Otto von Guericke Universität Magdeburg
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14 July 2011
20385 Population and Family Economics
Summer 2011

Part I:	/20	Student ID:	....
Part II:	/55	Family name:	....
Homework:	/25	First name:	....
Total:	/100		

Grade:

Important notes and instructions

This is a **120 minutes** examination which consists of **two parts**.

Both parts (I and II) have to be answered. Maximum points possible: 75 points.

Check, if you have all **six problem sheets (twelve pages)**. Read the instructions to Part I and Part II.

Write your name and student ID number on this cover sheet. In case you also use separate double sheets for your answers, write your name on all answer sheets. Write legibly!

Allowed auxiliary materials: Dictionary

Good luck!

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Part I: Multiple Choice

Instructions: Answer all of the 10 multiple-choice questions by marking the box next to the answer you think is correct. There is only one correct answer to each question. For each correct answer, you get 2 points. If a question is incorrectly answered or not answered at all, you get 0 points. You will also get 0 points if you mark more than one box. A maximum of 20 points is attainable.

1. A household good z is produced using as inputs purchased goods x and time t spent in household production, i.e. $z = f(x, t)$. Which of the following household production functions f exhibits increasing returns to scale?

   ☐ $f(x, t) = \frac{x}{t}$

   ☐ $f(x, t) = x + t$

   ☐ $f(x, t) = xt$

2. Assume there is only one good, a household collective good denoted by y. Under singlehood, individuals i and j derive utility $u(y_i)$ and $u(y_j)$. Levels of y_i and y_j are exogenously fixed and constant. What would be their respective individual utilities if they marry and join resources?

   ☐ $u(y_i + y_j)$ and $u(0)$

   ☐ $u\left(\frac{y_i + y_j}{2}\right)$ and $u\left(\frac{y_i + y_j}{2}\right)$

   ☐ $u(y_i + y_j)$ and $u(y_i + y_j)$

3. A potential gain to individuals from marriage that arises from risk sharing is that for constant values of expected individual income levels:

   ☐ income variance increases.

   ☐ income variance declines.

   ☐ income variance stays constant as well.

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4. Individuals can benefit from marriage if marriage helps them to coordinate their investment/schooling decisions. Let ρ denote the rate of return on schooling and r be the interest rate. Which statement is correct?

☐ If capital markets are imperfect and $\rho < r$ holds, the provision of credit within the family can support optimal schooling.

☐ If capital markets are imperfect and $\rho > r$ holds, the provision of credit within the family can support optimal schooling.

☐ If capital markets are imperfect, schooling cannot be beneficial.

5. In Becker's efficient marriage market model, a particular assignment of women and men on the marriage market is efficient if and only if it maximizes:

☐ Total marital output of all marriages over all possible assignments.

☐ Marital output in each marriage.

☐ Marital output for each individual that is married.

6. In the two-sided search model with non-transferable utility considered in the lectures, which marriage market assignment of women and men will result if the rate at which an individual finds an acceptable partner goes to infinity?

☐ The Gale-Shapley allocation.

☐ Nobody will marry.

☐ An efficient negative assortative matching.

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7. Which of the following reasons may account for the fact that married men tend to earn more on average than men who are unmarried?

☐ Less productive men are more likely to marry.

☐ Marriage makes men more productive, because it allows them to specialize more in market work.

☐ Married men have to do more housework.

8. Which statement about the rise of divorce rates in West European countries is correct?

☐ Since 1930 divorce rates have not significantly changed.

☐ Divorce rates have risen since 1960.

☐ Divorce rates have significantly fallen since 1990.

9. Which statement about completed fertility in most industrialized countries is correct?

☐ Over the last decades, completed fertility has declined.

☐ Over the last decades, completed fertility has increased.

☐ Over the last decades, completed fertility has not shown a particular trend.

10. Which statement about singles, cohabitating couples, and married couples is wrong?

☐ Married couples are more likely to have children than cohabitating couples.

☐ Cohabitating couples are more likely to have children than singles.

☐ Single are more likely to have children than cohabitating couples.

Part II:

Instructions: Answer **five** of the following seven questions. If more than five questions are answered, only the first five will be graded. A maximum of **55 points** is attainable.

1 Gains From Marriage

Consider the collective goods argument for marriage. Logarithmic utility depends on the consumption of a collective good q_i and a private good c_i as follows:

$$u(c_i, q_i) = \alpha \ln c_i + (1 - \alpha) \ln q_i.$$

Individual income is denoted by y_i such that the budget constraint is given by:

$$c_i + q_i = y_i.$$

1a Determine the utility level of an individal living in singlehood. (**2 points**)

1b Now consider a married couple. How would a social planer who puts equal weights on male and female utility decide on the individual expenses for the collective good? (**3 points**)

1c What utility levels would the wife and the husband obtain if the expenses on the collective good in (1b) would be implemented? Discuss your result. (**3 points**)

1d Briefly explain why children might be a good example for the collective good q. (**3 points**)

2 Matching in the Marriage Market

Consider the following payoff matrix of marital outputs for three men (M_1, M_2, M_3) and three women (F_1, F_2, F_3). Total marital output in a particular match is given by $Z_{ij} = m_i + f_j$, where m_i and f_j are the respective output shares man i and female j get if they marry each other and utility is transferable:

	F_1	F_2	F_3
M_1	9	2	3
M_2	7	6	8
M_3	1	5	4

2a Who will marry whom under transferable utility? (**3 points**)

Now assume that utility is not transferable and let individual preferences be given by:

F_1	M_2	M_1	M_3		M_1	F_1	F_2	F_3
F_2	M_3	M_1	M_2		M_2	F_2	F_1	F_3
F_3	M_3	M_2	M_1		M_3	F_2	F_3	F_1
Women's preferences					Men's preferences			

2b Who will marry whom under non-transferable utility when men propose? (**4 points**)

2c Who will marry whom under non-transferable utility when women propose? (**2 points**)

2d What can you say about the number of stable and unstable matchings in this marriage market? (**2 points**)

3 The Institution of Marriage

Consider the paper by Bethmann and Kvasnicka (2011) discussed in lecture.

3a Why do the two sexes follow different reproductive strategies? (**3 points**)

3b How do these strategies lead to mating market failure? (**4 points**)

3c Why does an increase in mating costs s generate welfare gains? In your answer, discuss the role of children. (**4 points**)

4 Economics of Divorce

Descriptive statistics suggest that divorce is harmful for women.

4a Briefly describe the potential identification problem encountered when giving this descriptive evidence a causal interpretation. (**4 points**)

4b Which empirical strategy do Bedard and Deschênes (2005) use to overcome this potential identification problem? (**4 points**)

4c What are Bedard and Deschênes' main findings? (**3 points**)

5 Fertility

Consider Becker's (1960) Quantity-Quality Model. Parental preferences are described by a unitary household utility function:

$$u(n, q, s).$$

The household's lifetime budget constraint is given by:

$$I = \pi_c qn + \pi_s s.$$

5a Briefly describe the model's equations (variables and parameters) in your own words. **(2 points)**

5b Define the Langrangian function $\mathcal{L}(n, q, s, \lambda)$ and determine the household's optimal decisions. **(4 points)**

5c Determine the marginal rate of substituion between n and q. Interpret your result. **(2 points)**

5d Show diagrammatically the effects of an increase in household income on n and q. Briefly explain your graph. **(3 points)**

6 Out-Of-Wedlock Childbearing

Consider the following model of a married couple with one child. Individual preferences are described by the following utility functions:

$$u(1, q, s_m), \quad \text{and} \quad v(1, q, s_f)$$

where the indices m and f stand for mother and father respectively. The argument $n = 1$ in the utility functions indicates that we assume that the couple cannot have another child. Individual lifetime budget constraints are given by:

$$I_m = \pi_c q_m + s_m \quad \text{and} \quad I_f = \pi_c q_f + s_f.$$

Finally, child quality q is determined as follows:

$$q = q_m + q_f.$$

6a Briefly describe the model's equations in your own words (hint: do not forget to explain the model's variables and parameters). **(2 points)**

6b How would a social planer who puts equal weights on the utility of both parents decide on the individual child quality contributions? Hint: solve the household constraint for s_m and then maximize the sum of utilities with respect to s_f and q. **(5 points)**

6c Show that the Samuelson condition for the efficient provision of a collective good is satisfied. **(2 points)**

6d Give reasons why parents might fail to contribute efficiently to the quality of their child. **(2 points)**

7 Sex Ratios and their effects

7a Why is the study of sex ratios and sex ratio changes of interest to economists? **(4 points)**

7b State and briefly explain two problems that may endanger the identification of the effects of regional sex ratio imbalances when inter-region migration is heavily sex biased. **(4 points)**

7c Briefly explain one empirical strategy to solve the identification problem that arises when sex ratios are endogenous. You may refer in your answer to a study discussed in lecture. **(3 points)**