LECTURE 11
THE PERSONAL INCOME TAX

I. MOTIVATIONS AND BASIC STRUCTURE OF THE TAX SYSTEM
-Figuring out how much you owe in taxes; 3 steps

II. DEFINING INCOME
Examples

III. EXCLUDABLE FORMS OF INCOME
A. Interest on State and Local Bonds
Example 1, interest on state and local bonds

B. Capital Gains Before Recent Legislation
C. Capital Gains After Recent Legislation
D. Employer Contributions to Benefit Plans
E. Some Employee Saving for Retirement
1. Traditional IRA
-2 benefits and 1 cost
F. Changes to IRA's
G. Do IRA's increase savings?

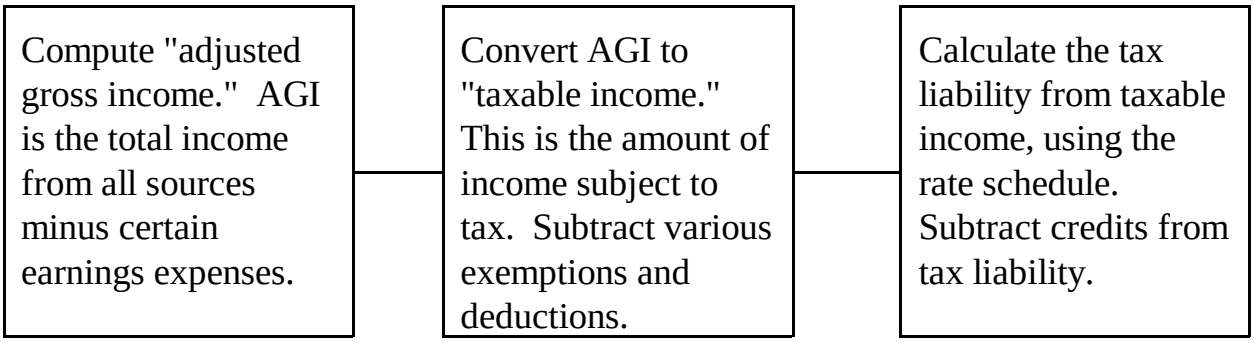
IV. EXEMPTIONS, DEDUCTIONS AND CREDITS
Tax Liability=t*(AGI-Deduction-Exemptions)

You may want to review the following problems:
Finals
Winter 1996, Question 2
Spring 1996, Question 7
Fall 1997, Question 4

I. Motivations and Basic Structure of the Tax System

The goal of this lecture is to give you an idea what principles underlie a good tax system, and compare those principles to what our tax system actually looks like. Although the U.S. tax code is far from ideal, there are inherent ambiguities in defining "income."

The basics: Your household files an annual tax return (due by April 15 of the next calendar year). Figuring out how much you owe in taxes falls into three steps:



We will define these terms more precisely in Sections III and IV.

Please note the following when reading these notes and studying for the exam:

1. Some of the numbers are outdated. These numbers usually refer to the 1994 tax year. In some places where the tax law has recently changed (for example, regarding capital gains taxes and individual retirement accounts), the discussion in the notes will differ from the textbook.

2. There is a lot of institutional detail in the U.S. tax code. For the exam, you are only responsible for understanding the concepts and numbers discussed in lecture.

II. Defining Income

A. Definition

How should "income" be defined? Public finance economists use their own standard, an "ideal" definition:

> Haig-Simons (H-S) definition of income: Income is the money value of the net increase in the individual's power to consume during a period.

This definition implies that both actual consumption and additions to wealth are increases in income (for example, if the stock market increased your wealth by $5,000, it should be counted as income regardless of whether or not you sell your stocks).

B. Items that should be included in the H-S definition, but not always counted as income in the tax code:

Examples --

- Employer contributions to retirement plans -- even though not directly given to recipient.
- Employer contributions to the employee's insurance plans -- health, disability, legal, dental.
- Transfer payments like Social Security.
- Capital gains -- increases in an asset's value are "capital gains," and decreases are "capital losses." In the tax code, you only pay taxes on capital gains when you sell the asset (meaning that the capital gain is <u>realized</u>). You do not pay taxes if it is unrealized.
- In-kind income -- one prominent example is owner-occupied housing. A landlord rents out a home, collects rent, and pays taxes. A homeowner receives value from his home even though he does not rent it out, and does not pay taxes on this imputed rent. The H-S definition requires that the homeowner pay taxes equal to rental payments he would have received if he had rented out home, rather than consuming housing.

C. Some Obvious Difficulties with the H-S Definition and Previous Examples

- Unrealized capital gains are hard to measure for some assets, like a house or piece of art. In addition, it may be difficult for the person to pay the tax bill unless he sells the asset.

- Some durable goods, like housing or cars, give "imputed income" for many periods. How does the person depreciate the asset?

- In-kind services (like housework) are clearly valuable, but are hard to monitor and somewhat difficult to value.

- The definition implies only net-of-business expenses should be counted as income, but it is hard to distinguish an expense that also gives personal value. For example, what fraction of business lunch should be counted as income?

III. Excludable Forms of Income

You do not pay taxes on every form of income received. Some prominent examples include income from government bonds, capital gains, and certain job benefits.

A. Interest on State and Local Bonds

- Unlike the interest from your Bank of America checking account, income from state and local bonds is not subject to federal tax. If investors do not have to pay federal tax on interest received from state and local bonds, they should be willing to accept lower rate of return. The exclusion of this income from the tax bill encourages investment in state and local governments.

Assume a person faces a tax rate (J) of 31%, and the rate of return (ROR) on taxable securities is 15%. If the state government offered a bond with a rate of return higher than (1-J)*ROR (=0.69*0.15=0.104), the person will invest in the state's bond.

People with different incomes face different marginal tax rates. The U.S. tax structure is progressive, meaning those with higher incomes face a higher marginal tax rate (see Section V for an illustration). Therefore the required ROR for someone with J=15% to invest in state bonds would be 0.1275 (=0.85*0.15). To induce both the high income (J=31%) and low income (J=15%) people to buy the state bonds, part of surplus goes to high-income person -- he is willing to accept a return of 10.4% from the state bond, but he instead gets 12.75%.

The progressive tax structure means that the federal government loses more in foregone tax revenue than the state government saves in foregone interest

payments. Assume the state borrows $100 at 12.75% instead of 15%; the state saves $2.25 in interest payments (it would have to pay the private market ROR without the tax deductibility). If only low income people (J=15%) bought the state's bond, the federal government loses $2.25 (before the low income person paid tax on $15 he received in interest at the private market interest rate of 15%; the taxes he paid was equal to J*return in dollars = 0.15*$15). For a high income person with the higher tax rate of 31%, the federal government loses 0.31*$15=$4.65. More than half of the tax loss to the government ($2.40) is not translated into a gain for the state.

Example from an old final exam

The interest from state bonds is not counted as taxable income on a individual's federal income tax form. Suppose that private market bonds yield a rate of return, ROR, of 20%. Also assume that there are 3 Federal tax brackets -- 0% (low income), 15% (moderate income), and 28% (high income).

a. If the return on state bonds was only 16%, which group (if any) would purchase state bonds? Why?

The after-tax rate of return on private investment is 1.00*0.20=20% for those with low income. It is 0.85*0.20=17% for those with moderate incomes, and is 0.72*0.20=14.4% for those with high incomes. Thus, the state's ROR exceeds the private ROR only for those with high incomes.

Suppose that individuals in the first bracket (0%) are willing to purchase, at most, $100,000 worth of state bonds. Individuals in the second bracket (15%) will purchase up to $75,000, while individuals in the third bracket (28%) are willing to purchase up to $250,000.

b. If the state government needs to raise $100,000 in revenue, what rate of return should it offer? How about for $175,000?

The state could raise either $100,000 or $175,000 by offering a ROR greater than 14.4%. The high income people are willing to supply this amount of money; thus, there is no need to raise the ROR even higher.

c. If the state government sold $325,000 worth of bonds, how much does it save in interest payments compared to when the interest is taxable? How much does the federal government lose in tax payments because of the deductibility?

To raise $325,000, the state must sell to both the moderate income and high income investors; thus it offers a ROR of 17%. The state can therefore offer a ROR that is 3% lower than it would have to if interest payments were not tax deductible. Altogether it saves 0.03*325,000=$9,750. The federal loses more however. The amount of tax revenue foregone from the moderate income group is 0.03*$75,000, and from the high income people is 0.056*$250,000. In total, the revenue loss is $16,250.

B. Capital Gains Before Recent Legislation

It used to be the case that all realized capital gains are taxed as ordinary income for most taxpayers. Maximum rate was 28 %, however (which gives break for those with marginal tax rates greater than 28 %). Capital losses, decreases in an asset's value, can be offset against gains (and capped at minus $3,000) This means that if one stock gained $10,000 and another lost $15,000, the total deduction from income is $3,000, not $5,000.

Feature #1. It is the case both before and after recent tax changes, that only realizations taxed: unless a gain is "cashed in" no tax is levied. And tax payments are deferred until the gain is realized. Postponing tax payments can have enormous consequences, because of compound interest.

The textbook has an excellent example on pages 366-367.

- Purchase asset for $100,000
- Annual return of 12%
- Hold asset for 20 years
- The tax rate on <u>realized</u> gains is 28%

If a person does not realize the gains until the end of 20 years, the asset is worth $100,000*$(1.12)^{20}$ = $964,629. The total capital gains are $864,629, and the tax liability is $242,096. His total net gain is **$622,533**.

If the person does realize the capital gains each year and then reinvests it into the asset, the "effective" annual return is (1-.28)*.12=.086. After 20 years, the value of the asset is $100,000*(1.086)^{20} = $524,560, and the net gain is **$424,560**. Since taxes were paid all along, there is no adjustment at the end.

The presence of capital gains taxes makes investors less likely to adjust their portfolios; this is called the "lock-in effect." Capital may be misallocated, because it no longer flows to highest ROR investments.

Feature #2. Capital gains are not realized at death.

- The value of the asset is "stepped up" at death, meaning if the child sells the asset immediately after the parent's death, the child does not pay very much in taxes. In the example above, if the asset valued at $964,629 was bequeathed to the child, and the child sold it after the death, the child avoids the $242,096 in taxes.

C. Capital Gains After Recent Legislation

The treatment of capital gains has changed recently. For a readable description of these changes, visit the internet site (http://www.kiplinger.com/magazine/archives/1997/October/taxcap.html).

If you sold stock, bonds, mutual funds or other assets after May 6, 1997 you get a capital-gains break regardless of your income. In the past, only those in the highest tax brackets benefitted as a 28% cap on the tax rate for long-term gains short-circuited the 31%, 36% and 39.6% brackets. Now, if you're in the 28% or higher bracket (with taxable income, including investment profits, of more than $24,650 on an individual return or $41,200 on a joint return), your long-term gains are taxed at a flat 20%. If you have less income--and live in the 15% bracket--long-term gains are taxed at 10%.

D. Employer Contributions to Benefit Plans

- Employer contributions to pension and health insurance are not taxed.
- Represent additions to potential consumption.
- When we reviewed "health care," we mentioned that this provides an

implicit subsidy to employer provided health insurance. You also saw a question like this on the midterm exam.

E. Some Employee Saving for Retirement

Workers can engage in tax-favored saving for their retirement.

1. "Traditional" individual retirement accounts (IRA): person without a pension at work can deposit up to $2000 per year in a qualified account. It is easy to get started on this -- the form you fill out is one page, and you deal with whatever mutual fund company or bank you choose.

There are two key benefits and one cost of traditional IRAs:

a. The interest accrues at the before tax ROR. That is, if you receive $100 in interest in year 1, the whole $100 is reinvested in year 2. If your marginal tax rate was 31%, on the other hand, the same investment in a normal bank account would only add $69 to be invested in year 2.

b. You can deduct your IRA contribution from your AGI if your income is under a certain level. For example, if your AGI was previously $20,000, it is now $18,000 after your contribution. You do pay income taxes when you withdraw the money during retirement, however.

c. There are penalties if the money is withdrawn before age 59.5.

- Note that you can invest IRA money in anything that you would normally invest in, i.e. can pick to invest in stocks, bonds, etc.

- Not all investments are good for IRAs (or 401k's) however! State and local bonds already are treated favorably by the tax system; thus you lose benefit (a). Surprisingly, a lot of people invest in things that are already treated favorably by the tax system.

2. 401(k) plans are named for a section of the income tax code (and for non-profits and universities, 403(b) plans). They are offered by employers (although there is no requirement that they be offered).

a. You earmark a portion of salary (up to 15% of your salary) for the 401(k), and no income tax liability incurred on that portion. You can contribute up to approximately $9,500 per year.
b. Your investment accrues at before tax ROR.
c. Some firms "match" some or part of your contribution -- for each $1 you contribute, companies often contribute 50 to 75 cents (up to some cap). U.K. has a 200% match rate, UCLA had 0%.
d. When you graduate from U.K. and get a job, you should definitely look into your company's benefits; you usually have to take active steps to start contributing.

F. Some Recent Changes to IRAs

You can still choose a "traditional" IRA, but for many people, the contributions are not tax deductible. The new IRA--dubbed the Roth IRA after its chief cheerleader in the Senate, William Roth (R-Del.)--is called back-loaded because the tax breaks come at the end of the line. Rather than deducting contributions and paying tax on withdrawals, after-tax money goes into the accounts and tax-free money comes out. These IRAs will be a big hit with higher-income taxpayers, who are forbidden to deduct IRA contributions.

As with traditional IRAs, there's a $2,000 limit on annual deposits. And you can't contribute the full $2,000 if your AGI is more than $95,000 on an individual return or $150,000 on a joint one. The door to this IRA slams closed when your AGI passes $110,000 on an individual return or $160,000 on a joint one.

For withdrawals to be tax-free, you generally can't tap a Roth IRA until you're at least age 59.5 and the account has been open for at least five years. If you open a Roth IRA in 1998, the first year for tax-free withdrawals would be 2003. Dipping in early means withdrawals might be taxed and hit with a 10% penalty.

IV. Exemptions, Deductions, and Credits

Once AGI is determined, certain subtractions are made to determine taxable income. These exemptions and deductions decreased the taxable base from $3.2

trillion to $2.1 trillion in 1992, a reduction of 35 %.

A. Exemptions

- A subtraction from AGI.
- There is an exemption for each family members, adjusted annually for inflation.
- In 1994, $2,450 per person, so a husband, wife, and three kids had exemption of $12,250.
- It is phased out for those with high incomes, which essentially leads to higher tax rate.
- Why have exemptions? It might adjust for ability-to-pay in the presence of children. Also, tax relief to poor families: the higher the exemption, the greater AGI must be before any income tax is owed.

B. Deductions

A subtraction from AGI. There are two types of deductions:

1. Itemized deductions -- for specific expenditures cited in law, like charitable contributions, mortgage interest, and state and local income taxes. The taxpayer must list each deduction separately on tax form, and prove (in principle) that expenditures have been made.

-- or --

2. Standard deductions -- instead of itemizing, can take a fixed amount which does not require documentation. Instead of accounting for all contributions to things like charity, medical expenses that are not reimbursed, etc. you can take standard deduction, which was $6,350 for joint filers and $3,800 for singles in 1994. Around 72 % of forms take standard deduction.

A taxpayer would choose (1) or (2) based on the one that minimized tax liability.

3. Specific Itemized Deductions

a. Unreimbursed medical expenses above 7.5 % of AGI

- essentially lowers the price of health care services

b. State and local taxes

- State and local income taxes (not sales taxes) are deductible, as are property taxes. Amounted to $143 billion in 1992.
- The deduction makes paying state and local taxes less painful, increases political support for tax increases at state level.

c. Certain interest expenses
- Some of the interest expenses from a business
- Interest on home mortgages. Deductible interest on home equity loans is limited to $100,000 per year.

d. Charitable contributions

- Can deduct the value of contributions made to charities (either in property or in money, but not in time services). It cannot exceed 50% of AGI.

- In 1992, $54 B in deductions for charity.

- The tax price of contributing to charity falls from $1 to $1(1-J). Effectiveness of deduction to giving depends on $,_P$ – if very responsive, will change behavior in response to tax code. Quite elastic, if believe estimates. Deductibility stimulates charitable contributions.

C. Credits

A reduction in your tax liability, regardless of your marginal tax rate.

Two prominent examples are the Earned Income Tax Credit (called either the EITC or EIC), and the child credit. These credits are taken off of the tax you

owed, and if your tax liability is less than zero, you are owed money (the EITC is refundable, although the child credit is not). The child credit gives $500 per year per child reduction in the tax liability.

D. Deductions vs. Credits

Tax Liability = J*(AGI-Deduction-Exemptions) - Credit for an itemizer!

Under a deduction, a poor person with lower J benefits less than rich person. Under credit, both tax liabilities fall equally.

V. Rate Structure

A. Some History

Tax Rates for 1994

Single Returns		Joint Returns	
Taxable Income	Marginal Tax Rate	Taxable Income	Marginal Tax Rate
$0-$22,750	15%	$0-38,000	15%
$22,751-$55,100	28	$38,001-91,850	28
$55,101-$115,000	31	$91,851-140,000	31
$115,001-$250,000	36	$140,001-250,000	36
$250,001 and over	39.6	$250,001 and over	39.6

- Once calculate taxable income, brackets define marginal tax rates. Different marginal tax rates for different brackets (actually 4 schedules, also married people who file separately and single people who are heads of households).
- MTRs have varied substantially over time.
- In 1940s, MTR ranged from 23 % to 94 %.

- In 1980s, 14 brackets ranging from 11 to 50 %.
- Tax reform act of 1986 -- drastic change in rate structure, fewer brackets, maximum tax rate was 28 %.
- 1990: 31 % bracket added, 1993: 36%, 39.3%.

B. Rates for Low-Income Individuals

Exemption was approximately equal to 2,450*number of people, and standard deduction ($6,350 for married, $3,800 for single).

For family of four with AGI = $16,150 = 6,350 + 4*2,450 has no tax liability.

In addition, low income families with dependents (children under some age that they support) receive the Earned Income Tax Credit (EITC) = subsidy to earnings of low-income families. Has been dramatically expanded in past few years.

Subsidy depends on number of children -- in 1996, family with 2 or more children can receive tax credit of 40% of first $9,470 (=$3,788). Also, if credit exceeds tax liability, difference is refunded. Credit is phased out from around $12,000 to $30,000 of earnings at a rate of 21% for another dollar earned.

The EITC changes the budget constraint in the following way:

***** SEE FIGURE 11-1 *****

- In the phaseout range, the EITC confronts poor families with higher marginal tax rates than those faced by many of their higher income counterparts.

- Does the EITC provide work incentives to the poor? In the phase in range, after tax wage is equal to (1+s)*wage = 1.4w. But in phase out range, the after tax wage is equal to 0.79*w.