal equity and to encourage certain activities, such as charitable giving, deemed socially desirable. This paper estimates that the privately borne cost in 1982 of allowing itemizable deductions above some limit amounted to $1.44 billion, with the social cost being somewhat higher. An increased standard deduction, as legislated in the Tax Reform Act of 1986, enhances progressivity, diminishes the horizontal equity and incentive effects of itemization, but saves resource costs. We estimate that increasing all taxpayers' standard deduction by $1,000 would save $180 million in privately borne costs, and increasing it by $2,000 would save $370 million.

Earlier studies of the compliance cost of taxation have been based on survey responses, and therefore are subject to error due to faulty memory or deliberate misrepresentation. How to value taxpayers' time spent on tax matters is also a difficult problem in such studies. In addition, only tangible resource costs of compliance can be measured with any accuracy. This paper

proposes a methodology to infer the cost of compliance from taxpayers' observed behavior. Thus it is not biased by survey response inaccuracy and captures psychic costs as well as the taxpayer's valuation of time and other resources used in tax compliance. These advantages make it a promising methodology for estimating the compliance cost of other regulatory requirements.

Footnotes

1. The existence of a state income tax is likely to complicate the itemization procedure. Adding a dummy variable for the presence of a state income tax in the cost of compliance equation was unsuccessful--the likelihood would not converge. Of the 13,409 records, only 80 were from states without an income tax, so that this influence is unlikely to be qualitatively important.

2. If investment income is included as an explanatory variable of cost of compliance, it is not statistically significant at common levels of significance.

3. The results reported here and in Table 4 for the lowest and highest adjusted gross income classes were obtained by applying the mean characteristics of the adjacent income class except in the case of income, in which case $5,000 was used for the less than $5,000 class and $100,000 was used for the over $100,000 class.

4. The nonmonotonicity probably reflects the fact that taxpayers with low reported adjusted gross income are often not "poor," but have temporarily low annual income or have taken tax losses that reduce their income subject to tax.

APPENDIX

Table A-1

Maximum Likelihood Estimates of the Itemization Decision Model

Tax Savings Equation:	Parameter	Asymptotic t-ratio
Intercept	9.346	85.21
AGI	-0.882	-13.73
AGISQ ($x10^2$)	25.892	21.62
Exempt ($x10^2$)	4.571	12.01
Business ($x10^2$)	13.928	14.06
Mar ($x10^2$)	-2.658	-1.92
Aged ($x10^2$)	-9.439	-9.30
Medcost ($x10^2$)	9.837	15.20
Invinc ($x10^2$)	1.073	6.36
Statetax ($x10^2$)	1.161	17.97
Proptax ($x10^2$)	0.807	3.42
σ_u	0.474	148.83
Cost of Itemizing Equation:		
Intercept	7.527	216.90
AGI	-0.069	-2.79
AGISQ ($x10^2$)	1.530	2.97
Exempt ($x10^2$)	0.142	1.02
Business ($x10^2$)	-0.643	-1.75
Mar ($x10^2$)	-1.165	-2.60
Aged ($x10^2$)	-0.500	-1.31
σ_v	0.013	6.52
σ_{uv}	0.0003	0.09
Log Likelihood	-919.69	
No. of Observations	13409	

Variables are defined and scaled as follows:

Tax savings	= ln(TS + 1700)
Cost of itemizing	= ln(C + 1700)
AGI	= ln(adjusted gross income)
AGISQ	= AGI^2
Exempt	= number of personal exemptions
Mar	= 1 if married, 0 otherwise
Aged	= number of aged deductions taken
Medcost	= hospital expense per day
Invinc	= if (dividends + interest income + capital gains) > 0; then ln(dividends + interest income + capital gains) otherwise 0.
Statetax	= state tax rate defined as a fraction x AGI (defined above)
Proptax	= property tax rate defined as a fraction x AGI (defined above)

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