Written Exam for the M.Sc. in Economics Summer 2015

Advanced Development Economics: Micro Aspects

Final Exam

28 May 2015

(3-hour closed book exam)

Please note that the language used in your exam paper must correspond to the language of the title for which you registered during exam registration. I.e. if you registered for the English title of the course, you must write your exam paper in English. Likewise, if you registered for the Danish title of the course or if you registered for the English title which was followed by "eksamen på dansk" in brackets, you must write your exam paper in Danish.

This exam question consists of 4 pages in total (including this frontpage)

Question 1: Education

The question below refers to the analysis and results in Duflo (2001), "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment", *American Economic Review*, 91(4), 795-813. Between 1973 and 1978, the Indonesian government engaged in one of the largest school construction programs on record. Duflo (2001) evaluate the effect of building schools on education and earnings in Indonesia.

Q1A: Using the Table below, describe in detail the basic idea behind the identification strategy followed in Duflo (2001).

Q1B: Discuss the way in which Duflo (2001) seeks to improve the precision of the above estimates. When doing this comment on the conclusion made by Duflo (2001) that estimates are not upwardly biased by mean reversion or omitted programs.

TABLE 3—MEANS OF EDUCATION AND LOG(WAGE) BY COHORT AND LEVEL OF PROGRAM CELLS

	Years of education			Log(wages)		
	Level of program in region of birth			Level of program in region of birth		
	High (1)	Low (2)	Difference (3)	High (4)	Low (5)	Difference (6)
Panel A: Experiment of Interest						
Aged 2 to 6 in 1974	8.49	9.76	−1.27	6.61	6.73	−0.12
	(0.043)	(0.037)	(0.057)	(0.0078)	(0.0064)	(0.010)
Aged 12 to 17 in 1974	8.02	9.40	−1.39	6.87	7.02	−0.15
	(0.053)	(0.042)	(0.067)	(0.0085)	(0.0069)	(0.011)
Difference	0.47	0.36	0.12	−0.26	−0.29	0.026
	(0.070)	(0.038)	(0.089)	(0.011)	(0.0096)	(0.015)
Panel B: Control Experiment						
Aged 12 to 17 in 1974	8.02	9.40	−1.39	6.87	7.02	−0.15
	(0.053)	(0.042)	(0.067)	(0.0085)	(0.0069)	(0.011)
Aged 18 to 24 in 1974	7.70	9.12	−1.42	6.92	7.08	−0.16
	(0.059)	(0.044)	(0.072)	(0.0097)	(0.0076)	(0.012)
Difference	0.32	0.28	0.034	0.056	0.063	0.0070
	(0.080)	(0.061)	(0.098)	(0.013)	(0.010)	(0.016)

Notes: The sample is made of the individuals who earn a wage. Standard errors are in parentheses.

Question 2: Health and Nutrition

Field et al (2009) examine the effects on child schooling of an intensive and repeated distribution of iodine supplements. They look for evidence of improvements in cognitive ability attributable to the intervention by assessing whether children who benefited from supplements in utero exhibit higher rates of grade progression 10 to 14 years later.

Q2A: Describe the way iodine deficiencies (IDD) can affect human capital accumulation and labor productivity. Include in the description the link between IDD and gender inequality.

Q2B: Based on the Table below describe the identification strategy pursued and the main results obtained. Remember to comment on the gender dimension.

Q2C: What are the two confounding issues of the approach chosen? And how likely are they to be valid?

TABLE 3—GRADE ATTAINMENT AND IOC SUPPLEMENTATION IN UTERO (*PART I*)

				Binary treatment indicator		
	All (1)	Girls (2)	Boys (3)	All (4)	Girls (5)	Boys (6)
Pr(IOC in utero)	0.347	0.594	0.190	0.246	0.429	0.134
	[0.148]**	[0.170]***	[0.160]	[0.114]**	[0.135]***	[0.136]
Pr(IOC in utero) × district coverage rate						
Pr(IOC in utero)$_{3\le t<5}$	0.033	0.208	−0.095	0.106	0.223	−0.017
	[0.159]	[0.296]	[0.210]	[0.122]	[0.199]	[0.147]
Pr(IOC in utero)$_{3\le t<5}$	−0.055	−0.283	0.080	−0.056	−0.313	0.121
× young mom	[0.161]	[0.354]	[0.200]	[0.081]	[0.180]*	[0.112]
Age 11	0.377	0.310	0.360	0.437	0.362	0.412
	[0.115]***	[0.137]**	[0.132]***	[0.126]***	[0.154]**	[0.147]***
Age 12	1.129	1.113	1.115	1.187	1.146	1.170
	[0.125]***	[0.162]***	[0.137]***	[0.130]***	[0.176]***	[0.154]***
Age 13	1.914	2.062	1.735	1.958	2.079	1.778
	[0.143]***	[0.172]***	[0.160]***	[0.148]***	[0.193]***	[0.191]***
Fixed effects	District	District	District	District	District	District
Observations	1,395	678	717	1,395	678	717

Question 3: Credit

Based on the framework outlined in Bardhan and Udry Chapter 7, consider a rural credit market where borrowers and lenders are risk neutral. Each individual in a village has access to the same amount of land, and can farm this land at a fixed cost (equal to 1). The farm yields 0 if there is harvest failure, and *R>1* otherwise. The probability of a successful farming season is $\pi(e)$, where *e* represents effort of the farmer. $\pi(e)$ is strictly increasing and concave. The utility cost to the farmer of working is given by *D(e)*, which is increasing and strictly convex. There is no land market (no wealth), the farmer therefore has to borrow the necessary working capital. If a lender offers an interest factor of $i \leq R$, the returns to the farmer and lender are as follows:

	Borrower	Lender
Success	*R-i-D(e)*	*i*
Failure	*D(e)*	0

Lenders have access to a risk-free capital market with a return (ρ) of $R > \rho \geq 1$. Moreover, if the borrower does not involve herself in farming, she can receive a return (*W*) of $R > W \geq 0$ in alternative employment. Based on the above we have that;

Q3A: Outline the expected utility for the borrower and the lender and illustrate graphically how a competitive equilibrium loan market model with complete information and markets compares with a

- **(i) Competitive equilibrium with moral hazard**
- **(ii) Equilibrium with a fully informed monopolist**
- **(iii) Equilibrium where there is competition between an informed local moneylender and uninformed outside lenders.**

Q3B: Outline and describe an example of how the consequences of moral hazard can be neutralized.

Q3C: Describe the pros and cons of the three main mechanisms used in microfinance (group lending, dynamic incentives and regular repayments).