Policies in a Perfect Market

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Introduction

Commodity Taxation

- 4 Facts about Commodity Taxation

Income Taxation

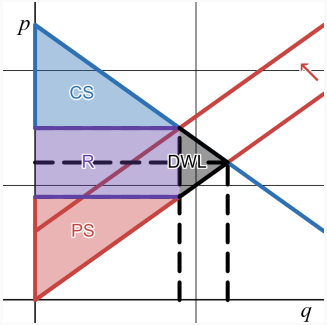
Price Ceiling & Price Floor

Different Taxes

- Lump-Sum tax.
- Commodity tax.
  - **Specific tax**.
  - **Ad-valorem tax**.
  - Tariffs.
- Income tax.
  - Labor/Capital income tax.
  - Corporate income tax.
- Wealth tax.
  - Property tax.

Commodity Taxation

Specific Tax to the Producers (or Consumers)



- Ex. $q_d(p) = 24 - p$ and $q_s(p) = p$. Tax \$6 to producers.
- Price consumers pay is greater than the price producers receive.
- Tax collects some revenue.
- But it also produces a deadweight loss, relative to perfect competition.

Harberger's Triangle

Arnold Harberger

- Visual representation of the Dead-Weight Loss associated with government intervention in a perfect market.
- Due to Arnold Harberger.

Deadweigth Loss

$$\text{DWL} \simeq \frac{1}{2} \cdot \frac{\varepsilon_s |\varepsilon_d|}{\varepsilon_s + |\varepsilon_d|} \cdot t^2 \cdot \frac{q^*}{p^*}$$

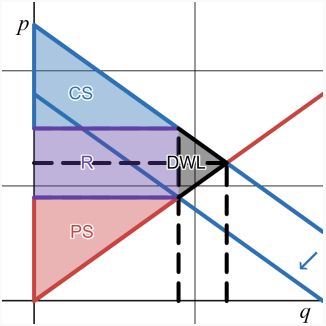
- DWL is proportional to the square of the tax.
- Only in two cases there's no DWL. Perfectly inelastic supply/demand.
- Why? Commodity tax affects the prices: With tax $p_c \neq p_p$, so marginal utility is not equal to marginal cost.

1. Tax Incidence is Shared

$$\text{TI}_C = \frac{\varepsilon_S}{\varepsilon_S + |\varepsilon_d|} \qquad \text{TI}_P = \frac{|\varepsilon_d|}{\varepsilon_S + |\varepsilon_d|}$$

- Prod. and Cons. share the tax burden.
- The more inelastic demand is (relatively to supply), the more incidence to consumers.

2. Tax Incidence is Independent of Who Pays



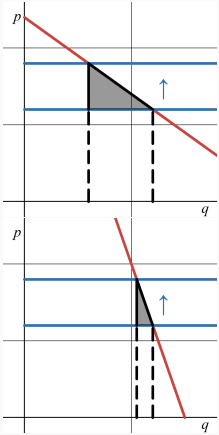
- Same example, but now consumers pay the tax.
- Price consumers pay is greater than the price producers receive.
- In a competitive market it is irrelevant who pay the tax. Relative elasticities determine the incidence.

3. A Lump Sum Tax Would Be Better

Lump-Sum Tax. A fixed tax that does not depend on the individual's behavior, income, or consumption.

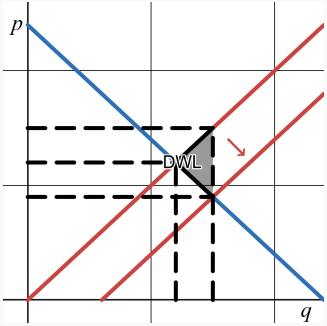
- Because it doesn't depend on consumption, it doesn't affect consumption.
- Hard to implement.
- Example.
- Calculate the tax revenue, but replace the commodity tax with two lump-sum taxes to cons. and producers.

4. An Inelastic Demand has Lower DWL



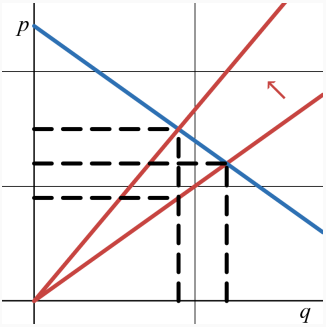
- See graph.
- The more inelastic demand is, the lower DWL.
- Note this is not good for consumers. Insulin example.
- Extreme case: perfectly inelastic demand.

Subsity to the Producers (or Consumers)



- The DWL takes a different form now.
- All four facts about a commodity tax in a perfect market applies to a commodity subsidy as well.
  1. Subsidy incidence is shared.
  2. It's also independent of who recieves the subsidy.
  3. A lump-sum subsidy would be better.
  4. Inelastic demand has a lower DWL.
- Example: subsidy of $6 per unit.

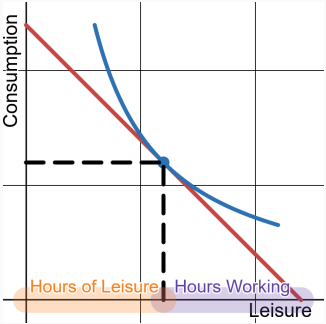
Ad-Valorem Taxes (or Subsidies)



- The analysis remain mostly the same.
- The only difference is that supply before/after tax are not parallel.
- For an ad-valorem tax, it's possible to find the equivalent specific tax. And work with the specific one.
- All four facts apply to ad-valorem taxes/subsidies with minor adjustments.

Income Taxation

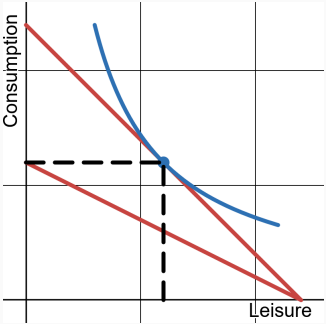
Labor Supply Decision - Revisited



$$c + wh = 24w$$

- Choice between consumption (c) and leisure (h).
- Suppose ↓w (price of leisure falls):
  - Substitution effect: Consume more leisure (work less).
  - Income effect: Consume less leisure (work more).
  - Net effect: ambiguous.
- Example with $w = 10$.

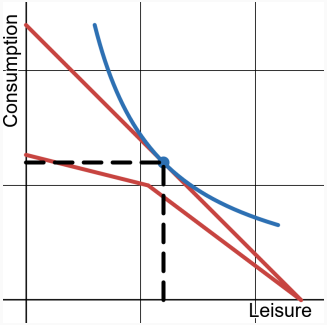
Proportional Income Tax



$$c + w(1-t)h = 24w(1-t)$$

- Ex: flat 10% tax on income.
- We cannot anticipate the net effect on working hours.
- Marginal Tax Rate (the tax you'll pay in your next dollar earned) is constant.
- Simple, but still adds distortion: it affects working decisions.

Progressive Income Tax



- Ex: For the first $90 you make, the tax rate is 10%. For any income above $90, the tax rate is 20%.
- Marginal Tax Rate is increasing.
- More distortion, but adds progressivity: people with higher income pay proportionally more.

Measure Progressivity

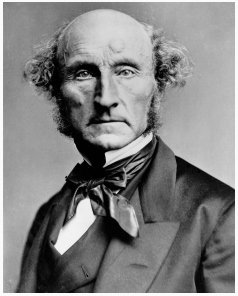
Progressivity. A tax system is said to be progressive if the **Average Tax Rate** (ATR), the ratio of taxes paid to income, increases with income.

- We say it's regressive if the ATR decreases with income.
- Example:
  - Consider 5 people making $2000, 3000, 5000, 10000, 30000.
  - Each individual computes the tax bill by subtracting 3000 from income and paying 20% of the remainder.
  - Find Marginal and Average Tax Rate.

Income Tax - Comments

- Equity vs Efficiency.
- If marginal utility of income decrease with higher income, it makes sense to consider progressive taxes:
  - 10% of income of a low income person may be considerable in terms of marginal utility.
  - 10% of income of a high income person may not be that considerable in terms of marginal utility.
- Choose tax rates such that they have the same impact in terms of marginal utility.

John Stuart Mill on Equality of Taxation



John Stuart Mill

Equality of taxation, therefore, as a maxim of politics, means equality of sacrifice. It means apportioning the contribution of each person toward the expenses of government, so that he shall feel neither more nor less inconvenience from his share of the payment than every other person experiences from his.

Setting out, then, from the maxim that equal sacrifices ought to be demanded from all, we have next to inquire whether this is in fact done, by making each contribute the same percentage on his pecuniary means. Many persons maintain the negative, saying that a tenth part taken from a small income is a heavier burden than the same fraction deducted from one much larger; and on this is grounded the very popular scheme of what is called a graduated property-tax, viz., an income-tax in which the percentage rises with the amount of the income[a].

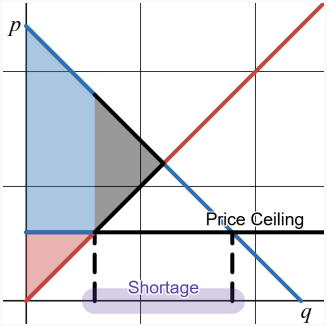
[a] From Jonh Stuart Mill's Principles of Political Economy.

Price Ceiling & Price Floor

Idea

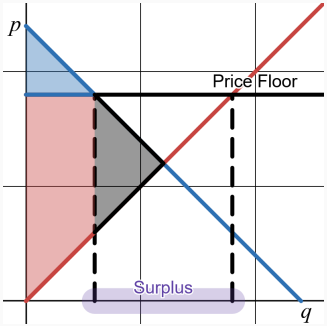
- Simplest policy in a partial equilibrium model.
- If the equilibrium price is too high, set a price ceiling. The goal is to improve consumer's welfare. Example: Rent control.
- If the equilibrium price is too low, set a price floor. The goal is to improve producer's welfare. Example: Minimum wage.
- Assumes the authority can enforce those prices.
- They will generate a DWL.

Price Ceiling



- Generates a shortage or excess demand: demand is higher than supply.
- Rationing: Queuing. Favoritism or discrimination.
- May create a black market.

Price Floor



- Generates a surplus or excess supply: supply is higher than demand.
- If one models the labor market as a perfect market, a binding minimum wage creates unemployment: there are more people willing to supply labor vs firms willing to employ them.

DWL

- Why?
- We are setting a price different from the equilibrium price.
- Some transactions that should be happening from the social point of view are not happening.
- In both cases there are consumers willing to pay a price that's higher than the marginal cost, but they cannot engage in to trade at the imposed price.

Summary

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Income Taxation

Price Ceiling & Price Floor