

THE ELASTICITY OF TAXABLE INCOME

14.471 - Fall 2012

Why Focus on "Elasticity of Taxable Income" (ETI)?

i) Captures Not Just Hours of Work but Other Changes (Effort, Structure of Compensation, Occupation/Career Choice) and Non-Labor Income and Evasion and Avoidance

ii) Under Restrictive Assumptions, this Elasticity May Determine the Deadweight Burden of the Tax System (key is no "fiscal externality" in that the tax base in question in part depends on another tax base - example of corporate vs. personal income tax)

iii) ETI links easily to calculation of "Revenue Maximizing Tax Rate" τ^* .

Let z = taxable income; in the simplest case $z = w \cdot l$, but more generally z would subtract deductions. Assume that (locally) z is related to the "keep ratio" $(1 - \tau)$ with constant elasticity β so that

$$\beta = [dz/d(1 - \tau)] \cdot [(1 - \tau)/z]$$

If we write this as

$$z = \theta \cdot (1 - \tau)^\beta$$

then revenue, R , is given by $R = \tau^* \theta^* (1 - \tau)^{\beta}$. It is straightforward to find the FOC for the revenue-maximizing tax rate:

$$\theta^* (1 - \tau)^{\beta} = \beta^* \tau^* \theta^* (1 - \tau)^{\beta-1}.$$

This yields $\tau^* = 1/(1 + \beta)$.

This generalizes (see Saez, Slemrod, Giertz 2012) to the case of a multi-bracket tax system. For the TOP tax bracket, which begins at z_{cutoff} and for which the average income of taxpayers in the bracket is z_{mean} , if we define $\varphi = (z_{\text{mean}} - z_{\text{cutoff}})/z_{\text{mean}}$, which is closely related to a parameter of the Pareto distribution, the modified expression is

$$\tau^* = 1/(1 + \varphi^* \beta).$$

Provided there are no income effects, the marginal deadweight burden per dollar of additional revenue collected is $(\beta^* \tau^*)/[1 - \tau - \beta^* \tau]$.

Note that since $\varphi \geq 1$, the revenue maximizing flat rate is always higher than top marginal rate - since raising top rate raises money only on guys at the top, but produces a behavioral response at the top that is as large as for overall tax increase

With ETI of 0.5, Giertz (2009) estimates that behavioral response eliminates 31% of the "static" revenue gain from a federal tax increase.

For economy at large, if $\beta > 1$, then the revenue maximizing tax rate will fall below 50%. Even lower values of β will generate that outcome for top marginal rate.

ETI Literature:

Excellent Survey by Saez, Slemrod, Giertz (2012)

1. "Income Projection Method"

Lindsey (1987) uses tax return information on the composition of income by income class in 1979, and the change in aggregate income from various sources in subsequent years, to "forecast" the distribution of income by source in 1982, 1983, and 1984. Let k denote an income range, and j denote an income source (wages, dividends, interest income). Then, for example,

$P_{j,k,1984} = (Z_{j,1984}) * (Z_{j,k,1979} / Z_{j,1979})$. Lindsey used these projections to compare actual and predicted levels of income tax, and finds that more taxes were paid (than expected) at high income levels. This is where marginal tax rates fell most sharply.

Year	> \$200K	\$50-200K	\$30-50K	< \$30K
1980	+0.2%	+1.9%	+2.8%	-0.2%
1982	+18.6	+3.7	+3.6	+0.4
1984	+55.7	+7.6	+1.4	-5.6

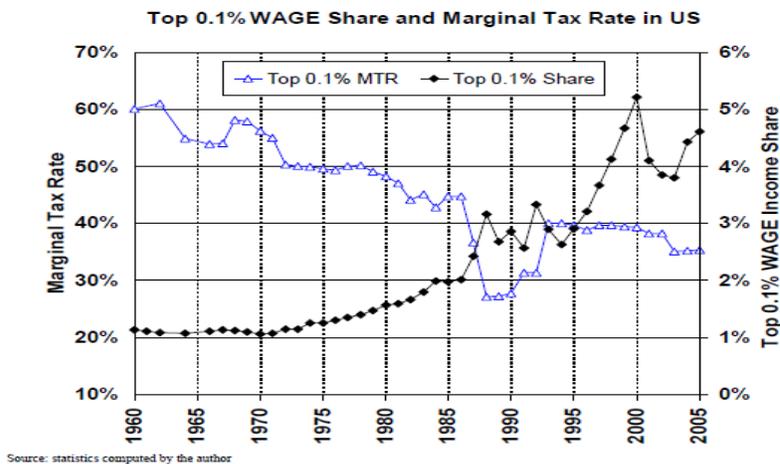
Source: Lindsey (1987, p. 185)

Compute elasticity as

$$\beta = \ln (Z_{j,k, 1984} / P_{j,k, 1984}) / \ln [(1-\tau_{j,k,1984}) / (1-\tau_{j,k,1979})]$$

Elasticity value for highest income group exceeds 2.
 Problem: Limited control for economy-wide trends in distribution of income.

2. Longer Time Series Evidence: (Saez-Piketty)



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3. Feldstein (1995 JPE) uses individual tax returns to estimate

$$\ln(Z_{i,2}/Z_{i,1}) = \alpha + \beta \ln[(1-\tau_{i,2})/(1-\tau_{i,1})] + X_i\gamma + \varepsilon_i$$

where variation in marginal tax rates comes from TRA86 and the data are panel data on U.S. tax returns.

1985 τ_i	Sample Size	$\Delta \ln(1 - \tau_i)$	$\Delta \ln Z_i$
22	800	9.0%	9.4%
28	713	16.3	3.9
45	45	30.9	12.4
49	35	41.2	27.1
50	22	44.0	18.4

Implied ETI:

"high vs. medium" 1.04

"highest vs. high" 3.05

"highest vs. medium" 2.14

Problem with this approach: mean reversion or underlying trends

- if mean reversion, then folks who are rich will get poorer – if tax rates on rich are falling, understates tax response
- if underlying trends towards more inequality, and tax rates on rich are falling, then overstate tax response

4. Gruber and Saez (2003) advance the literature by estimating a compensated elasticity of taxable income by controlling for income. Their basic specification, where i denotes an individual tax return in year 1 or year 2 and z_i is:

$$\ln(Z_{i,2}/Z_{i,1}) = \alpha + \beta \ln[(1-\tau_{i,2})/(1-\tau_{i,1})] + \gamma \ln[(Z_{i,2} - T_{i,2})/(Z_{i,1} - T_{i,1})] + X_i\gamma + \varepsilon_i$$

Estimate using repeated cross sections of U.S. income tax returns.

Broadest Income Concept: $\beta = 0.30$ (0.12)

Taxable Income: $\beta = 0.47$ (0.19)

Highest Income Taxpayers: $\beta = 0.60$

Lowest Income Taxpayers: $\beta = 0$

Much of the Elasticity Arises from Shifts in Deductions
Not Gross Income

Problem of course is endogeneity of tax rate – so instrument with: $[(1-\tau^*_{i,2})/(1-\tau_{i,1})]$, where the former uses period 1 incomes in period 2 tax code - that is, instead of holding bracket constant (as in Feldstein), hold the actual income constant – just change in tax rate for fixed income

- if tax code didn't change, this IV is zero
- but in 1980s have major fed/state reforms

Key is that controls include non-linear function of base period income – so that control for both mean reversion and omitted trends correlated with base period income

Conclusion: tax base is elastic. Broad income elasticity is 0.12, 0.17 for highest income group – so deductions are important source of the effect

Kopczuk (2005) examines tax base elasticity: if nothing is deductible, elasticity is 0.12 – but that as more income is deductible, elasticity rises one for one with share deductible

Giertz (2007) uses richer data than Gruber-Saez and studies 1979-2001, finds ETI of 0.3 – lower in 1990s – partly because of falling number of itemizers

Chetty et al. (2009) suggest that adjustment costs are key and that longer run effects may be larger (e.g. since bunching is much larger around larger kinks)

Key Questions Regarding Interpretation of ETI:

1. Short-Run Behavioral Responses vs. Long-Run Shifts
 - example of 1986 Capital Gains Tax Increase
 - 1992 acceleration of bonuses on Wall Street
 - SR effects can be large, LR much harder to evaluate

2. "Fiscal Externalities": when is income shifted from one part of fiscal system to another?

- example of Subchapter C / Subchapter S corporations. When $\tau_{\text{personal}} > \tau_{\text{corporate}}$ individuals choose to locate income within corporations, avoid direct earnings but when sign flips, income migrates INTO the personal income tax base (no underlying change in behavior)

- must consider all types of income: standard example is turning labor income into various forms of capital income

3. Evasion vs. Other Behavioral Responses (need to embed tax paying decisions in optimizing model of tax evasion)

4. Heterogeneity in Responses:

- Most Taxable Income Effects seem to flow from deduction behavior

- High income households seem more responsive than lower income counterparts

- History-dependence: cutting rates after many years of high rates may have different effects than cutting further after low rates

- Structure of entire tax code can matter - tax avoidance opportunities

Conclusions:

- 1) Given current imperfect tax base, taxable elasticity is around 0.3-0.4 – suggests that revenue maximizing tax rate is 66%, much higher than today
- 2) Elasticity is driven largely by highest income group which claims deductions in the tax code
- 3) Substantial efficiency gains from base broadening; narrow base makes progressive taxation more difficult

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