

PRACTICE 4 - MICROECONOMICS

Bachelor Degree in Global Governance

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PERFECT SUBSTITUTES

- The case of perfect substitute goods is a special case in which the consumer considers the consumption of the two goods to be **equivalent** and the choice between the two goods depends **solely by their price**.

Let us consider three cases:

1. The budget constraint has a slope greater than the slope of the indifference curves, i.e. $-\frac{p_1}{p_2} > -MRS$, or $\frac{p_1}{p_2} < MRS$, the highest consumer utility is the intercept of the budget constraint with the x_1 axis and the consumer only consumes good 1, so her demand of good 1 is given by $x_1 = \frac{I}{p_1}$ and $x_2 = 0$. Note that if $\frac{p_1}{p_2} < MRS$, then $\frac{p_1}{p_2} < \frac{MU_1}{MU_2}$ and $\frac{MU_2}{p_2} < \frac{MU_1}{p_1}$.
2. The budget constraint has a slope smaller than the slope of the indifference curves, i.e. $-\frac{p_1}{p_2} < -MRS$, or $\frac{p_1}{p_2} > MRS$, the highest consumer utility is the intercept of the budget constraint with the x_2 axis and the consumer only consumes good 2, so her demand of good 2 is given by $x_2 = \frac{I}{p_2}$ and $x_1 = 0$.

PERFECT SUBSTITUTES

3. The slope of the budget constraint is equal to the one of the indifference curves, i.e. $-\frac{p_1}{p_2} = -MRS$, or $\frac{p_1}{p_2} = MRS$. In this case, the demand can be any bundle on the budget constraint, so her demand of good 1 is given by $x_1 = [0; \frac{I}{p_1}]$ and $x_2 = [0; \frac{I}{p_2}]$ if $\frac{p_1}{p_2} = MRS$. Note that if $\frac{p_1}{p_2} = MRS$, then $\frac{MU_2}{p_2} = \frac{MU_1}{p_1}$.

PERFECT COMPLEMENTS

- The case of perfect complement goods is a special case in which the consumer only wishes to consume two goods in a specific proportion and the utility function is of the form:

$$U(x_1, x_2) = \min\{\alpha x_1; \beta x_2\}$$

In this case, the optimal bundle is given by the corner points, in which the optimal proportion between the quantities is respected, given by the line:

$$\alpha x_1 = \beta x_2, \text{ or } x_2 = \frac{\alpha}{\beta} x_1.$$

The system to find the optimal bundle is therefore:

$$\begin{cases} x_2 = \frac{\alpha}{\beta} x_1 \\ I = p_1 x_1 + p_2 x_2 \end{cases}$$