Lecture 6: Taxable Income Elasticities

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TAXABLE INCOME ELASTICITIES

Modern public finance literature focuses on taxable income elasticities instead of hours/participation elasticities

Two main reasons:

1) What matters for policy is the total behavioral response to tax rates (not only hours of work but also occupational choices, avoidance, etc.)

2) Data availability: taxable income is precisely measured in tax return data

Recent overview of this literature: Saez-Slemrod-Giertz JEL’12
FEDERAL US INCOME TAX CHANGES

Tax rates change frequently over time

Biggest tax rate changes have happened at the top:

Reagan I: ERTA’81: top rate ↓ 70% to 50% (1981-1982)

Reagan II: TRA’86: top rate ↓ 50% to 28% (1986-1988)

Clinton: OBRA’93: top rate ↑ 31% to 39.6% (1992-1993)

Bush: EGTRRA ’01: top rate ↓ 39.6% to 35% (2001-2003)

Obama ’13: top rate ↑ 35% to 39.6%+3.8% (2012-2013)

Trump ’17: top rate may decrease a lot?

Taxable Income = Ordinary Income + Realized Capital Gains - Deductions
⇒ Each component can respond to MTRs
US Top Marginal Tax Rate (Federal Individual Income Tax)

Source: IRS, Statistics of Income Division, Historical Table 23
LONG-RUN EVIDENCE IN THE US

Goal: evaluate whether top pre-tax incomes respond to changes in one minus the marginal tax rate (=net-of-tax rate)

Focus is on pre-tax income before deductions and excluding realized capital gains (because they are taxed at lower separate rate)

Piketty-Saez QJE’03 estimate top income shares since 1913 [IRS tabulations for 1913-1959, IRS micro-files since 1960]

Piketty-Saez-Stantcheva AEJ-EP’14 estimate the effect of top MTR on top income shares in the US since 1913
Top 1% Income Share and Top MTR

![Graph showing the top 1% income share and marginal tax rates over time. The x-axis represents years from 1913 to 2013, with specific years labeled. The y-axis represents top 1% income shares and marginal tax rates. The graph includes two lines: one for top 1% income shares (excluding capital gains) and another for top marginal tax rates. The data shows fluctuations over time, with peaks and troughs at different years.]
INCOME SHARE BASED ELASTICITY ESTIMATION

1) Tax Reform Episode: Compare top pre-tax income shares at $t_0$ (before reform) and $t_1$ (after reform)

$$e = \frac{\log sh_{t_1} - \log sh_{t_0}}{\log(1 - \tau_{t_1}) - \log(1 - \tau_{t_0})}$$

where $sh_t$ is top income share and $\tau_t$ is the average MTR for top group in year $t$

Identification assumption: absent tax change, $sh_{t_0} = sh_{t_1}$

2) Full Time Series: Run regression:

$$\log sh_t = \alpha + e \cdot \log(1 - \tau_t) + \varepsilon_t$$

and adding time controls to capture non-tax related top income share trends

Identification assumption: non-tax related changes in $sh_t \perp \tau_t$
LONG-RUN EVIDENCE IN THE US

1) Clear correlation between top incomes and top income rates both in several short-run tax reform episodes and in the long-run: estimated elasticities are large: around 0.7 for long-run, and sometimes over 1 for short-run episodes (such as ’86–’88).

2) Correlation between tax rates and income shares largely absent below the top 1% (such as the next 9%)

3) Top income shares sometimes do not respond to large tax rate cuts [e.g., Kennedy Tax Cuts of early 1960s]

2) and 3) suggest that context matters (such as opportunities to respond / avoid taxes matter), response unlikely to be due to a universal labor supply elasticity
Behavioral response to income tax comes not only from reduced work effort and economic activity but also from tax avoidance. Two main forms of tax avoidance:

1) **Intertemporal substitution:** Shift income over time to take advantage of tax changes: Example: If tax rates increase next year, shift income from next year to this year.

2) **Income shifting:** Shift income to another tax base that is taxed less. Example: shift business profits from corporate tax base to the individual tax base if this is tax advantageous.

Such tax avoidance affect tax revenue through these other tax bases and such revenue effects need to be accounted for in optimal tax analysis.
Inter-Temporal Substitution: Realized Capital Gains

Realized capital gains occur when individual sells asset at a higher price than buying price

Individuals have flexibility in the timing of asset sales and capital gains realizations

TRA’86 lowered the top tax rate on ordinary income from 50% to 28% but increased the top tax rate on realized capital gains from 20% to 28%

2013: tax rate on KG increased from 15% to 20%+3.8% (see Saez 2017)

⇒ Surge in capital gains realizations in 1986 and 2012 [and depressed capital gains in 1987 and 2013]

⇒ Short-term elasticity is very large but long-term elasticity is certainly much smaller
Top 1% pre-tax income share and top tax rates

Source: Top 1% income share: Piketty and Saez, 2003 updated to 2015, series including realized capital gains. Top MTR include Federal individual tax + uncapped FICA payroll tax.
US Top 0.1% Income Share and Composition

Source: Piketty and Saez, 2003 updated to 2015. Series based on pre-tax cash market income including realized capital gains, and always excluding government transfers.
Inter-Temporal Substitution: Stock-Options

Goolsbee JPE’00 analyzes CEO pay around the 1993 Clinton top tax rate increase [from 31% in 1992 to 39.6% in 1993 announced in late 1992]

Finds a strong re-timing response through stock-option exercise (executives can choose the timing of their stock-option exercises)

⇒ Large short-term response due to re-timing, small long-term response

The 2013 Obama top tax rate increase has also generated income shifting from 2013 to 2012 (Saez ’17)
EXECUTIVE COMPENSATION

TABLE 2

AVERAGE COMPENSATION BY TYPE FOR HIGH-INCOME EXECUTIVES
(in Thousands)

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<thead>
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<tbody>
<tr>
<td>Taxable income</td>
<td>911</td>
<td>1,153</td>
<td>974</td>
<td>965</td>
<td>1,173</td>
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<tr>
<td>Salary</td>
<td>347</td>
<td>336</td>
<td>336</td>
<td>351</td>
<td>373</td>
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<tr>
<td>Bonus</td>
<td>198</td>
<td>207</td>
<td>241</td>
<td>284</td>
<td>330</td>
</tr>
<tr>
<td>LTIP payout</td>
<td>57</td>
<td>72</td>
<td>57</td>
<td>64</td>
<td>89</td>
</tr>
<tr>
<td>Options exercised</td>
<td>268</td>
<td>496</td>
<td>293</td>
<td>235</td>
<td>381</td>
</tr>
<tr>
<td>Other income (nontaxed)</td>
<td>36</td>
<td>37</td>
<td>66</td>
<td>54</td>
<td>78</td>
</tr>
</tbody>
</table>

SOURCE.—Author’s calculations for executives with permanent income greater than $275,000 per year.
STOCK OPTIONS

Major form of compensation of US top executives. Theoretical goal is to motivate executives to increase the value of the company (stock price $P(t)$)

Stock-options granted at date $t_0$ allow executives to buy $N$ company shares at price $P(t_0)$ on or after $t_1$ (in general $t_1 - t_0 \simeq 3 - 5$ years = vesting period)

Executive exercise option at (chosen) time $t_2 \geq t_1$: pays $N \cdot P(t_0)$ to get shares valued $N \cdot P(t_2)$. Exercise profit $N[P(t_2) - P(t_0)]$ (considered and taxed as wage income in the US)

After $t_2$, executive owns $N$ shares, eventually sold at time $t_3 \geq t_2$: realized capital gain $N[P(t_3) - P(t_2)]$ (taxed as capital gains)
Income Shifting: Corporate And Individual Tax Base

Businesses can be organized as corporations or unincorporated businesses [also called pass-through entities]

Corporate profits are first taxed by corporate tax [tax rate $\tau_c$]

Net-of-tax profits are taxed again when finally distributed to shareholders. 2 distribution options:

a) dividends [tax rate $\tau_d$]

b) retained profits increase stock price: shareholders realize capital gains when finally selling the stock [tax rate $\tau_{cg}$]

For unincorporated businesses (sole proprietorships, partnerships, S-corporations) profits are taxed directly and solely as individual income (rate $\tau_i$)
CORPORATE AND INDIVIDUAL TAX BASE

Corporate form best if \((1 - \tau_c)(1 - \tau_{cg}) > 1 - \tau_i\)

US fed taxes in 2016: \(\tau_c = 35\%\), \(\tau_{cg} = 20\%\) (less because of deferral value), \(\tau_d = 20\%\), \(\tau_i = 39.6\%\), (top rate)

Today, individual form is best

Before TRA’86 (and especially before ERTA’81), top individual rate \(\tau_i\) was much higher so corporate form was best

Shifts from corporate to individual base increases business profits at the expense of dividends and realized capital gains

Large part of TRA’86 response is due to such shifting
US Top 0.1% Income Share and Composition (excl. K gains)

Source: Piketty and Saez, 2003 updated to 2015. Series based on pre-tax cash market income excluding realized capital gains, and always excluding government transfers.
Bottom Line on Behavioral Responses to Taxes

1) Clear evidence of strong responses to tax changes due to re-timing or income shifting

2) Heterogeneity in tax responses due to heterogeneity in shifting opportunities [e.g., Kennedy tax cuts of ’61 vs. TRA’86]

3) Top income shares can change drastically without changes in tax rates [e.g., 1993-2000]

4) Difficult to know from single country time series the role played by top tax rate cuts in the surge of top incomes ⇒ International evidence can cast further useful evidence
TOP RATES AND TOP INCOMES INTERNATIONAL EVIDENCE

1) Use pre-tax top 1% income share data from 18 OECD countries since 1960 using the World Top Incomes Database.

2) Compute top (statutory) individual income tax rates using OECD data [including both central and local income taxes].

Plot top 1% pre-tax income share against top MTR in 1960-4, in 2005-9, and 1960-4 vs. 2005-9
A. Top 1% Share and Top Marginal Tax Rate in 1960−4

Elasticity = .07 (.15)

Source: Piketty, Saez & Stantcheva (2011)
B. Top 1% Share and Top Marginal Tax Rate in 2005–9

Elasticity = 1.90 (.43)

Source: Piketty, Saez & Stantcheva (2011)
Change in Top Tax Rate and Top 1% Share, 1960-4 to 2005-9

Elasticity = .47 (.11)

Source: Piketty, Saez & Stantcheva (2011)
TOP RATES AND TOP INCOMES EVIDENCE

1) Pre-tax Top income shares have increased significantly in some but not all countries [Atkinson-Piketty-Saez JEL’11]

2) Top tax rates have come down significantly in a number of countries since 1960s

3) Correlation between 1) and 2) is strong but not perfect: lower top tax rates are a necessary but not sufficient condition for surge in top incomes
ECONOMIC EFFECTS OF TAXING THE TOP 1%

Strong empirical evidence that pre-tax top incomes are affected by top tax rates

3 potential scenarios with very different policy consequences

1) Supply-Side: Top earners work less and earn less when top tax rate increases ⇒ Top tax rates should not be too high

2) Tax Avoidance/Evasion: Top earners avoid/evade more when top tax rate increases

⇒ a) Eliminate loopholes, b) Then increase top tax rates

3) Rent-seeking: Top earners extract more pay (at the expense of the 99%) when top tax rates are low ⇒ High top tax rates are desirable
Tax Avoidance: Top 1% Income Shares and Top MTR

![Graph showing the relationship between Top 1% Income Shares and Marginal Tax Rates over time.](image)
Real changes vs. tax Avoidance? Charitable giving

Test using charitable giving behavior of top income earners (Saez TPE ’17)

Because charitable giving is tax deductible, incentives to give are stronger when tax rates are higher.

Under the tax avoidance scenario, reported incomes and reported charitable giving should move in opposite directions.

Empirically, charitable giving of top income earners has grown in close tandem with top incomes.

⇒ Incomes at the top have grown for real
Charitable Giving of Top 1% Income Earners

Source: The figure depicts average charitable giving of top 1% incomes (normalized by average income per family) on the left y-axis.

Source: Saez TPE 2017
Charitable Giving of Top 1% Income Earners

Source: The figure depicts average charitable giving of top 1% incomes (normalized by average income per family) on the left y-axis. For comparison, the figure reports the top 1% income share (on the right y-axis).

Source: Saez TPE 2017
Supply-Side or Rent-Seeking? (Piketty-Saez-Stantcheva AEJ’13)

Correlation between **pre-tax** top incomes and top tax rates

If rent-seeking: growth in top 1% incomes should come at the expense of bottom 99% (and conversely)

Two macro-preliminary tests:

1) In the US, top 1% incomes grow slowly from 1933 to 1975 and fast afterwards. Bottom 99% incomes grow fast from 1933 to 1975 and slowly afterwards ⇒ Consistent with rent-seeking effects

2) Look at cross-country correlation between economic growth and top tax rate cuts ⇒ No correlation supports rent-seeking

One micro-test using CEO pay data
INTERNATIONAL CEO PAY EVIDENCE

Recent micro-data for 2006 gathered by Fernandes, Ferreira, Matos, Murphy RFS’12.

1) CEO pay across countries strongly negatively correlated with top tax rates

2) Correlation remains as strong even when controlling for firms’ characteristics and performance

⇒ Consistent with rent-seeking effects
A. Average CEO compensation

Link between top tax rate and CEO pay in 2006 across countries
Controlling for firm profitability, governance, size, and industry
Tax Induced International Migration

Public debate concern that top skilled individuals move to low tax countries (e.g., in EU context) or low tax states (within US Federation, see Moretti-Wilson AER17, Young et al. 16)

Migration concern bigger in public debate than supply-side within a country debate

Little work on tax induced international migration of top skilled workers

Hard to get data but interesting variation due to proliferation of special low tax schemes for highly paid foreigners in Europe

Kleven-Landais-Saez AER’13 look at football players in Europe (highly mobile group, many tax reforms) ⇒ Find significant migration responses to taxes after football market was de-regulated in ’95

Akcigit-Baslandze-Stantcheva AER’16 look at innovators (using patent data) mobility and find significant tax effects for top innovators
Exploit the 1991 tax scheme in Denmark: immigrants with high earnings (≥ \(103,000\) Euros/year) taxed at flat 25% rate (instead of regular tax with top 59% rate) for 3 years

Use population wide Danish tax data and DD strategy: compare immigrants above eligibility earnings threshold (treatment) to immigrants slightly below threshold (control)

**Key Finding:** Scheme doubles the number of highly paid foreigners in Denmark relative to controls

⇒ Elasticity of migration with respect to the net-of-tax rate above one (much larger than the within country elasticity of earnings)

⇒ Tax coordination will be key to preserve progressive taxation in the European Union
Figure 3: Total number of foreigners in different income groups

Control 1= annualized income between .8 and .9 of threshold
Control 2= annualized income between .9 and .995 of threshold.

REFERENCES


Department of the Treasury(2012) “Capital Gains and Taxes Paid on Capital Gains” (web)


