<u>Elasticity</u>

- The concept of elasticity measures to responsiveness of a variable to a change in another.
- Elasticity of X with respect to Y is simply how much does X change when Y changes by a percent.
- For example, price elasticity of demand measures how much does the demand change when price changes by a percent.
- Elasticity of X with respect to Y **OR** Y Elasticity of X= (% change in in X/% change in Y)
- Similarly, income elasticity of demand measures the relative change in the demand for a good when the income of the consumer changes.

	Year 1	Year 2
Rent	$50	$80
Food	$20	$30
Entertainment	$10	$60
Transportation	$20	$30
Total Income	$100	$200

- The income doubles from $100 to $200, that is, there is a 100% increase in income. However, the rent went up by only by 60%. Food consumption went up by 50%. The income elasticity of rent (60/100) and food (50/100) is less than one in this example.
- Calculate the income elasticity of demand for the other two goods.
- **Why is the income elasticity of food consumption usually less than one?**
  Food is a necessity. The consumers will first make the minimum purchases of food before they move on to buying other things such as "entertainment". However, once minimum food has been purchased, with a higher income they are not going to change their consumption by a lot because the minimum levels have already been met, even at a lower income. **What does this mean for the income elasticity of food demand?**
  Thus as the income would increase, the share of food consumption would fall.
  Voila!! We have Engel's Law.

Can you think of a context when this law could be violated?

Professor mentioned in the class that kids are very food intensive? What do we understand by that?

<u>Real Variables versus Monetary/Nominal Variables</u>

We have been using these terms in different contexts (real wages and monetary wages etc.) in the class and in the assignment a lot. What is the difference between the real version of a variable and its monetary counterpart?

The monetary version of a variable, is simple the value in money terms. An income of $100 has a monetary value of $100. The real version accounts for the general price level. Imagine an economy where you eat only apples. Price of an apple is $10. Your income of $100 is now worth 10 apples. Due to the benevolence of your employee, your income has now increased to $110. Apple orchards were affected by blight and a lot of the crop was destroyed. Price of an apple has gone up to $12. You can buy (110/12) apples now with your income. Are you richer now? **Why, or why not?**

Can monetary income go down but real income increase?

Utilitarianism and Inequality

If you are a utilitarian: "Income inequality lowers social welfare."

Three key ingredients to get this result:
- Maximize aggregate social welfare, defined as the sum total of "utility" in society.
- Everyone has essentially the same utility from a given income.
- There was diminishing marginal utility of income, meaning that the extra utility from a given increase in income is greater the lower the initial income.

Consider a society where we have to divide $100 among four people who live in that society. They all have identical utility functions- $(x)^{1/2}$. Let's start with an equal division: {25, 25, 25, 25}. The total social welfare is 20 units. Now let's try different combinations of division of $100. Can you increase the social welfare beyond 20 units?

Note that we have diminishing returns to income in this utility function. If I make someone richer, the incremental gain to her utility would be less than the loss in the utility of the person who is made poorer.

Professor mentioned in the class that under utilitarian paradigm, you can make the richest better off by taking away resources from the poorest, and still have an increase in the total social welfare. Is that supported by the discussion above? Why, or why not? Under which conditions is such a transfer plausible?