Written Exam for the M.Sc. in Economics summer 2014 - R

Advanced Development Economics: Micro Aspects

Final Exam

11 August, 2014

(3-hour closed book exam)

Please note that the exam is available only in English.

This exam question consists of 6 pages in total.

Question 1: Social Learning

Suppose that the production function takes following form:

$$q_{it} = 1 - (k_{it} - \kappa_{it})^2$$

where k_{it} is the level of input chosen by person i in period t and κ_{it} is the target level of input use. κ_{it} is not known at the time inputs are chosen. It is determined by

$$\kappa_{it} = \kappa^* + \mu_{it}$$

where μ_{it} is a normally distributed independent and identically distributed shock with mean zero and variance σ_u^2. At time t, person i does not know κ^* but has beliefs about κ^* which are distributed $N(\kappa_t^*, \sigma_{\kappa it}^2)$.

a) Define the concept of social learning and briefly describe the "Target Input" model.
b) Comment on how neighbor technology adoptions affect own adoption, and describe the two most important testable implications of this model.

The following question relates to the results in Conley and Udry (2010) "Learning about a New Technology: Pineapple in Ghana." *American Economic Review*, 100(1): 35-69.

c) Table 5 in Conley and Udry (2010) contains some of the main estimation results. Briefly describe the context and the key variable used for measuring the social learning. What are the main conclusions to be drawn from the results shown in Table 5? Discuss the implications of the results. [Note: There is no need to comment on the size of the effect, only the direction and the significance of associations.]

TABLE 5—PREDICTING INNOVATIONS IN INPUT USE, DIFFERENTIAL EFFECTS BY SOURCE OF INFORMATION
(*Dependent variable: Innovation in per plant fertilizer use*)

	A	B	C	D	E	F
Index of good news input levels ($M_{i,t}$)	1.05					
	(0.20)					
$M_{i,t}$ × novice farmer		1.07				
		(0.22)				
$M_{i,t}$ × veteran farmer		−0.46				
		(0.34)				
Index of good news input levels by novice farmers			−0.05			
			(0.39)			
Index of good news input levels by veteran farmers			1.05			
			(0.20)			
Index of good news input levels by farmers with same wealth				1.06		
				(0.22)		
Index of good news input levels by farmers with different wealth				−0.32		
				(0.32)		
Index of good news input levels on big farms					1.17	
					(0.19)	
Index of good news input levels on small farms					0.92	
					(0.20)	
Index of good news input levels, farmers with same soil						1.08
						(0.23)
Index of good news input levels, farmers with different soil						0.93
						(0.22)
Novice farmer		3.97	4.03	4.02	3.96	3.94
		(2.67)	(2.68)	(2.67)	(2.69)	(2.77)
Avg. dev. of geog. neighbors from previous use [$\Gamma_{i,t}$]	0.52	0.56	0.56	0.57	0.56	0.57
	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Avg. dev. of financial neighbors from prev. use	0.52	0.55	0.38	0.41	0.23	0.24
	(0.59)	(0.57)	(0.58)	(0.54)	(0.62)	(0.61)
Village 1	−7.50	−8.09	−7.97	−8.10	−7.68	−7.79
	(1.22)	(1.50)	(1.42)	(1.48)	(1.39)	(1.36)
Village 2	−0.47	−1.91	−1.94	−1.98	−1.60	−1.59
	(1.53)	(2.07)	(1.99)	(2.07)	(1.99)	(2.03)
Wealth (million cedis)	0.10	0.41	0.36	0.40	0.24	0.26
	(0.25)	(0.17)	(0.18)	(0.18)	(0.21)	(0.21)
Clan 1	−2.36	−2.44	−2.43	−2.32	−2.24	−2.33
	(1.41)	(1.25)	(1.27)	(1.23)	(1.28)	(1.30)
Clan 2	−0.35	0.00	−0.10	−0.13	−0.26	−0.24
	(1.44)	(1.35)	(1.34)	(1.35)	(1.31)	(1.31)
Church 1	0.13	0.63	0.48	0.41	0.69	0.74
	(1.31)	(1.13)	(1.09)	(1.13)	(1.15)	(1.15)

Notes: OLS point estimates, spatial GMM (Conley 1999) standard errors in brackets allow for heteroskedasticity and correlation as a function of physical distance; see footnote 24 for details. Sample size = 107. A full set of round dummies included but not reported. Information neighborhoods defined using responses to: Have you ever gone to farmer _____ for advice about your farm?

Question 2: Rural Land Markets

a) Describe how a limited liability constraint, *i.e.*, a scheme in which the tenant is only liable up to his own wealth level, may affect a sharecropping contract.

The questions below refer to the analysis in Banerjee, Gertler and Ghatak (2002). "Empowerment and Efficiency: Tenancy Reform in West Bengal", *Journal of Political Economy*, 110(2), 239-280.

b) Operation Barga in India was a drive to increase tenant registration in West Bengal in India. A registered tenant could not be evicted as long as they paid their dues and the maximally legal binding due was set at 25 percent of the output. Explain and discuss the expected effects of operation Barga on agricultural productivity.

c) Describe the approach used in Banerjee, Gertler and Ghatak (2002) to test the effect of operation Barga.

Question 3: Education

a) One of the UN MDGs is to reach 100% primary school gross enrolment worldwide. Discuss the potential problems (both in relation to quantity and quality of schooling) of focusing on gross enrolment rates only.

The questions below refer to the analysis and results in Angrist and Lavy (1999). "Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement", *Quarterly Journal of Economics*, 114(2), 533-573.

b) Outline the basic idea behind the identification strategy followed in Angrist and Lavy (1999). Describe Figure I and describe possible challenges with the identification strategy in their paper.

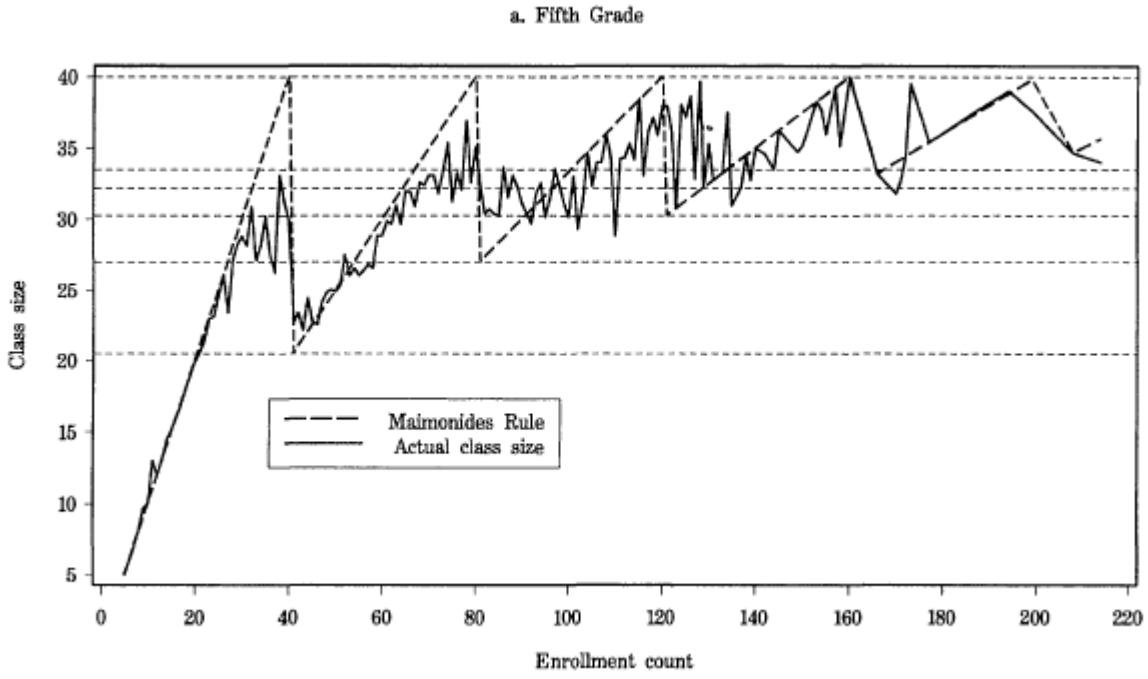

FIGURE I
Class Size in 1991 by Initial Enrollment Count, Actual Average Size and as Predicted by Maimonides' Rule

c) Table 4 contains some of the main results reported in Angrist and Lavy (1999). What are the main conclusions to be drawn from their results? Discuss the implications of the result.

TABLE IV
2SLS ESTIMATES FOR 1991 (FIFTH GRADERS)

	Reading comprehension						Math					
	Full sample				+/− 5 Discontinuity sample		Full sample				+/− 5 Discontinuity sample	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Mean score	74.4				74.5		67.3				67.0	
(s.d.)	(7.7)				(8.2)		(9.6)				(10.2)	
Regressors												
Class size	−.158	−.275	−.260	−.186	−.410	−.582	−.013	−.230	−.261	−.202	−.185	−.443
	(.040)	(.066)	(.081)	(.104)	(.113)	(.181)	(.056)	(.092)	(.113)	(.131)	(.151)	(.236)
Percent disadvantaged	−.372	−.369	−.369		−.477	−.461	−.355	−.350	−.350		−.459	−.435
	(.014)	(.014)	(.013)		(.037)	(.037)	(.019)	(.019)	(.019)		(.049)	(.049)
Enrollment		.022	.012			.053		.041	.062			.079
		(.009)	(.026)			(.028)		(.012)	(.037)			(.036)
Enrollment squared/100			.005						−.010			
			(.011)						(.016)			
Piecewise linear trend				.136						.193		
				(.032)						(.040)		
Root MSE	6.15	6.23	6.22	7.71	6.79	7.15	8.34	8.40	8.42	9.49	8.79	9.10
N	2019			1961	471		2018			1960	471	

The unit of observation is the average score in the class. Standard errors are reported in parentheses. Standard errors were corrected for within-school correlation between classes. All estimates use f_{sc} as an instrument for class size.