Chapter 13

INCOME TAXES

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Outline: Chapter 13 INCOME TAXES

1. Comprehensive Income: The Haig-Simons Definition
2. A General Tax on Comprehensive Income: Economic Effects of a Flat-Rate Income Tax
3. Labor Market Analysis of Income Taxation
4. Taxation of Interest Income and Its Effect on Saving
5. Market Analysis of Taxation on Interest and Investment Income

Income Tax

- Taxes on personal income represent the dominant source of revenue for federal government in the U.S.
  - Accounted for 44% of federal income in 2006
  - Also used by state governments
- Before 1913, major source of revenue for federal government was customs duty, or tariffs.
- A 1913 constitutional amendment empowered Congress to levy taxes on personal and business incomes.
- Chapter discussion assumes that all income, regardless of its source or use, is taxed at the same rate.

Comprehensive Income

- *Comprehensive income* is the sum of a person's annual consumption expenditures and the increment in that person's net worth in a given year:
  - $I = C + \Delta NW$
  - Concept also called the Haig-Simons definition of income
- ***Net worth*** is the value of a person's assets held at any point in time less the value of a person's liabilities, or debts.
  - ***Capital gains*** are increases in the value of assets over the accounting period.

Sources of Personal Income

TABLE 13.1 An Income Statement

SOURCES	USES
Earnings from Sale of Productive Services	Consumption
Transfer Payments Received	Taxes, Donations, and Gifts
Capital Gains (or Losses)	Savings (Increases in Net Worth)

Source	=	Uses
Earnings +		Consumption +
Transfer Payments	=	Taxes, Gifts, and Donations
+ Capital Gains		+ Savings

Sources and Uses of Income

$$\text{Sources} = \text{Earnings} + \text{Transfers} + \text{Net Capital Gains} - \text{Cost of Acquiring Income},$$

$$\text{Uses} = \text{Consumption} + \text{Gifts and Donations} + \text{Savings} - \text{Cost of Acquiring Income}.$$

- Net capital gains are capital gains minus capital losses
- Sources are always equal to uses

Income-in-Kind

- Income-in-kind – Income in the form of goods and services rather than cash payments
  - Home production of goods and services
  - Occupations allowing workers flexible hours and freedom from pressures

- Serious problem involved in administering income tax is treatment of nonmonetary transactions
  - Taxation of all types of income-in-kind infeasible
  - Some easy to tax, such as fringe benefits provided by employers (medical and life insurance, vehicles, etc.)

1. Mary has earnings of $50,000 this year. She also has been fortunate because the market value of the condominium she purchased this year for $100,000 has increased by 5 percent. Assuming that the rate of inflation is 3 percent, and that Mary has neither capital losses nor other
(1) earnings, and receives no transfers, calculate Mary's comprehensive income. If she were subject to a comprehensive income tax at a 20
(2) percent flat rate, what would her tax liability be for the year?

(1) **1.** Mary has a real unrealized capital gain of $2,000. Her comprehensive income is therefore $52,000.

(2) Under a 20-percent, flat-rate tax, her tax liability would be $10,400 for the year.

7. PROBLEM: Back in 1979, Alex bought an old house in a rundown neighborhood. That year, Alex paid $125,000, the equivalent of $300,000 in today's dollars, to purchase the house and complete renovations. Today, Alex's neighborhood has been gentrified by well to do professionals. A realtor recently offered Alex $2 million for his home. Alex responded, "thank you, but my house is not for sale." Alex is very content where he is. How do existing state, local and federal tax laws treat Alex's current housing situation? (1)
Alternatively, how would Haig and Simons want Alex to be taxed? How do Haig and Simons justify their alternate methods to tax Alex? (2)

ANSWER:

(1) Alex is liable to face a fairly large tax on the capital gain from selling his house which may convince him to not sell it and bequest it to an heir.

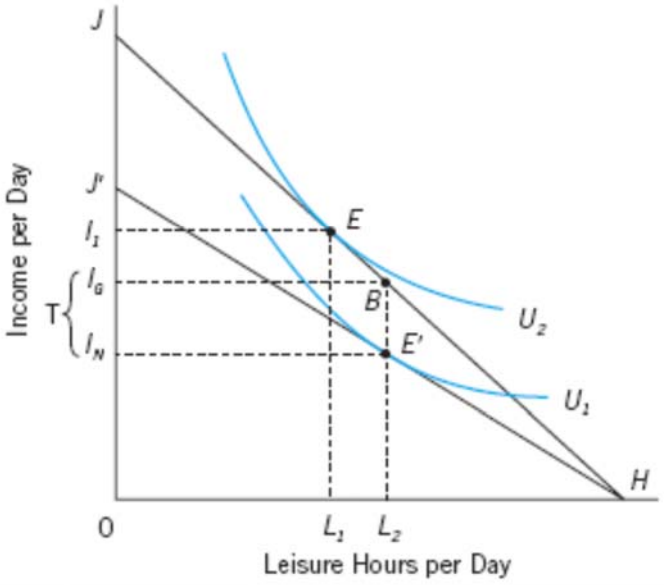
(2) Under the Haig-Simons definition of income, Alex's tax would be based on the initial value of the house being $300,000 rather than $125,000 because under the Haig-Simons definition, values are inflation adjusted.

Flat-Rate Income Tax

- Reformers suggest that U.S. tax system would be more efficient with a flat-rate income tax.
  - No loss in efficiency will occur in how people spend money or earn it
  - The tax, however, is likely to distort choices made concerning allocation between work and leisure and between consumption and saving or productive investment.

Flat-Rate Income Tax

.1 Impact of a Flat-Rate Income Tax on the Work-Leisure Choice



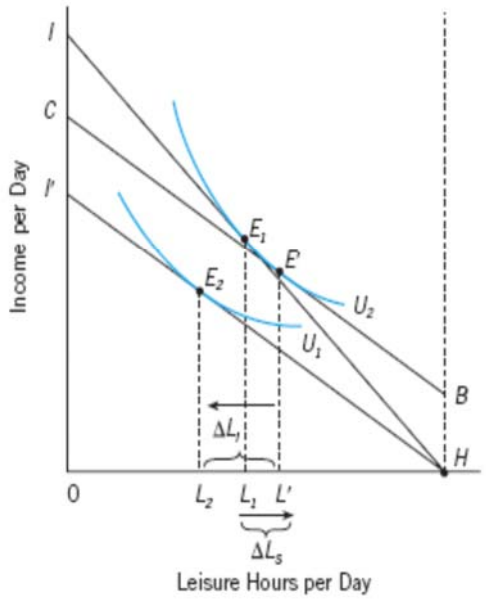
- The income tax reduces the slope of the worker's wage line.
- As a result, the worker moves from point *E* to point *E'*. In this case, leisure per day increases.
- The tax results in a decrease in hours worked per day on average over the year.

Income and Substitution Effects

- Impact of tax on work effort depends on income and substitution effects of tax-induced reduction in wages.
- Tax lowers implicit price of leisure by reducing the return from work effort.
  - *Substitution effect*: Income tax results in a substitution effect that is unfavorable to work effort; therefore tends to increase consumption of leisure.
  - *Income effect*, however, provides an incentive to increase work effort when leisure is a normal good; individual tends to work harder to maintain previous (before tax) income.

Income and Substitution Effects

13.2 Income and Substitution Effects of a Tax-Induced Wage Decline



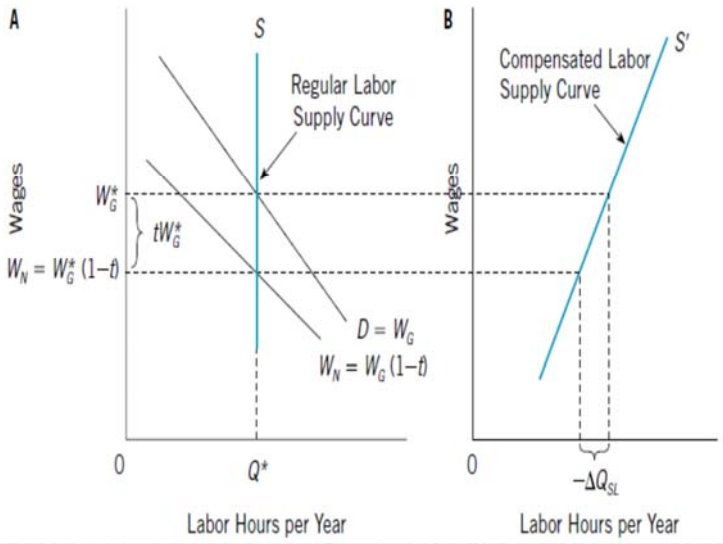
- The substitution effect is separated from the income effect by ***giving the worker a compensating variation in income*** equal to an average of BH dollars per day over the year.
- In this case, the income tax results in an increase in work effort because the income effect, ΔL_I, outweighs the substitution effect, ΔLS.

Perfectly Inelastic Labor Supply

- Tax-induced distortion in work-leisure choice used to measure excess burden of tax *must be based only on change in work hours due to substitution effect* caused by tax
  - Labor supply response must be adjusted to remove income effect of tax-induced wage change
  - Curve showing how hours worked per day vary with wages when income effect of wage changes is removed is a *compensated labor supply curve*

Perfectly Inelastic Labor Supply

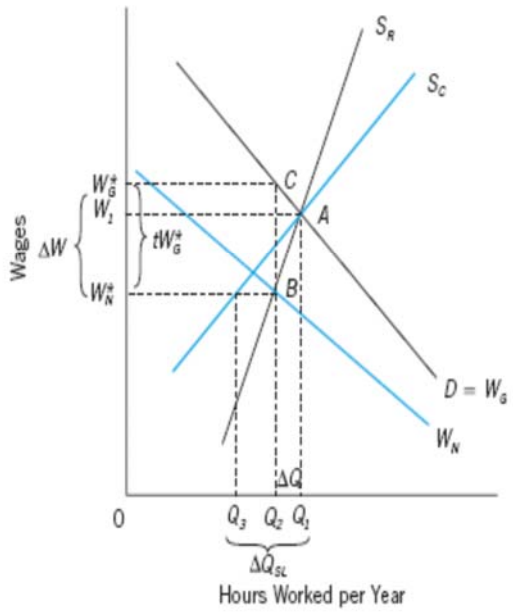
FIGURE 13.3
Impact of an Income Tax on Labor Markets and Efficiency when the Market Supply of Labor Is Perfectly Inelastic



- An income tax on labor reduces wages by the full amount of the tax per hour when the supply of labor is perfectly inelastic, as shown in A.
- However, the excess burden of the tax is not zero because the substitution effect of the tax reduces labor hours supplied per year.
- If a lump sum were used, workers would work more hours per year. B shows that the compensated labor supply curve is upward sloping.

Elasticity of Supply of Labor Exceeding Zero

13.4
Effect of Income Taxes on Labor Markets when the Supply of Labor Is Responsive



- If the supply curve of labor is not perfectly inelastic, a tax on labor income increases market wages and decreases the quantity of labor hours supplied per year.
- If a regular supply curve, S_R, is used to estimate the excess burden of the tax, the burden will be underestimated.
- The compensated supply curve, S_C, must be used to estimate the **substitution effect** of the tax, ΔQ_{SL}.

Empirical Evidence on Labor Supply

- For males between ages of 25 and 55, income effect of wage changes roughly equal to substitution effect.
  - May be that substitution effect of wage reductions caused by income tax is large, but offset by equally large income effect
  - Studies conclude that income taxes have little effect on labor supply decisions of workers who provide main source of income to household but have much greater effect on labor supply of other household members.

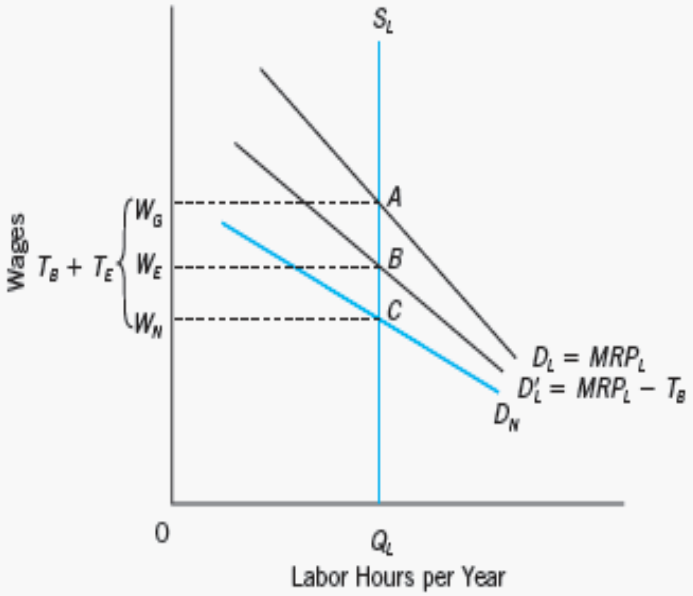
Payroll Tax / SS contribution

SSF (Social Security Funds), seven types of coverages, and contribution rates.

Conditions	Government	Employers (TB)	Employees (TE)
1. Sickness	Every party made a contribution of 1.5% of wage.		
2. Maternity			
3. Disability			
4. Death			
5. Child allowance	1% of wage	3% of wage	3% of wage
6. Old-age			
7. Unemployment	0.25% of wage	0.5% of wage	0.5% of wage

Note: Base wage used in calculation range from 1,650 to 15,000 baht per month.

The Payroll Tax



Payroll Tax

- If the supply of labor is perfectly inelastic, a payroll tax collected from both employers and employees would be fully borne by workers, as the hourly wage falls by the full amount of the tax per labor hour.

4. Suppose leisure is an inferior good for a worker. Set up this worker's indifference curves for money income and leisure, and derive the income and substitution effects of a tax-induced wage decline. Derive the compensated labor supply curve for this worker, and explain how it differs from the compensated supply curve of a worker for whom leisure is a normal good.

Ans.

If leisure were an inferior good, both the income and substitution effects of a tax-induced wage decline would be unfavorable to work effort. The compensated labor supply curve would be steeper than the regular labor supply curve.

5. Empirical studies show that the market labor supply of prime-age males (between the ages of 25 and 55) in the United States is close to perfectly inelastic with respect to the labor compensation. If this is the case, explain why it does not imply that the excess burden of a tax on the labor income of prime-age males is necessarily zero. What does a perfectly inelastic market labor supply imply about the incidence of taxes on labor income? Why is there reason to believe that the overall market labor supply is not perfectly elastic when groups other than prime-age males are considered? What possible problems exist in empirical studies of the response to taxes on labor income that might make it difficult to estimate actual labor market responses?

1 **5.** The excess burden is not zero because a perfectly inelastic market labor supply means that the income effect is offset by an equal and opposite substitution effect. The existence of a substitution effect means that there is a positive excess burden.

2 A perfectly inelastic market labor supply implies that the incidence of the tax is borne entirely by the workers, market equilibrium wages do not rise in response to the tax, and none of the tax is shifted to the employers.

3 Overall market labor supply includes responses of many demographic groups. Spouses and the elderly often have more elastic labor supply than prime-age males.

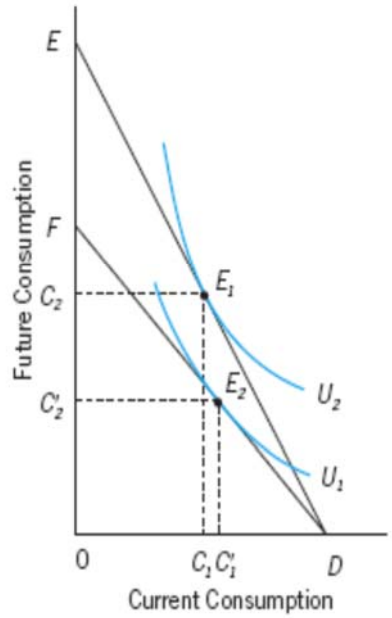
4 Factors that might affect labor supply that are difficult to measure include early retirement, absenteeism, reduced intensity of work, unwillingness to invest in more training, and choice of occupation.

Taxation of Interest Income

- Taxation of interest income lowers return to saving but can either increase or decrease actual amount of saving observed.
  - Indifference curve analysis can be used to analyze one's choice between consumption and saving.
  - *Marginal rate of time preference (MRTP)* is the slope of an indifference curve for present and future consumption multiplied by –1.

Taxation of Interest Income

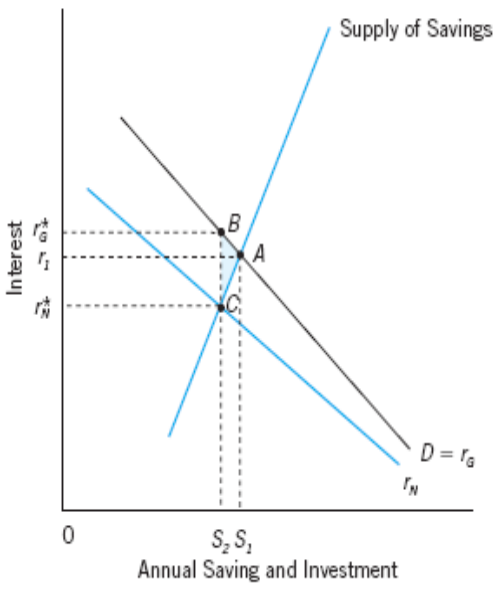
13.5 Income Taxation and Intertemporal Choice



- The income tax reduces the net interest earned by savers. This shifts the intertemporal budget line downward from *ED* to *FD*.
- In this case, the substitution effect of the tax-induced decline in net interest received increases current consumption out of income and therefore reduces savings.

Savings and Taxation of Interest Income

13.6 Impact of an Income Tax on Investment Markets and Saving



- An income tax reduces annual saving and investment when the supply of saving is responsive to changes in net interest.
- If income effects of tax-induced interest charges are negligible, the area *ABC* can be used to approximate the excess burden of the tax.

Incidence of Taxes on Interest Income

- If annual amount of saving is responsive to tax-induced declines in net interest payments, tax can be shifted from savers to borrowers through increase in market rate of interest

- Effects:
- Higher interest offsets some tax burden on savers, but increases production costs, resulting in tax being shifted to consumers in form of higher prices
- Decreased investment results in slower growth of nation's capital stock
- Lower ratio of capital to labor decreases labor productivity, implying that, in competitive labor markets, wages would be lower than if there were no tax on interest income

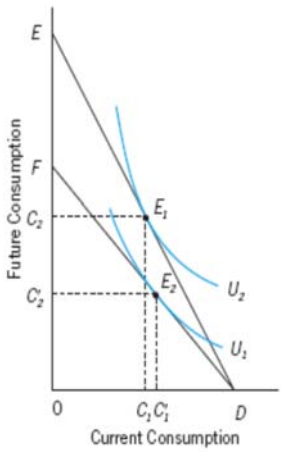
6. PROBLEM: Tax breaks for retirement savings are intended to encourage more retirement savings. Use a diagram similar to figure 13.5 to show the savings effects on a current worker when tax breaks raise the real rate of return on retirement savings. In this case, also make the worker's income effect **stronger than** his substitution effect. Draw the budget line shift, and show the change in this worker's new savings choice.

ANSWER: Draw Figure 13.5, but re-label it in the following manner: U_1 becomes U_2 (and vice versa), C_1 becomes C'_1 (and vice versa), and C_2 becomes C'_2.

Line FD is the initial line and line ED becomes the new line after the tax break.

What is different from the textbook example is instead of interest being devalued by r(1 – t) creating a substitution effect, interest gets scaled up by r / (1 – t) creating a dominant income effect that decrease saving.

13.5 Income Taxation and Intertemporal Choice



3. Suppose the current market rate of interest is 8 percent. John is subject to a 31 percent marginal tax rate on his
1 interest income. What is John's equilibrium marginal rate of time preference? Suppose the marginal tax rate John is subject to decreases to 20 percent. Can you predict the
2 effect of the decrease in marginal tax rates on John's current saving?

1 **3.** The marginal rate of time preference in equilibrium is
8% (1 – .31) = 5.52%

A decrease in the marginal tax rate will increase the equilibrium marginal rate of time preference to 8%(1 – .2) = 6.4%

2 John will increase the amount of current income saved as future consumption is substituted for current consumption if the substitution effect outweighs the income tax.

2. An estimate of the efficiency-loss ratio of taxes on labor income is 15 percent. The efficiency-loss ratio of taxes on capital income is estimated to be 45 percent. Assuming that these estimates are accurate, calculate the change in well-being that would result from a $10 billion reduction in taxes on capital income, accompanied by a $10 billion increase in taxes on labor income

2. A $10 billion reduction in taxes on capital income will reduce the excess burden by $4.5 billion. A $10 billion increase in taxes in labor income will result in a new added excess burden of $1.5 billion. There will be a net increase in well-being of $3 billion as a result of the change.

RECAP: Chapter 12 INCOME TAXES

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