ECON 4540/6540: Income Taxation

Elliott Isaac

Department of Economics
Tulane University

March 7, 2023

Income Taxation in the United States

Income Taxation in the United States

- Individual income taxation comprised 42% of federal revenue and 20% of state/local revenue in 2010

- U.S. income taxation is a **pay-as-you-go** system

  - Employers subtract **withholding** from gross earnings

  - **Withholding**: the subtraction of estimated taxes owed directly from workers' earnings

  - Withholding can be manually adjusted up/down

  - A common behavior is for married taxpayers to request that taxes are withheld at the higher single rate to increase the probability they will receive a refund

Income Taxation in the United States

- Filing an income tax return in April of following year is a reconciliation between what actually happened during the year and how much taxes were withheld throughout the year

  - If too much was withheld then you get a refund

  - If too little was withheld then you receive an extra tax bill

Income Taxation in the United States

- You do not pay taxes on all of your gross income
  - Some spending is **exempt** from income tax, for example:
    - Contributions to individual retirement accounts
    - Health insurance premiums paid by self-employed
    - School supplies paid for by teachers
    - Interest paid on student loans
  - You can choose either the **standard deduction** or **itemized deductions**
  - **Standard deduction**: a fixed amount that a taxpayer can deduct from taxable income (currently $13,850 for single, $27,700 for married filing jointly, $20,800 for head of household)
  - **Itemized deductions**: taxpayer deducts the total amount of money spent on various other expenses, for example:
    - Other taxes paid
    - Mortgage interest
    - Charitable donations
    - Unreimbursed employee expenses
    - Medical/dental expenses above 10% of AGI

Income Taxation in the United States

1. Gross income − Exemptions = Adjusted Gross Income (AGI)

2. AGI − Standard/Itemized Deduction = Taxable Income

3. Apply tax code to Taxable Income → Taxes Owed

4. Taxes Owed − Tax Credits = Tax Liability

5. Tax Liability − Withholding = Refund/Bill Due

Income Taxation in the United States

**Computing Jack's Income Tax**

Gross income	$60,000
−Deductions	−2,000
=Adjusted gross income (AGI)	=58,000
−Exemptions	−19,000
−Standard (or itemized) deduction	−11,900
=Taxable income	=27,100
Use income tax schedule (Figure 18-3)	
=Taxes owed	=3,195
−Credits	−3,000
=Total tax payment	=195
−Withholding	−2,000
=Final payment (refund) due	=(1,805)

FIGURE 18-3

Marginal tax rate if married, filing jointly

35%
33
28
25

15
10

$17,400 $70,700 $142,700 $217,450 $388,350
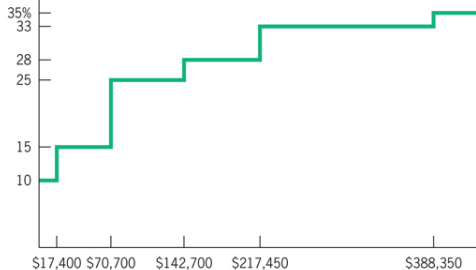
U.S. Federal Income Tax Rate Schedule, 2012 • In 2012, the tax rate on the next dollar of taxable income varied from 10% on married couples with taxable incomes below $17,400 to 35% on those with taxable incomes above $388,350.

Source: Internal Revenue Service (2012)

Income Taxation in the United States

- 10% tax rate on each dollar of taxable income below $17,400

- 15% tax rate on each dollar of taxable income between $17,401–70,700

- 25% tax rate on each dollar of taxable income between $70,701–142,700

- ... and so on

- Jack's taxes owed:
  - 10% of his first $17,400 = $1,740
  - 15% of his remaining $9,700 = $1,455
  - For a total of $3,195 before subtracting credits and withholding

Margins of Behavioral Responses to Taxation

- Adjust hours of work in response to marginal tax rates (manipulate gross income)

- Enter/leave the labor force in response to average tax rates (manipulate gross income)

Margins of Behavioral Responses to Taxation

- Adjust hours of work in response to marginal tax rates (manipulate gross income)

- Enter/leave the labor force in response to average tax rates (manipulate gross income)

- Utilize deductions (manipulate adjusted gross income or taxable income)
  - Mortgage interest deduction; alimony taxes

Margins of Behavioral Responses to Taxation

- Adjust hours of work in response to marginal tax rates (manipulate gross income)

- Enter/leave the labor force in response to average tax rates (manipulate gross income)

- Utilize deductions (manipulate adjusted gross income or taxable income)
    - Mortgage interest deduction; alimony taxes

- Utilize specific tax credits (manipulate total tax payment)
    - Child tax credit; EITC

Margins of Behavioral Responses to Taxation

- Adjust hours of work in response to marginal tax rates (manipulate gross income)

- Enter/leave the labor force in response to average tax rates (manipulate gross income)

- Utilize deductions (manipulate adjusted gross income or taxable income)
  - Mortgage interest deduction; alimony taxes

- Utilize specific tax credits (manipulate total tax payment)
  - Child tax credit; EITC

- Get married or divorced (switch tax schedules entirely)

- Not file taxes at all (noncompliance) or hide some of their income from their tax return (evasion)

Marginal and Average Tax Rates

- There are two main tax rate concepts:

  - **Marginal tax rate**: the percentage that is paid in taxes of the **next dollar earned**

  - **Average tax rate**: the percentage of total income that is paid in taxes $\left(\frac{\text{Tax liability}}{\text{Total income}} \right)$

- The earlier tax bracket figure plots **marginal** tax rates

Marginal and Average Tax Rates

- Example: Jessica has a gross income of $190,000 and a taxable income of $170,000

- Her total tax bill (using the earlier schedule) is:

$$(\$17,400 \times 0.1) + (\$53,300 \times 0.15) + (\$72,000 \times 0.25) +$$
$$(\$27,300 \times 0.28) = \$35,379$$

- Jessica's **marginal** tax rate is 28% (the percentage she will pay in taxes of the next dollar earned)

- Jessica's **average** tax rate is $\frac{\text{Tax liability}}{\text{Total income}} = \frac{\$35,379}{\$190,000} = 18.6\%$

Horizontal and Vertical Equity

Measuring the Fairness of Tax Systems

- There are two common goals often considered when measuring tax fairness:

    - **Vertical equity**: the principle that groups with more resources should pay higher taxes than groups with fewer resources

    - **Horizontal equity**: the principle that similar individuals who make different economic choices should be treated similarly by the tax system

Vertical vs Horizontal Equity

- *Vertical equity*: the principle that groups with more resources should pay higher taxes than groups with fewer resources

- Most analysts conclude that progressive tax systems are vertically equitable

- **Progressive tax system**: a tax system in which the effective average tax rate $\left(\frac{\text{Tax liability}}{\text{Total income}} \right)$ increases as income increases

- Other tax systems could be:
  - **Proportional**: a tax system in which the effective average tax rate does not change with income (all taxpayers pay the same proportion of their income in taxes)

  - **Regressive**: a tax system in which the effective average tax rate decreases as income increases

Vertical vs Horizontal Equity

- Example: Horizontal equity
  - Jane and Fay are identical twins, took all the same classes/extracurriculars as children, scored identically on every test they've ever taken, both went to Tulane and studied economics

  - Both were offered identical jobs with the same pay and work schedule

  - Fay turned it down in favor of a less stressful, lower paying job

  - Who should have a higher tax burden?

Vertical vs Horizontal Equity

- Example: Horizontal equity
    - Jane and Fay are identical twins, took all the same classes/extracurriculars as children, scored identically on every test they've ever taken, both went to Tulane and studied economics

    - Both were offered identical jobs with the same pay and work schedule

    - Fay turned it down in favor of a less stressful, lower paying job

    - Who should have a higher tax burden?

- Fay chose a job with higher utility and lower earnings, and we respond by taxing her less

- Is that fair?

Vertical vs Horizontal Equity

- Example: Horizontal equity
  - Jane and Fay are identical twins, took all the same classes/extracurriculars as children, scored identically on every test they've ever taken, both went to Tulane and studied economics

  - Both were offered identical jobs with the same pay and work schedule

  - Fay turned it down in favor of a less stressful, lower paying job

  - Who should have a higher tax burden?

- Fay chose a job with higher utility and lower earnings, and we respond by taxing her less

- Is that fair?

- Should we redistribute resources or utility?

Vertical vs Horizontal Equity

- Joe makes $100,000, but donates 50% to charity

    - Should he be taxed the same amount as someone who makes $50,000 and donates nothing to charity?

- Jane makes $100,000 off of interest from stocks and does not work

    - Should she be taxed the same amount as someone who makes $100,000 from labor?

Budget Constraints with Labor Supply

Budget Constraints

- Consider an individual with limited time of $T = 2000$ hours, who likes leisure (L) and consumption (C)

- In order to pay for consumption (1 unit = \$1), the individual must work for wage w

- Time spent working is labor: $2000 - L$

- Explicit trade-off between leisure and consumption because they must work in order to consume, which takes away from leisure
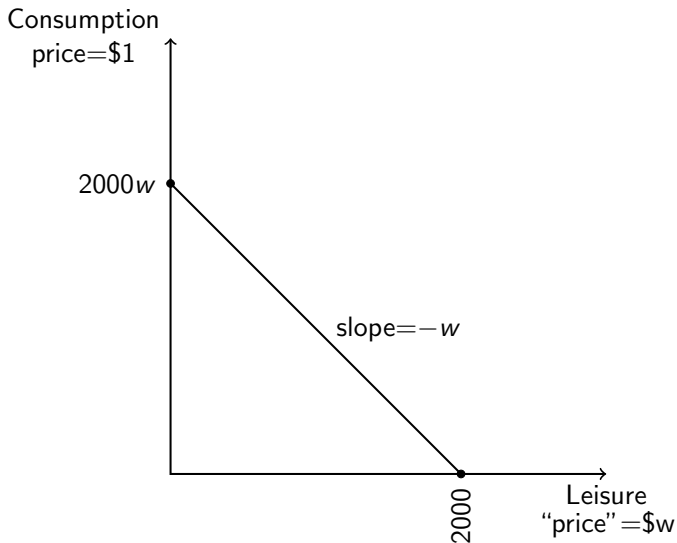
Budget Constraints: Graph
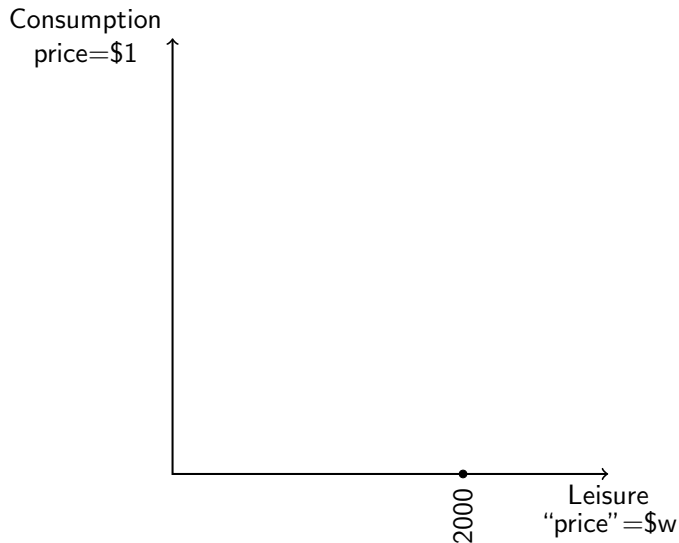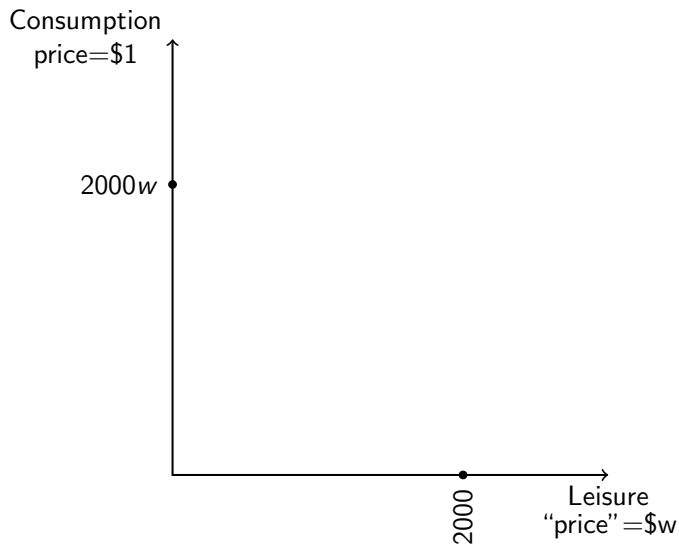
Consumption
price=$1

Leisure
"price"=$w

Consumption
price=$1

2000

Leisure
"price"=$w

Budget Constraints: Algebra

- A budget constraint equation tells us how much consumption an individual can purchase as a function of how many hours they work

- Equivalent ways to write the budget constraint:

  - $C = (2000 - L)w$

  - $C = 2000w - wL$

  - $\underbrace{2000w}_{\text{Max. Income}} = \underbrace{C}_{\substack{\$ \text{ spent} \\ \text{on C}}} + \underbrace{wL}_{\substack{\$ \text{ spent} \\ \text{on L}}}$

- Y-intercept when $L = 0$: $C = 2000w$

- X-intercept when $C = 0$: $L = 2000$

- Slope is constant (straight line): slope $= -w$

Budget Constraints: Algebra

- A budget constraint equation tells us how much consumption an individual can purchase as a function of how many hours they work

- Equivalent ways to write the budget constraint:

  - $C = (2000 - L)w$

  - $C = 2000w - wL$

  - $\underbrace{2000w}_{\text{Max. Income}} = \underbrace{C}_{\substack{\$ \text{ spent} \\ \text{on C}}} + \underbrace{wL}_{\substack{\$ \text{ spent} \\ \text{on L}}}$

- Y-intercept when $L = 0$: $C = 2000w$

- X-intercept when $C = 0$: $L = 2000$

- Slope is constant (straight line): slope $= -w$

- Since we assume consumption costs \$1 per unit, we can also think of consumption as after-tax income

- Denote consumption as C, hours worked is L, wage rate is w:

$$C = (2000 - L)w$$
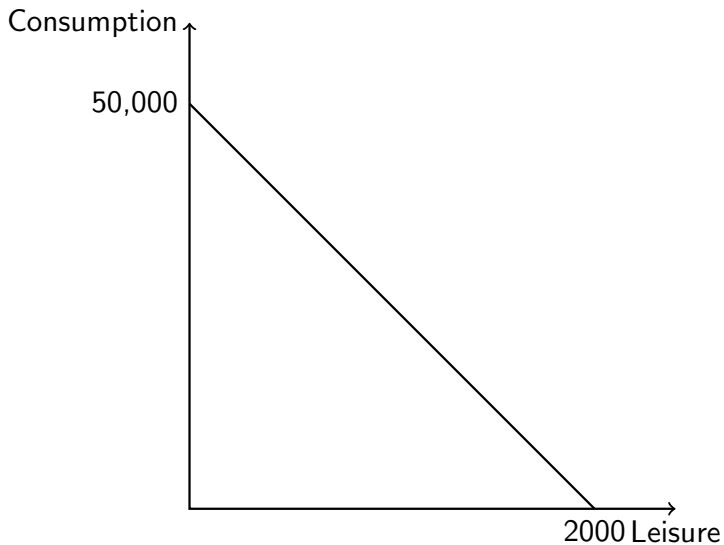
- Denote τ as a constant tax rate on all income:

$$C = (2000 - L)w(1 - \tau)$$

- Suppose no tax on income below \$10,000 and tax rate of τ on income above \$10,000:
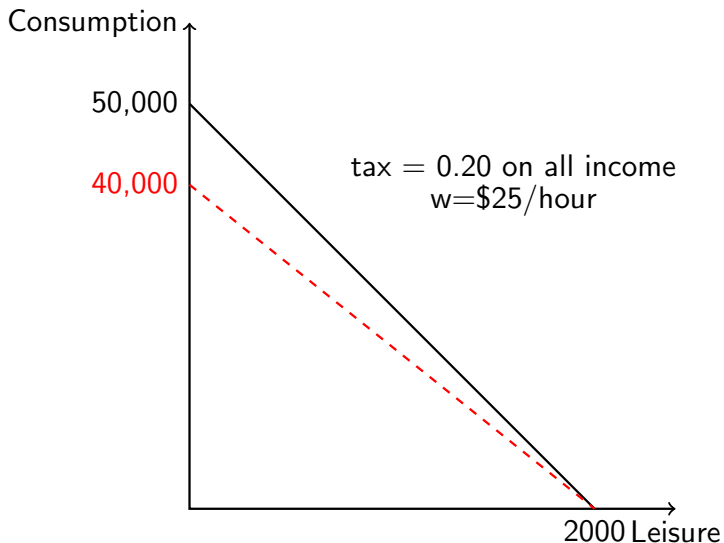
If $(2000 - L)w \leq 10,000$: $C = (2000 - L)w$

If $(2000 - L)w > 10,000$: $C = [(2000 - L)w - 10,000](1 - \tau) + 10,000$
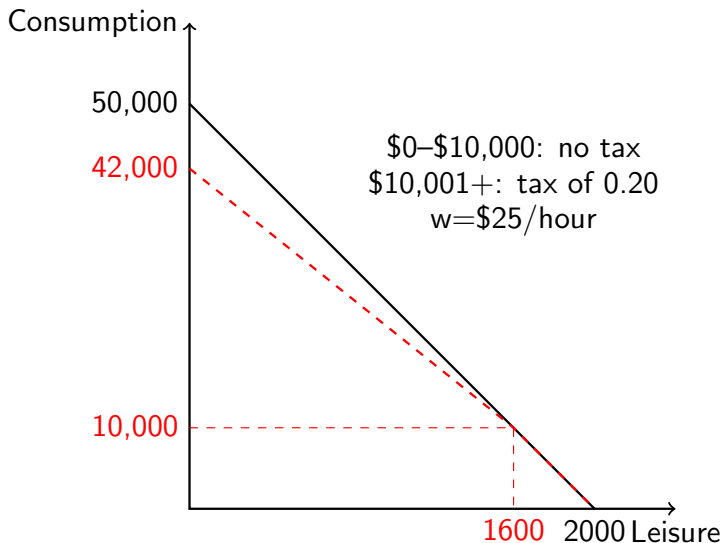
Budget Constraints: Taxes
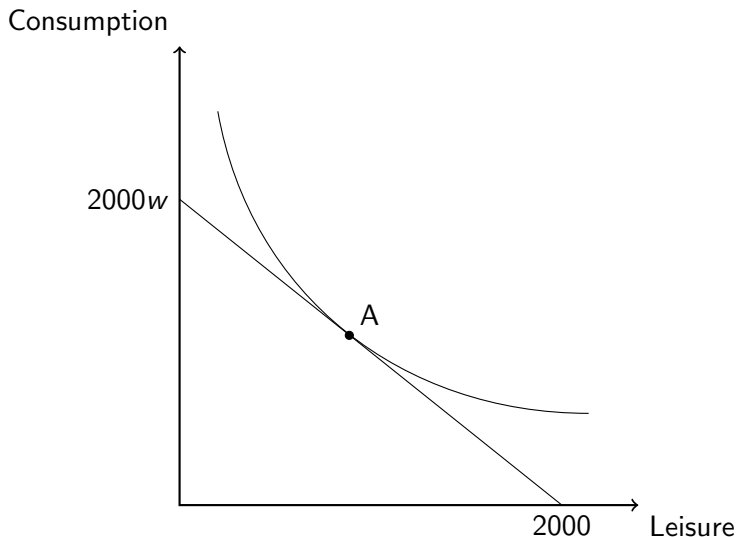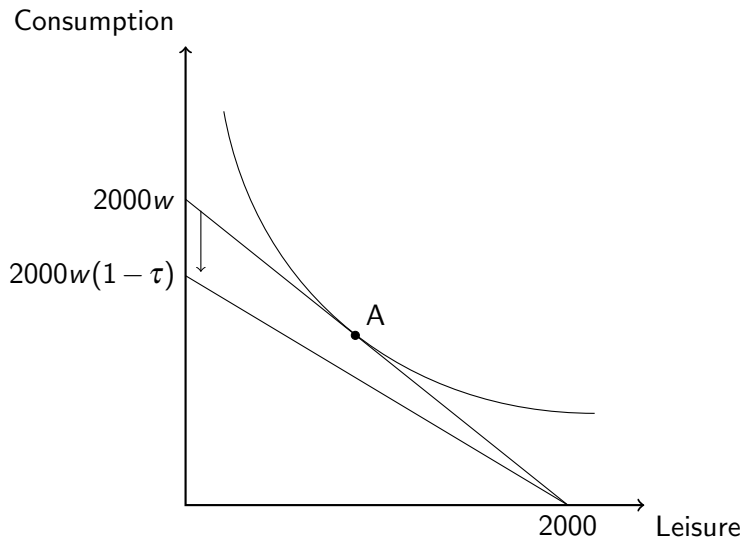
Budget Constraints: Taxes

Budget Constraints: Taxes

Worksheet: Income Taxation 1

Income and Substitution Effects

Consumption

$2000w$

A

2000

Leisure

Income and Substitution Effects

Consumption

$2000w$

$2000w(1-\tau)$
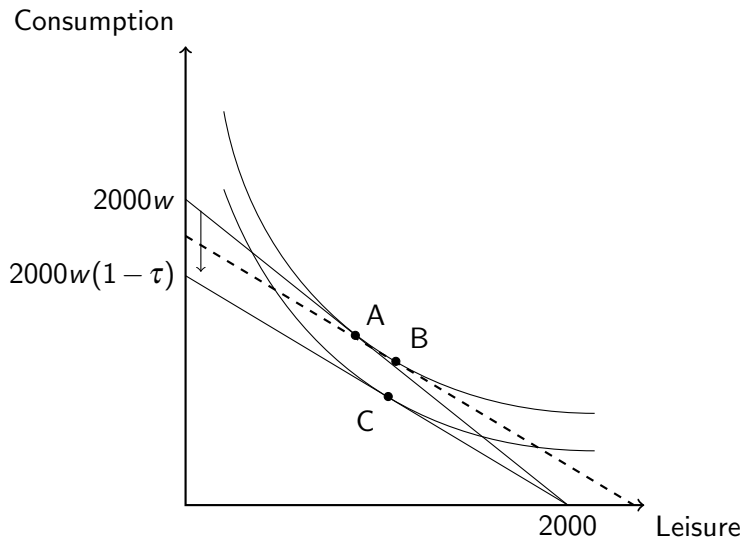
A

2000

Leisure

Consumption

$2000w$

$2000w(1-\tau)$

A

C

2000
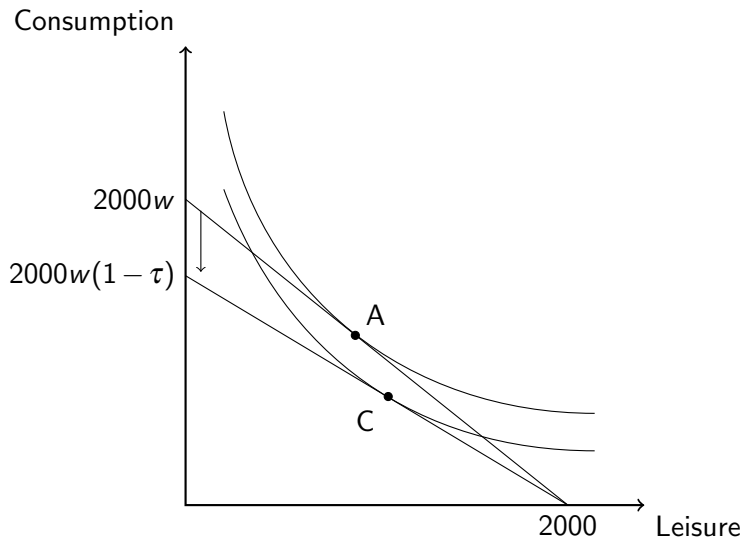
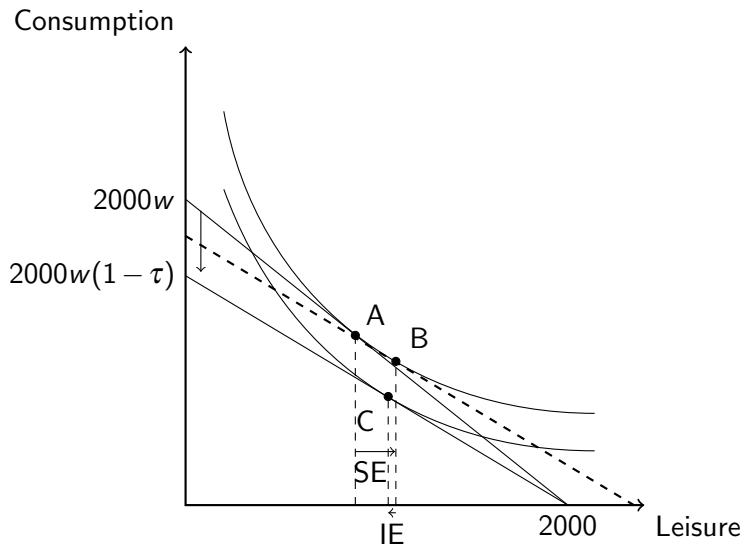Leisure

Income and Substitution Effects

Income and Substitution Effects

Income and Substitution Effects

- **Substitution effect**: if my marginal tax rate increases then working an additional hour is not as worthwhile to me, so I take more leisure (i.e., work less)

- **Income effect**: if my marginal tax rate increases then I need to work more to earn the same as I did before, so I take less leisure (i.e., work more)

- Theory will not tell us whether the substitution or income effect is larger

- Without data, we cannot tell for sure whether overall labor supply with increase or decrease following a tax change

Income and Substitution Effects

- In preceding graph, substitution effect was larger, so labor supply decreased overall following an increase in tax rates

- If substitution effect is larger then labor supply curve is upward sloping (like normal)

- If income effect is larger then labor supply curve is downward sloping (strange)

- Empirical evidence sometimes points to a "backward bending" labor supply function

Market Labor Supply

Wage rate

Labor Supply

Income effect
dominates

Substitution effect
dominates
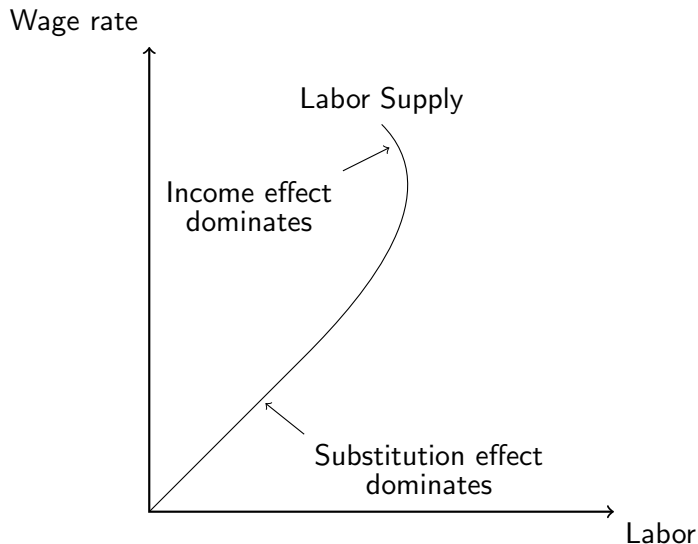
Labor

Worksheet: Income Taxation 2

Refresher: Labor Supply Theory

- Labor supply theory often assumes that individuals choose hours of work freely

  - Constraints like contracted hours or overtime pay rules will not allow workers to adjust their hours freely in response to wage or tax changes

  - Researchers only sometimes take these things into account, and they often do so when it is convenient to them

Simplifying Assumptions

- Married couples may also choose both of their labor supplies together

  - Primary vs. secondary earner status may be a couple's decision

  - Researchers often assume that husbands are primary earners, and wives are secondary earners

  - Most research also assumes that primary earners work no matter what, and secondary earners choose whether to work at all

- These types of restrictions are often assumed for convenience, but may not represent reality

Worksheet: Income Taxation 3

Unit of Taxation

Unit of Taxation

- In the US, the unit of taxation is the family (joint taxation) instead of the individual (individual taxation)

- Thus, two married, filing jointly families with equal incomes are taxed the same

- And two single filers with equal incomes are taxed the same (1 person families)

- But changing from a 1 to 2 person family has tax implications

    - The married, filing jointly tax schedule is different than the single filer tax schedule

Unit of Taxation

- Example

  - Simple progressive tax system with the family as the unit of taxation:

    - 10% up to $20,000

    - 20% between $20,001 and $80,000

    - 30% above $80,001

### ■ TABLE 18–3

The Impact of Marriage on Tax Liabilities

|	Individual Income	Individual Tax	Family Tax with Individual Filing	Total Family Income	Family Tax with Total Family Income
Michelle	$140,000	$32,000	$33,000	$150,000	$35,000
Barack	10,000	1,000			
Bill	75,000	13,000	26,000	150,000	35,000
Hillary	75,000	13,000			

- Michelle and Barack pay a marriage tax of $2,000

- Bill and Hillary pay a marriage tax of $9,000

Unit of Taxation

- Michelle and Barack pay a marriage tax of $2,000

- Bill and Hillary pay a marriage tax of $9,000

- In general, families with equal earners face larger marriage taxes

- In general, families with unequal earners (or 1 earner) face smaller marriage taxes (or even a subsidy)
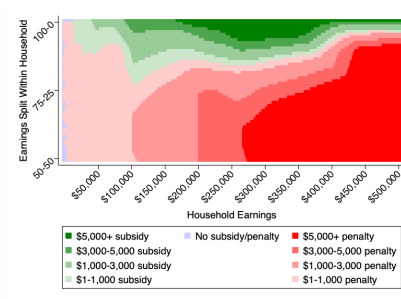
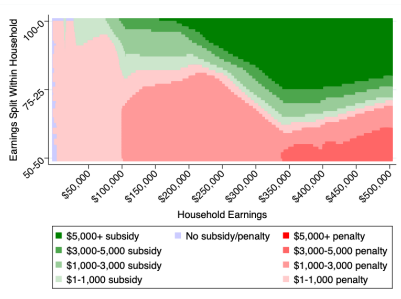# Marriage Penalty (Childless Couples)
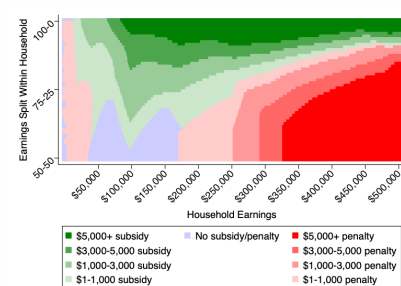
*figure 2017, Childless Couple
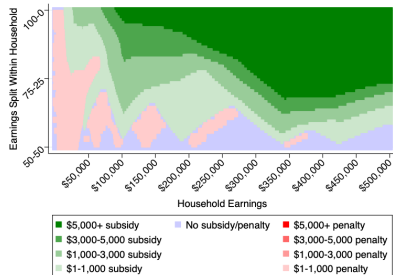
*figure2018, Childless Couple (Post TCJA)

*figure 2017, 1 Child

*figure 2018, 1 Child (Post TCJA)

Unit of Taxation

- From Gruber: "Most research on this topic suggests that taxes exert little effect on the decision to get married."

Unit of Taxation

- From Gruber: "Most research on this topic suggests that taxes exert little effect on the decision to get married."

- This is true, the effects researchers (including myself) have found are generally small, but present

- But this is not the whole story

- Due to categorical and means-tested welfare requirements, marital status also affects welfare receipt
  - One of the main correlates of traditional welfare (TANF): single motherhood
  - If a single mother marries she likely loses all TANF benefits
  - This adds to the marriage penalty

Unit of Taxation

- Taxes affect your hours decision (i.e., conditional on working at all, how much do you work?)

- Taxes also affect your participation decision (i.e., should I work at all?)

- Marriage changes the marginal tax rate of secondary earners

- Marriage changes the total tax liability that a couple owes

- Marriage creates very strong incentives for secondary earners to stop working

Empirical Evidence: Unit of Taxation

- What have researchers found?

  1. Primary earners generally always work and are not very responsive to tax changes

  2. Secondary earners generally decide whether to work or not (instead of choosing hours), and are more responsive to tax changes

  3. Women's responsiveness to tax changes has decreased over the last 50 years, and looks more like men's responsiveness now (Blau and Kahn, 2007)

  4. Joint taxation creates more deadweight loss and generates less tax revenue than individual taxation (Isaac, 2020)

     - Mostly driven by secondary earners leaving the labor market due to work disincentives from joint taxation

  5. Joint taxation today and recent tax changes generally encourage marriage for high-earners (Friedberg and Isaac, 2020)

Worksheet: Income Taxation 4