# Microeconomics HU WS 2006/2007, Exercises 2 (two pages)

## More Exercises for Chapter 4

11. A consumer has the utility function $U = X^{0.3} \cdot Y^{0.4}$

    a. Is the utilty function homogeneous in the quantities of goods? Of which degree? Interpret this result economically.

    b. The income level is €140, $P_x = 3$, $P_y = 4$. Derive the utility maximizing demand quantities using the Lagrange method.

    c. Derive the demand functions for X and Y for the general case (income I, $P_x$, $P_y$).

    d. Calculate marginal utility of money for the situation under b.

    e. Check how results change compared to b. if the utility function is $U = 100 \cdot X^{0.3} \cdot Y^{0.4}$. Why is this?

    f. Answer question d. again for the utility function under e. Why is this?

    g. Derive the indirect utility function.

    h. Is the indirect utility function homogeneous in prices and income? Of which degree? What does this say?

    i. Derive the expenditure function.

    j. Is the expenditure function homogeneous in prices? Of which degree? What does this say?

    k. $P_y$ increases to 8. How much would income need to be changed in order to maintain the utility level under b? How much would income need to be changed in order to enable the consumer to purchase the original bundle of X and Y? Explain the difference.

12. In a developing country manioc is an important basic food product. A typical household in this country has a monthly income of 300 € and consumes 80 kg manioc per month. The market price for manioc is 1.25 €/kg.

    a. Draw for this household a coordinate system with manioc consumption on the horizontal axis and consumption of all other goods (measured in monetary units) on the vertical axis. sketch the budget line and the relevant indifference curve.

    b. The government wants to support poor consumers without letting consumption of manioc increase (because manioc is scarce). Therefore, the following system is applied: Each household gets food stamps which entitle the household to buy 60 kg of manioc for a price of 0.50 €/kg. The market price (for purchases above 60 kg) is raised to 3.50 €/kg.

        i. Can you say anything about how the new system will affect welfare of typical, poor and rich households without an indifference curve analysis? Give reasons for your answer.

        ii. Put the new situation in the diagram and discuss the welfare effect on the typical household.

        iii. How is manioc consumption of the typical household affected? How can you explain this? How do you assess this from an economic point of view?

        iv. Assume, that manioc is an inferior good for all households (remember: inferior goods are goods for which consumption decreases with rising income). How does the new system affect households which have considerably less than 300 € monthly income? How are households with more than 300 € income affected?

        v. What would, under situation iv, have been a better option to support low income households?