

Income Taxation

The personal income tax

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- Denote
 - Income= y ,
 - Taxes collected= T .
- Income tax schedule: $T = f(y)$.
- Two important aspects:
 - Functional form or the rate structure: $f(\cdot)$.
 - Definition of y (tax base).

What is income?

- *Haig-Simon Definition*: The increase in an individual's ability to consume during a given period of time.
- According to this definition, income is equal to consumption expenditures and savings.

Problems

- There are differences between what should be considered as income and what is considered as income by the tax system.
- These are intentional as well as due to difficulty in measurement.
- Correctly done: Wages and salaries.
- Generally ignored:
 - health insurance provided by the employer.
 - perquisites (perks).
 - social security payments, medicare, unemployment insurance.
- Interest, dividends: Counted but not adjusted for inflation.

- Capital gains (stocks, houses):
 - Counted but when realized.
 - Not adjusted for inflation.
 - Top tax rate on capital gains is lower than other types of income.
- Housing:
 - Housing capital gains can be escaped altogether.
 - Implicit income from owner-occupied housing and consumer durables is ignored.
- Bracket creep.

From income to taxable income

- *Exclusions*: Roughly 20% of what department of commerce calls “personal income”.
 - Untaxed transfers:
 - * Employer contribution for social security and medicare. (This is as much income as employee contribution; it is compensation by employer on behalf of employee).
 - * Most of the social security benefits and medicare received.
 - Employee benefits (7.4%): Employer contribution to health insurance plans, pensions, life insurance, other perks.
 - Other (3.7%): Exclusion of interest in state and local bonds; implicit income from home ownership; IRA; 401 k and 403 b plans.

- *AGI to “taxable income”:*

- Personal exemption: \$3,300 per family member in 2006.
- Standard deduction \$5,150 for singles and \$10,300 for couples in 2006.
- Itemized deduction.
- This is like having a “zero bracket” in AGI.

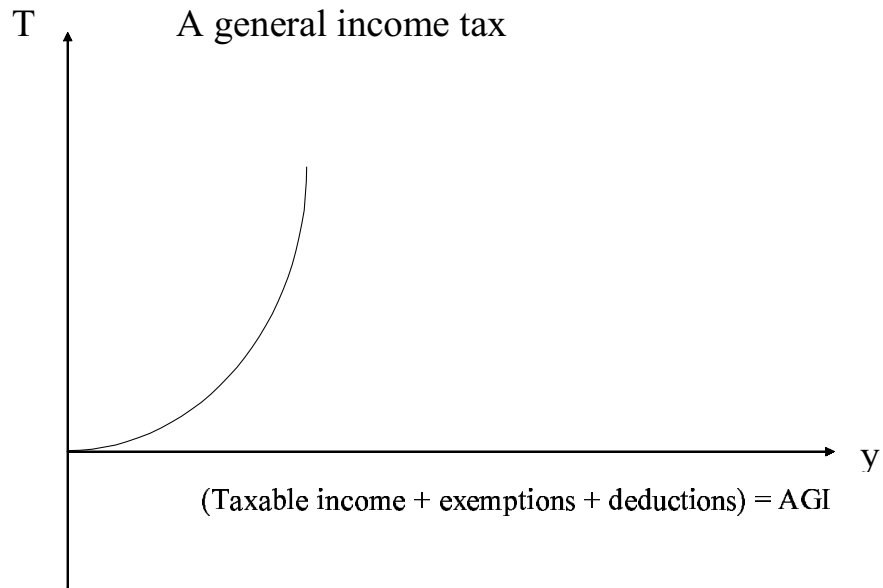
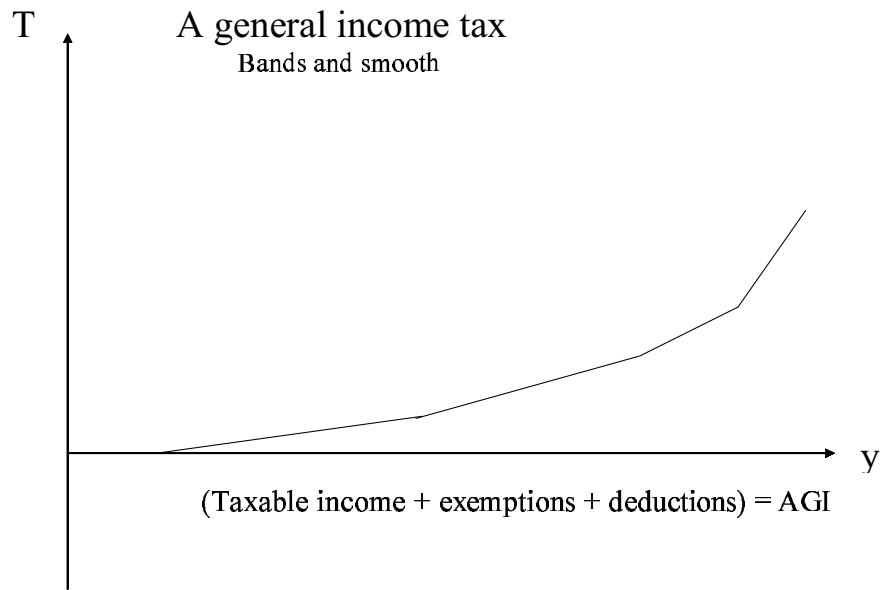
Table 1: Statutory personal income tax rates for 2007
(single individuals)

10%	on	$0 <$	part of “taxable income”	\leq	\$7,825
15%	on	$\$7,825 <$	part of “taxable income”	\leq	\$31,850
25%	on	$\$31,850 <$	part of “taxable income”	\leq	\$77,100
28%	on	$\$77,100 <$	part of “taxable income”	\leq	\$160,850
33%	on	$\$160,850 <$	part of “taxable income”	\leq	\$349,700
35%	on	$\$349,700 <$	part of “taxable income”	$<$	∞

Table 2: Statutory personal income tax rates for 2007
(Married couples)

10%	on	$0 <$	part of “taxable income”	\leq	\$15,650
15%	on	$\$15,650 <$	part of “taxable income”	\leq	\$63,700
25%	on	$\$63,700 <$	part of “taxable income”	\leq	\$128,500
28%	on	$\$128,500 <$	part of “taxable income”	\leq	\$195,850
33%	on	$\$195,850 <$	part of “taxable income”	\leq	\$349,700
35%	on	$\$349,700 <$	part of “taxable income”	$<$	∞

- The rate structure applies to “income” after exemptions, deductions etc.; namely, the “taxable income” as opposed to AGI.
- Alternatively, one can think of y to be AGI but with a zero bracket (albeit not the same for everyone).
- Nothing is god-given about rates and/or brackets.
- Both have changed over time.
- Both differ across countries.
- As brackets become smaller and smaller \Rightarrow A “general” income tax function.



Earned income tax credit

Table 3: EITC rates in 2006

(A family with two children)

40%	on	$0 <$	part of “earned income”	\leq	\$11,340
0%	on	$\$11,340 <$	part of “earned income”	\leq	\$14,810
-21.06%	on	$\$14,810 <$	part of “earned income”	\leq	\$36,348

Table 4: EITC rates in 2006

(A family with one child)

34%	on	$0 <$	part of “earned income”	\leq	\$8,080
0%	on	$\$8,080 <$	part of “earned income”	\leq	\$14,810
15.98%	on	$\$14,810 <$	part of “earned income”	\leq	\$32,001

Table 5: EITC rates in 2006

(A family with no children)

7.65%	on	$0 <$	part of “earned income”	\leq	\$5,380
0%	on	$\$5,380 <$	part of “earned income”	\leq	\$6,740
-7.65%	on	$\$6,740 <$	part of “earned income”	\leq	\$12,120

- Interaction with various marginal tax rates.

Treatment of business income

- Business income is more difficult to define.
- Medium and large firms:
 - Come under corporate system “C-corporations”.
 - Account for 8% of *number* of firms in the US.
 - Account for 58% of all business *income* in the US.
- Smaller businesses:
 - They include sole proprietorships; partnerships; S corporations (a kind of corporation limited to 35 or fewer shareholders).
 - Come under the personal income tax rules.
 - Naturally, account for = 91% of all firms and 42% of all business income in the US.

Basic features of the US corporate income tax

- These are the so called C-corporations.
- Rate structure:
 - Between 15% to 35% (most at 35% level).
- Definition of income.
 - Depreciation:
 - * Difficult because of inflation.
 - * Accounting versus economic.

- Returns to shares are thus taxed twice:
 - Once at the corporate income level and a second time at the personal level.
 - Worse in case of dividends; capital gains are at least treated preferentially.
 - This also implies a lack of neutrality between C-corporation and other businesses.
- Cost of raising funds:
 - Borrowing? Yes!
 - Issuing shares? No!

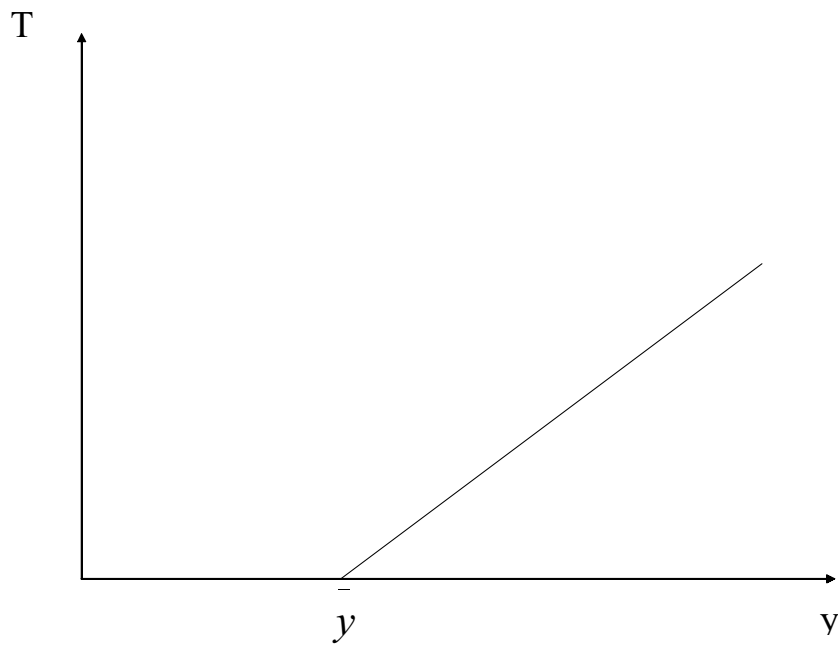
- A most fundamental problem:
 - The cost of earning income reduces one's ability to consume; it should be subtracted from "income".
 - But what are these costs?
 - * Inputs, raw materials, etc.?
 - * Wages paid?
 - * Cost of borrowing?
 - * Durables, depreciation?
 - * How about suits for lawyers? How much? What about transportation for him? Vacation?

Analytcs

- Some Definitions:
 - Marginal income tax rate: $\frac{\Delta T}{\Delta y}$.
 - Average income tax rate: $\frac{T}{y}$.
 - Diagrammatic representation.
 - Progressive: $\frac{T}{y}$ is increasing in y .
 - Proportional: $\frac{T}{y}$ does not change with y .
 - Regressive: $\frac{T}{y}$ is decreasing in y .
 - Progressivity \Rightarrow marginal $>$ average, etc.
 - Graduated brackets increase the “degree” of progressivity but is not necessary.

- **The tax schedule:** $T = f(y)$
- **“Flat tax”** is a special form of $T = f(y)$.

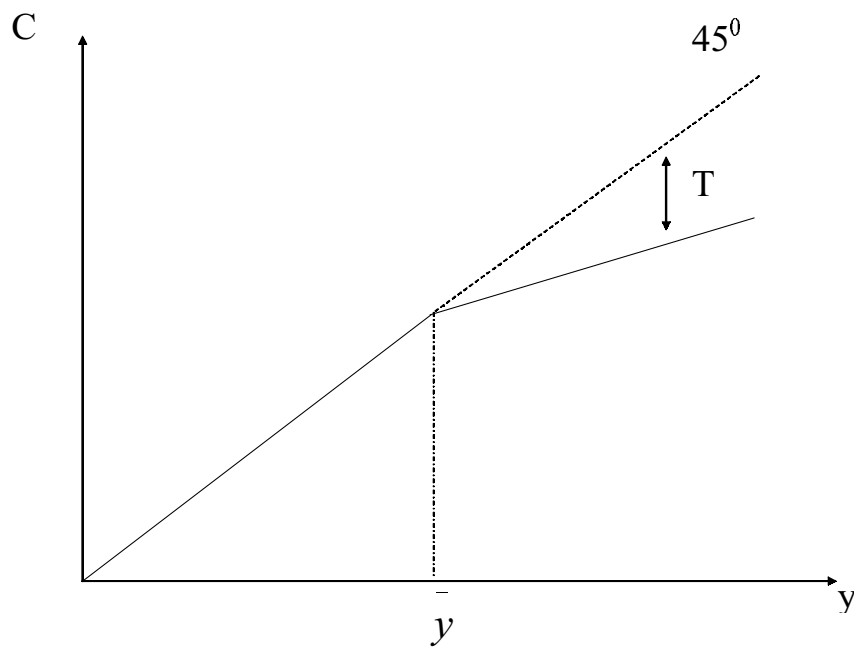
$$T = \begin{cases} 0 & \text{for } y \leq \bar{y} \\ \theta(y - \bar{y}) & \text{otherwise} \end{cases}$$



- A flat tax is progressive because of the exemption level.

- \Rightarrow The budget constraint: (from $c = y - T$):

$$c = \begin{cases} y & \text{for } y \leq \bar{y} \\ y - \theta(y - \bar{y}) = \theta\bar{y} + (1 - \theta)y & \text{otherwise} \end{cases}$$

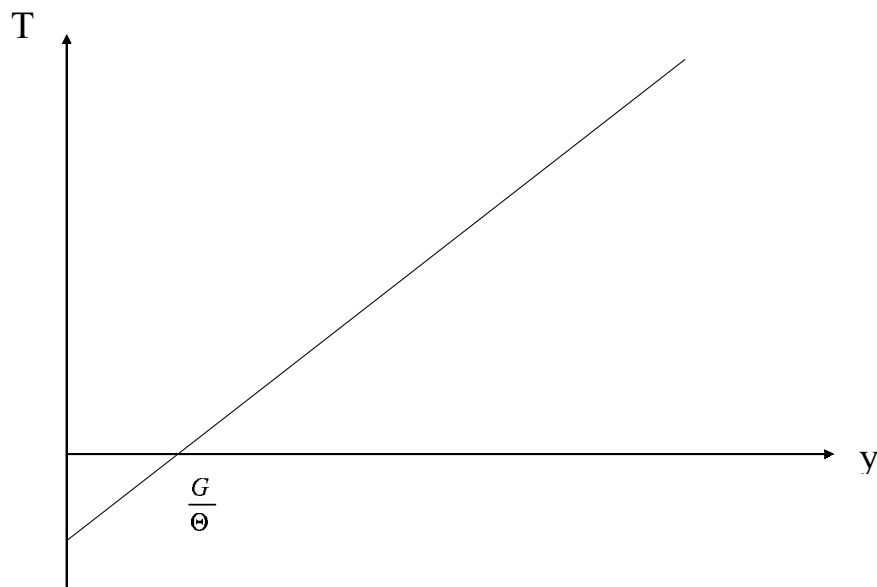


The linear income tax

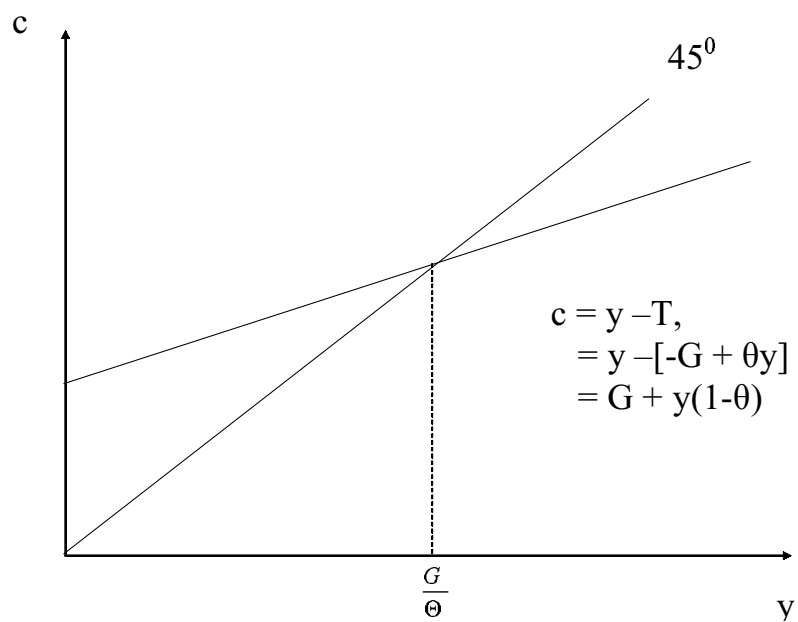
- Also called: the negative income tax.

$$T = -G + \theta y.$$

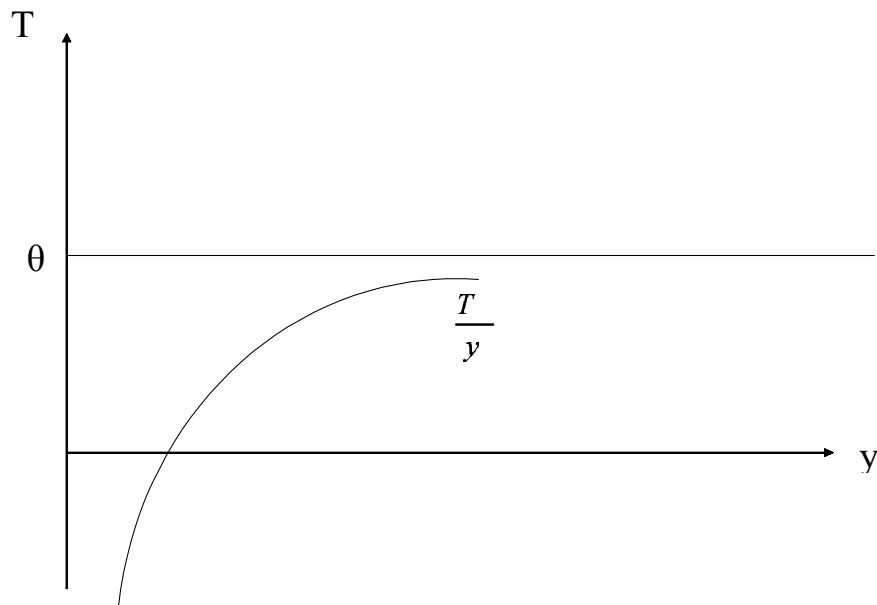
- This is a variation of the flat tax in that the tax applies to all values of y .
- The other difference is that everyone receives G .



- Note: If $y < \frac{G}{\theta}$, the net effect of the tax and rebate is a negative tax.



- Behavior of $\frac{T}{y}$ as a function of y in the case of a linear income tax when $G > 0$.



- It will be proportional if $G = 0$.
- It will be regressive if $G < 0, (-G > 0)$.

- A general formulation:

$$T = \begin{cases} s(y - \bar{y}) & \text{for } y \leq \bar{y} \\ \theta(y - \bar{y}) & \text{for } y \geq \bar{y} \end{cases}$$

- \Rightarrow

$$c = \begin{cases} y - s(y - \bar{y}) = s\bar{y} + (1 - s)y & \text{for } y \leq \bar{y} \\ y - \theta(y - \bar{y}) = \theta\bar{y} + (1 - \theta)y & \text{for } y \geq \bar{y} \end{cases}$$

Fairness

- Often people talk about being “fair” without specifying what they mean:
- Bill Clinton, in his 92 presidential campaign, talked about an “America in which the wealthiest, those making over 200,000 dollars a year, are asked to pay their fair share”.
- But one can interpret this as:
 - Higher income people should pay more taxes. If we accept this interpretation we are still left with the question of “How much?”
 - Higher income people pay more in terms of average taxes. But again “How much?”
 - Higher income people pay more in terms of marginal taxes. But again “How much?”
- William Safire, a previous columnist for New York Times, defines “tax fairness” as “the poor should pay nothing, the middlers something, and the rich the highest percentage”. So his is in terms of averages. But the question of how much still remains.

Taxation principles

- Benefit principle.
- Ability to pay principle.
- Vertical equity.
- Social welfare function: The idea is to make one's notion of vertical equity explicit introduced by Samuelson and Bergson.
- Horizontal equity.

The question of the marriage tax

- Conflicting objectives.
- Two desirable properties:
 - *Marriage neutrality*: Two persons should pay the same tax whether they remain single or get married.
 - *Equal tax treatment of singles and couples*: If a single person and a couple have the same aggregate income they should pay the same amount of tax.
- Take two persons with incomes of \$30,000 and \$50,000.
- Take the simplest progressive tax structure (the flat tax) for everyone:

$$T = \begin{cases} 0 & \text{for } y \leq \$20,000 \\ 0.2(y - 20,000) & \text{otherwise} \end{cases}$$

- Taxes paid as singles:
 - Person 1 = $.2(30,000 - 20,000) = 2,000$.
 - Person 2 = $.2(50,000 - 20,000) = 6,000$.
- Taxes paid if married:
 - The couple = $.2(80,000 - 20,000) = 12,000$.
- \Rightarrow Marriage neutrality is violated.
- A *single* person earning \$80,000:
 - The couple = $.2(80,000 - 20,000) = 12,000$.
- \Rightarrow Equal tax treatment of singles and couples holds.

- “Solution 1”: Everybody pays as a single person.
 - \Rightarrow Marriage neutrality holds.
 - \Rightarrow Equal tax treatment of singles and couples is violated (A married couple with income of \$80,000 pays \$8,000, but a single person with income of \$80,000 pays \$12,000).
- “Solution 2”: Everybody pays as a single person with no deductions
 - Sure. But not progressive.
- “Solution 3”: Different tax schedules. Increase the deduction of the married couples to \$40,000.
 - Married couple pays: $= .2(80,000 - 40,000) = 8,000$.
 - \Rightarrow Marriage neutrality holds.
 - A single person with income of \$80,000 pays: $= .2(80,000 - 20,000) = 12,000$.
 - \Rightarrow Equal tax treatment of singles and couples is violated.
- “Solution 3”: A more complicated differential tax schedules (as done in the US)?

- An impossibility theorem: A progressive tax schedule cannot satisfy both properties simultaneously.
- Denote:
 - * y = income of the “first” person.
 - * y' = income of the “second” person.
 - * $T^s(\cdot)$ = the tax schedule facing a single person.
 - * $T^m(\cdot)$ = the tax schedule facing a married couple.

- The first property implies,

$$T^m(y, y') = T^s(y) + T^s(y').$$

- The second property implies,

$$T^s(y + y') = T^m(y, y').$$

- Suppose the two properties hold simultaneously. \Rightarrow

$$T^s(y + y') = T^s(y) + T^s(y').$$

- This is not a progressive tax system.