# MICROECONOMICS I

**Problems. 2011-2012**

Antonio Miralles y P. Rey

## 1 Revealed Preferences

**5.1.** The next table show prices, income and conssumption made by a consumer in two years.

| Year | $p_1$ | $p_2$ | $x_1$ | $x_2$ | $m$ |
|------|-------|-------|-------|-------|-----|
| 1 | 10 | 20 | 50 | 25 | |
| 2 | 10 | 10 | | | 750 |

Argue why it is the case than in the second year $x_1 \leq 50$.

**5.2.** A consumer chooses the bundle $(6, 6)$ when prices are $(6, 5)$. The same consumer chooses the bundle $(10, 0)$ when prices are $(5, 5)$. Do her choices violate WARP? Is any conssumption choise revealed preferred to another? Which one?

**5.3.** For each of the following cases, show whether WARP is satisfied.

1. With $m = 2000$, $p_1 = 100$ and $p_2 = 100$, choice is $x_1 = 10$ and $x_2 = 10$; with $m = 2000$, $p_1 = 50$ and $p_2 = 300$, choice is $x_1 = 20$ and $x_2 = 3'33$.

2. with $m = 2000$, $p_1 = 100$ y $p_2 = 100$, choice is $x_1 = 5$ and $x_2 = 15$; with $m = 2000$, $p_1 = 200$ and $p_2 = 50$, choice is $x_1 = 8$ and $x_2 = 8$.

3. with $m = 1000$, $p_1 = 10$ y $p_2 = 100$, choice is $x_1 = 10$ and $x_2 = 9$; with $m = 2000$, $p_1 = 40$ and $p_2 = 40$, choice is $x_1 = 25$ $_{and}$ $x_2 = 25$.

4. with $m = 100$, $p_1 = 10$ y $p_2 = 20$, choice is $x_1 = 8$ and $x_2 = 1$; with $m = 500$, $p_1 = 100$ and $p_2 = 50$, choice is $x_1 = 4$ and $x_2 = 2$.

## 2 Aplications: Labour supplu and intertemporal choice

**6.1.** Consider a consumer with Cobb-Douglas preferences $u(c, h) = ch^3$, where $c$ is conssumption and $h$ is leissure. The consumer has an initial non-

wage income of $M$ and a wage coming from working (with a limit of $H$ hours). Assume $p = w = 1$, $H = 24$ and $M = 5$.

1. Find how much this consumer consumes and how much she works.

2. Check wehther leissure is a normal good.

3. Solve the previous 2 exercises for $H = 10$.

4. Find the effects on conssumption, leissure and hours worked of changes in $w$.

5. Draw the labour supply function and explain it..

**6.2.** COnsider a consumer with the following preferences $u(c, h) = c + (2h)^{1/2}$, where $c$ is conssumption and $h$ is leissure.

1. Find the labour supply function.

2. Which is the minimum wage for which she will work?.

3. How will labour supply change if there is a small reduction in income taxes?

4. How will labour supply change if there is a small reduction in the taxes paid for the good she buys?

**6.3.** Consider a consumer who lives two periods. His goal is to maximize the utility derived from consuming in the two periods. The utility function is $u(c_1, c_2) = c_1 c_2$. In the current period, he recieves a wage of $m_1 = 10$ while in the future he will get a subsidy of $m_2 = 5$.

1. Assume there is no credit market. Represent the conssumption set and find the optimal conssumption in each period.

2. Assuem there is a credit market. SOlve the previous exercise. Does this consumer save?

3. Is it true that the existance of a credit market enhances the cosnumer's welfare? Why?

4.

**6.4.** A cosnumer has preferences such as for every two euros he has, he spends one today and another tomorrow. Assume $r > 0$ is the interest rate in the credit market.

1. Draw the indifference curves map

2. Assume the consumer only has $m_1 > 0$ Euros today. Which is the maximum conssumption he could have tomorrow?

3. Assume the consumer only has $m_2 > 0$ euros tomorrow. If he goes to the bank he will be able to consume today. WHich is the biggest loan he can apply to?

4. Assume this consumer has 2,000 Euros in each period. Write his budget constraint. Draw the conssumption set and find the demands of money today and tomorrow.

5. Why the substitution effect of a change in the interest rate is zero?