

I. An Overview of Taxation by the U. S. Central Government

- A.** The two main tax sources for governments around the world are the income tax and the VAT or Sales tax.
- i.** Instead governments were funded by a combination of income and excise taxes, augmented by government businesses and sales of land and monopoly privilege.
 - ii.** Both the VAT and income tax are relatively recent inventions.
 - iii.** The income tax was not used until the mid-nineteenth century
 - a.** The British first implemented an income tax in 1842
 - (This was partly to offset revenues lost from tariffs as the Corn Laws were repealed.)
 - b.** The Netherlands adopted one in 1893
 - c.** Sweden adopted one in 1902
 - d.** Germany adopted one in 1920
 - e.** (Source Aidt event4 data set, 2007)
 - iv.** This is not to say that taxes similar to income taxes were never used before the 19th century.
 - Land taxes and "in-kind" labor taxes resemble income taxes in their effects, and were widely used throughout history.
 - Part of the reason that income taxes were a relatively new form of taxation is that market-based income became a relatively large tax base only after the industrial revolution.
- B.** Until 1914, most of the revenues of the U. S. federal government came from excise taxes, tariffs, and land sales in the West.
- i.** There was a temporary use of an income tax during the Civil War, but the Constitution ruled out direct taxation of citizens unless it was proportional to population--as would be the case for a "head tax" or pole tax.
 - ii.** Partly as a consequence of this restriction on revenues and partly as a consequence of other interpretations of the constitution which restricted the domain of federal government, most government revenues were collected by state governments and most government services were provided by state and local governments prior to 1914.
- C.** A federal income tax was allowed by the **XVI constitutional amendment**, which was **ratified in 1913**.
- i.** The 16th amendment had major effects on the balance of power between the states and federal government, and in the potential fiscal impact of the federal government.
 - Indeed, apart from a few of the early amendments included in the bill of rights and the 13th amendment (that eliminated slavery), the 16th amendment probably had one of the largest effect on the political culture in the US of any of the 27 amendments.
 - ii.** Initially, the federal income tax applied only to about 1% of the population, and rates were very low.
 - (The method of selecting senators was also changed by the 17th amendment, which was also ratified in 1913. Prior to 1914 senators had been **appointed** by state legislatures.)
 - (The last of the four "Progressive" amendments was the 19th amendment that assured Woman's suffrage. It was ratified in 1919.
 - iii.** Tax rates were increased during W.W.I, but were reduced during the post war years.
 - a.** (The marginal tax rate on incomes greater than a million dollars per year rose to 77%!)
 - b.** (Greater use of the income tax became necessary after W. W. I, because prohibition (the 18th amendment) was ratified in 1919, which reduced revenues from excise taxes on alcoholic beverages!)
 - (The 18th amendment was repealed by the 21st amendment, which was ratified during the Great Depression in 1833. The repeal of "prohibition" increased national tax revenue, reduced crime, and facilitated a bit of economic growth.)
 - [Use diagrams to show the effects of prohibition and its repeal on the market for alcohol, clubs, and restaurants.](#)
 - iv.** During the 1930s the income tax was extended to include more people and the income tax became the largest single source of government revenue.
 - a.** Although the income tax base included most persons, relatively few person paid an income tax prior to W.W.II--other than a small tax to support the new social security program.
 - b.** President Roosevelt also extended the role of the federal government in regulation and providing social services, and created new income-based taxes.
 - c.** For example, the social security system was enacted in 1935.
 - v.** Government spending on national defense increased rapidly during W.W.II, and spending on other social services increased after the war--especially those associated with social security.
 - a.** It was during this period that the income tax took the basic form that it has today.
 - b.** For example, withholding of employee taxes by employers and the standard deduction were introduced during W. W. II (partly at the

recommendation of Milton Friedman, who was working in the US treasury at the time.)

vi. (For more detailed histories, see the history links on the class website.)

II. Public Finance and General Ideas for Tax Reform

A. There are a wide variety of normative theories of taxation used in Public Finance, and these norms suggest that the current tax system can be "improved" through tax reforms of one kind or another.

- (at least if one ignores political considerations)
- We covered this in some detail before the midterm.
- We now revisit those ideas with the idea of making general recommendations for tax reform of existing tax laws in the US and elsewhere.

i. **For example, Neutrality** can be increased.

- Neutrality is generally increased by broadening the tax base, and reducing loopholes and exemptions.
- (Increases in neutrality are sometimes described as reducing tax "distortions" or as "**tax simplification.**")
- The US personal income tax includes a variety of "loopholes" (also called tax preferences) relative to the payroll tax used to finance social security.
- Although much of the complexity of the US tax code has to do with properly defining income, definitions of income could be brought more in line with economic theory--which would also increase neutrality across income sources.
- (Tax preferences are usually adopted as a consequence of lobbying by the groups that benefit most directly from the loop hole of tax preference.)
 - However, in some cases Pigovian tax preferences are introduced as a method of advancing policies desired by moderate voters (the median voter).
 - In a few cases, both are true--that is to say a tax preference may advance mainstream voter interests in environmental quality, social insurance, capital formation ..., but use policy tools (taxes, subsidies, etc.) preferred by particular groups that have lobbied for those tools.

ii. **Deadweight losses** can be reduced by broadening the base (as indicated with the indifference curves diagrams.

- (Recall our diagrams of lump sum taxes and excise taxes from the first part of the course.)

b. However, an effort to minimize the overall dead weight loss from a system of commodity taxation through **Ramsay taxes** will not be neutral because it requires different tax rates on different goods.

- Deadweight losses from commodity taxation are reduced by attempting to target markets with relatively inelastic demand or supply curves with relatively higher tax rates
- Indeed, the Ramsay tax method implies that taxes should be different for nearly every product.
- (Imagine, however, the contentious politics of creating such a tax system!)

iii. Consensus about many government policies can be increase by linking marginal **benefits** from government services to marginal tax rates. (**Lindahl** taxes.)

iv. **Externalities** can be addressed with taxes rather than regulatory mandates. (Pigovian taxes)

v. **Economic growth** can be encouraged rather than discouraged by the tax system. (consumption taxes)

- For example, saving rather than borrowing can be encouraged in order to increase the accumulation of human and physical capital.
- Tariffs can be reduced to promote trade and specialization.
- Investments in public infrastructure can be made to reduce transactions costs and increase the effective size of markets.
- Tax preferences and subsidies for scientific and technical research can be created.

vi. **Fairness** (horizontal and vertical equity) can be increased through tax rate reform and base broadening.

- Horizontal equity suggests that people with similar incomes should be taxed at similar rates.
 - (On this point, there is fairly broad agreement within the Public Finance community.)
- Theories of vertical equity, however, vary more widely than theories of horizontal equity.
 - Some argue that fairness is increased if everyone is taxed in the same way, as with a flat income tax, VAT, or head tax.
 - Others argue that people with higher incomes should be taxed at higher rates because they have a greater ability to pay the taxes.

vii. The **political efficiency** of democratic governance can be increased by broadening the base and applying uniform tax rates (Buchanan and Congleton 1998)

EC441: Public Finance: Analysis of Major Tax Reforms in the United States

- a. Application of a generality rule to the tax system would greatly reduce incentives for "rent seeking" in pursuit of preferential tax treatment.
 - b. It would also reduce political deadweight losses and some forms of corporate and government corruption.
- B.** Based on this list of tax norms, several US tax systems turn out to be quite good systems for collecting revenue.
- i. For example, the payroll tax used to pay for the social security system is broad based and taxes an activity that tends to be quite inelastic although not perfectly inelastic (labor supply curves slope upward).
 - a. The payroll tax system has very few loopholes.
 - Essentially all labor income below the maximal taxable labor income is taxed at the same rate.
 - b. On the other hand, the payroll is regressive in its upper ranges and, as true of all income taxes, it somewhat distorts choices between work and leisure.
 - (The maximum labor income taxed was 94,200 in 2007)
 - c. (The associated **benefit program has a far larger effect on labor-leisure** choices. Most people retire soon after being eligible for program benefits.)
 - ii. The gasoline tax resembles a benefit tax, because revenues are (largely) earmarked for highway expenditures.
 - The tax is roughly proportional to the marginal benefits obtained from using the highways, because those who drive most pay the most in taxes.
 - Those who drive the most--other things being equal--also produce more wear and tear on the highways.
 - Moreover, heavy vehicles cause more wear and tear, but also tend to consume more gasoline and so pay more taxes.
 - Gasoline consumption is also a relatively inelastic, externality-generating activity.
 - iii. State sales taxes are generally broad based and flat
 - Like essentially all taxes, however, they somewhat "distort" decisions between savings and consumption and between work and leisure-
 - [Show and explain why](#)
 - iv. Local property taxes **on land** tend to have relatively little dead weight losses associated with them.
 - The supply of land is almost perfectly inelastic, so taxing it produces almost no dead weight loss.
 - (See Henry George)
- However, taxing improvements as well as land--as normally done with local property taxes--tends to discourage capital formation.
- C.** Many other tax systems in the U. S. have significant problems according to the normative tax theories outlined above.
- These imperfect tax systems account for more than half of the revenues collected
- i. For example, the personal income, corporate profit, excise, and tariff tax systems all have a number of problems.
 - a. Most of these tax systems include large and varied tax rates and loopholes (tax preferences) that favor or punish particular industries, types of expenditures, and sources of income.
 - b. These loopholes often violate horizontal equity, because they tax essentially similar tax payers at quite different rates..
 - Examples include preferences for particular kinds of investments (computers, oil wells, farming, drugs, housing),
 - special treatment of income from capital gains, tax exemption of income from government bonds,
 - excise taxes on restaurant meals, tires, differential tax rates on commercial and residential property, etc.
 - c. They are often regressive in that marginal and average tax rates decline over part of their range (relative to taxpayer income)
 - ii. (Illustrate how unequal taxes and tax preferences distort economic decisions and tend to generate larger dead weight losses than more general taxes.)
 - a. [How many of these "tax breaks" make sense from the perspective of the median voter?](#)
 - b. [from the perspective of internalizing externalities?](#)
 - c. [from the perspective of interest group politics--who wins and who loses?](#)
- D.** As a consequence of such concerns (as well as rent-seeking) a number of major reforms are always being discussed by policy makers and policy advocates in the US.
- i. Typical proposals include:
 - a. Keep the present system, but reduce loopholes and tax preferences.
 - b. Broaden the base and adopt a (very) flat income tax.
 - c. Replace the income tax with a flat consumption tax (VAT).
 - d. Replace the corporate income tax with a carbon tax.
 - e. ([Discuss how these taxes advance or conflict with the tax norms listed above.](#))
 - ii. See the class website for links to tax reforms currently under discussion.

III. Some Specific Conclusions about Tax Reform in the US from the Work of this Class

- A. Tax systems should have broad bases and few loopholes.
- Neutral broad based taxes tend to have a lower deadweight loss.
- B. Lower marginal rates are better than higher marginal rates other things being equal.
- [Use a supply and demand of labor curve to illustrate how higher marginal tax rates affect market equilibria in labor markets. The higher is the progressivity of the tax, the higher marginal rates have to be and the lower employment and national output tend to be.]
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 - [Both A and B tend to reduce the excess burden of taxation.]
- C. In the US, there is a structural deficit that appears to be increasing from about 3% (22-18) of GDP to 6% of GDP (24-18), rather than decreasing through time, because of their retirement of the baby boomers and the socialization of health care and pension plans through the social security, medicare, and medicaid systems. This is unsustainable. Thus, average tax rates should be increased to close the gap. (It is unlikely that the entire gap will be closed by reducing expenditures.)
- GAO forecasts suggest that under current law debt will grow rapidly to unsustainable levels.
 - Debt payments themselves will consume more and more of tax revenue, become one of the largest expenditure categories.
 - It is not clear that world bond markets will be able to absorb all the debt that will need to be sold as this takes place.
- D. The Lindahl tax diagrams suggest that some degree of progressivity is desirable (eg. one linked to marginal benefits), but beyond this point the tax system itself may induce political outcomes that tend to increase future deficits. The political economy of taxation suggests that low marginal rates (0) for low income persons tend to increase the median voter's demand for services by reducing the tax price of public services.
- [Draw a three persons diagram to illustrate this political economy effect of taxation through effects on median demand for services.]
 - Recall that differences in marginal benefits are at least partly driven by differences in income.
 - Differences in ideal service levels, however, are driven by **both** marginal benefits and marginal tax costs for the services.

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- Another side benefit of Lindahl tax systems (in addition to their assumed provision of the service levels that maximize social net benefits) is that they tend to reduce conflict over public service levels.
- [These may also apply to social insurance programs but not transfer programs, explain why.]

IV. A review of the effects of tax preferences (loop holes) within an income tax system

- A. Many existing income tax and VAT tax systems include "tax preferences" (loop holes) of various kinds.
- These preferences (and/or loop holes) have the effect of making an otherwise neutral tax systems less neutral.
 - The demonstration below used some algebra to illustrate this point. Undergraduates can skip the math and rely on the diagrams instead.
- B. The effects of privileged areas of life on excess burden can be modelled with a bit of algebra.
- Suppose that a consumer's (Al's) pretax budget constraint is
 - $Y = P_aA + P_bB$
 - where Y is the consumer's income A and B are quantities of goods A and B that might be purchased and P_a and P_b are the prices of those goods.
 - Recall that the ratio $-P_b/P_a$ is the slope of the consumer's budget line.
 - After a flat income tax, Al's budget constraint becomes:
 - $(1-t)Y = P_aA + P_bB$
 - The after tax budget constraint can also be written as Y - tY, pretax income Y less the tax paid tY. $Y-tY = (1-t)Y$
 - The new after-tax budget line is parallel to the pretax budget line, but inside (below) the pretax budget line.
 - The slope of the budget line is **not affected** by a flat broad-based income tax.
 - Now suppose that tax preferences for activity or product A are introduced.
 - A tax preference allows the tax payer to reduce his or her tax burden by purchasing the preferred good.
 - Suppose that good A is given a tax preference of Z dollars per unit.
 - The new budget line can be written as $Y - tY + ZA = P_aA + P_bB$
 - Note that after just a bit of algebra this can be written as:

- $Y - tY = P_a A - TA + P_b B = (P_a - Z) A + P_b B$

- or: $(1-t)Y = (P_a - Z) A + P_b B$

c. Note that the relative has changed from $-P_b/P_a$ to $-(P_b - T)/P_a$

C. The effect of a tax preference or loop hole is to "narrow" the tax base, particularly in cases in which the preferred good or activity is subject to no tax.

i. Tax preferences usually create excess burdens that would not be present under a neutral tax.

This can be shown using geometry similar to that which we studied earlier in the course.

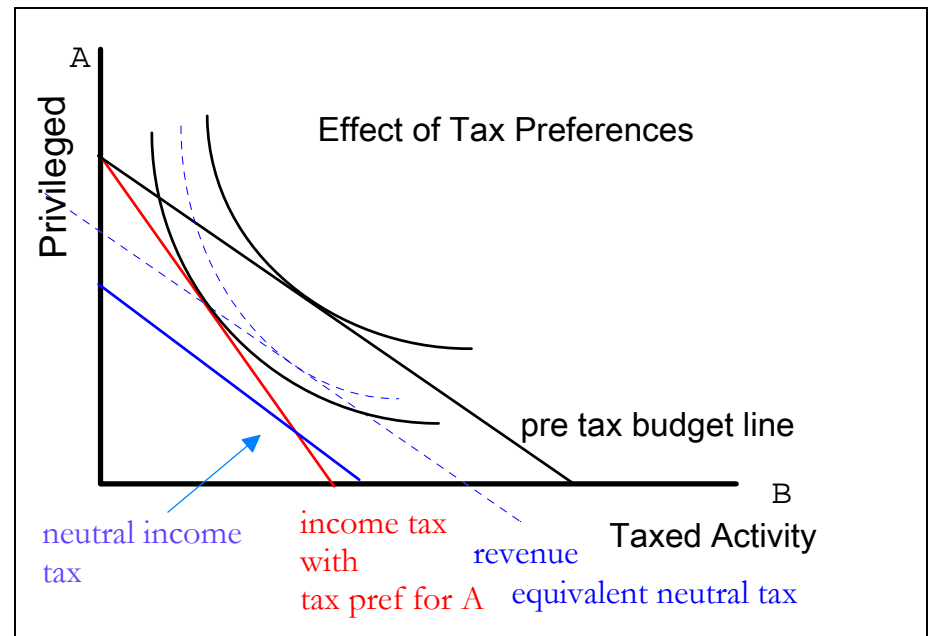
a. (See the diagram below.)

b. A flat tax rate of "t" reduces the consumer income, which shifts A's budget line back toward the origin (from the black to the blue line).

c. A tax preference for A makes consumers better off by increasing the size of the budget set, but also affects relative prices (shift from the blue to the red line)

d. Note that this tax has an excess burden. The consumer would be better off with a neutral tax with a lower overall tax rate than with a tax preference. The blue dashed line allows A to reach a higher indifference curve while paying the same total amount of taxes.

e. (For the algebra of the advantage of neutral tax see the appendix to the notes from the earlier lecture on tax burdens.)

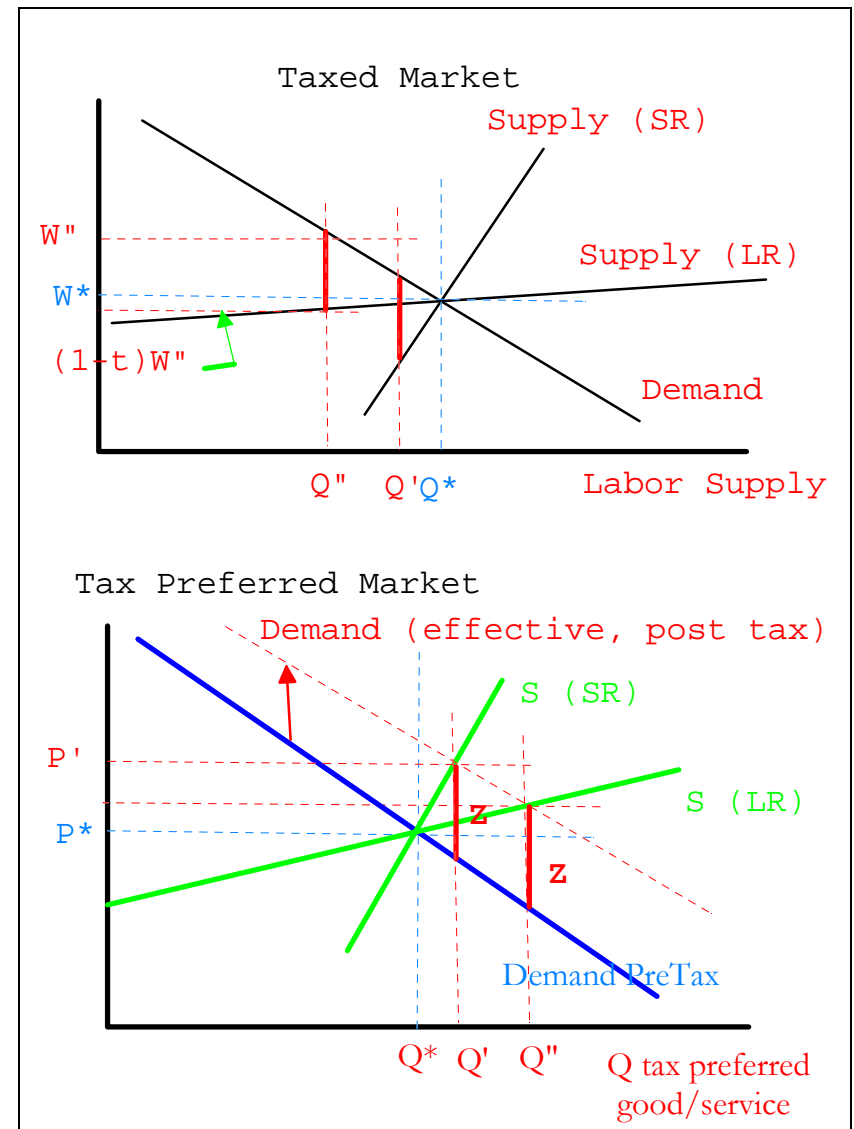


D. Effects of Loopholes on Product Markets

- i. The after-tax reduction in the price of "privileged" activities and products has an effect similar to a subsidy.
 - Consequently, the tax preference Z above can be thought of as a subsidy for the purposes of analysis, although the tax payer does not receive any payments from the government.
 - Alternatively, the relative price change induced by the preference can be modeled as increasing the "effective" demand for the "preferred" activity
 - (The subsidy treatment is more consistent with the geometric tools used previously in class, but a bit less faithful to "cash flow" definitions of subsidies and taxes.)
- ii. The effects of a tax preferences are greater in the long run than in the short run. because long run supply (and demand) tends to be more price sensitive in the long run (after all possible adjustments are made) than in the short run (after quantity adjustments are made, holding capital and technology constant).
- iii. In the figures below, the effects of tax preference Z on the market for a preferred and non-preferred activity are illustrated.

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- Insofar as the tax preference is modeled as an implicit subsidy for the preferred activity, the geometry of subsidies applies.
- This is indicated with the dark red lines of length Z in the diagram.
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- The subsidy effect occurs because of the change in the relative price of the preferred good relative to the other taxed goods and services or sources of income, etc.
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- (Note that in some cases, a tax preference may be implemented with a tax rebates, which clearly resemble a subsidy.)
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- (A change in the demand for the privileged good occurs because the increased price of any taxed good that is a substitute for the privileged good.)



E.

- i. As an exercise,
 - label the areas that represent deadweight loss, and changes in consumer surplus and profit
 - Note that the deadweight losses increase in the long run
 - Recall that the effect of a Pigovian tax such as a Carbon Tax may be similar but not produce a dead weight loss. (explain why)