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

Advanced Development Economics: Micro Aspects

Final Exam

28 May, 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: Rural credit markets

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 $\pi(t)$, where t represents the type of farmer. Suppose that farming requires no effort, but that there are two types of potential borrowers:

- Type 1 is a low risk, low return
- Type 2 is a high risk, high return

$$\pi(1) > \pi(2)$$
$$R(1) < R(2)$$

The expected return to farming each type of land is identical: $\pi(1)R(1) = \pi(2)R(2) = \bar{R}$

Assume no land market (no wealth), and the farmer therefore has to borrow the necessary working capital from the lender, who offers an interest factor of $i \leq R$. Assume that lenders have access to a risk-free capital market with a return of ρ $(R > \rho \geq 1)$. Assume also that, if the borrower does not farm, she can receive a return of W $(R > W \geq 0)$ in an alternative employment. Based on the above we have that:

- The expected utility of a borrower is: $U(i,t) = \pi(t)(R(t) - i)$
- The expected utility of a lender is: $\Pi(i,t) = \pi(t)i$

a) Consider a rural credit market where lenders might have a good idea about the average characteristics of the pool of potential, but they may not have complete information concerning the characteristics of any particular borrower. Explain and illustrate graphically how a competitive equilibrium model with complete information and markets compares with (i) Competitive equilibrium with adverse selection, (ii) Equilibrium with a fully informed monopolist and (iii) Equilibrium where there is competition between an informed local moneylender and uninformed outside lenders. Note: it is not required that you analyze the possibility of credit rationing.

b) Outline how the consequences of adverse selection can be neutralized.

Question 2: Inter-firm relationships and informal credit

The question takes point of departure in McMillan and Woodruff (1999), "Interfirm Relationships and Informal Credit in Vietnam", *Quarterly Journal of Economics*, 114(4), 1285-1320.

McMillan and Woodruff (1999) test three hypotheses about relational contracting:
1. Customers lacking alternative suppliers will receive more trade credit.
2. There will be more trade credit when the supplier inspects their customers directly and in relationships of longer duration.
3. A supplier belonging to a network will grant more trade credit.

a) Describe the reasoning behind these three hypotheses.
b) Explain the two additional sets of explanations described in McMillan and Woodruff (1999) of why firms offer credit to their customers rather than leaving financing to specialists like banks.
c) Table IV outlines the main results in McMillan and Woodruff (1999). Based on the table, describe and discuss the main conclusions obtained in the article.

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TABLE IV

CUSTOMER CREDIT TOBITS

PERCENT OF BILL PAID BY CUSTOMER AFTER DELIVERY

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	(1)	(2)	(3)	(4)	(5) Domestic	(6) Foreign	(7) Big	(8) Small
Customer lock-in:								
# similar manufacturers w/in 1 km	−0.007 (1.66)	−0.008 (1.86)	−0.011 (2.98)	−0.010 (2.54)	−0.006 (1.35)	−0.018 (2.30)	−0.026 (3.10)	−0.006 (1.38)
Most important competitor w/in 1 km	−0.13 (2.46)	−0.12 (2.18)	−0.11 (2.18)	−0.16 (2.92)	−0.14 (2.41)	−0.01 (0.12)	−0.04 (0.43)	−0.19 (3.12)
Manufacturer information:								
Duration of relationship (years)	0.08 (2.96)	0.07 (2.61)	0.07 (2.51)	0.07 (2.42)	0.04 (1.34)	0.13 (1.34)	0.14 (1.74)	0.06 (1.90)
Duration ^2	−0.005 (2.15)	−0.004 (1.95)	−0.004 (1.74)	−0.004 (1.78)	−0.003 (1.19)	−0.007 (0.55)	−0.020 (1.45)	−0.003 (1.43)
Visited customer before first sale		0.08 (1.63)	0.07 (1.71)	0.06 (1.33)	0.12 (2.32)	0.04 (0.36)	0.03 (0.41)	0.10 (1.87)
Currently visit cust at least weekly		−0.03 (0.46)	−0.06 (1.03)	−0.05 (0.84)	−0.09 (1.43)	0.07 (0.49)	0.06 (0.60)	−0.05 (0.76)
Network membership:								
First information from other manufacturers	0.20 (3.36)	0.16 (2.83)	0.10 (1.99)	0.17 (2.98)	0.06 (1.00)	0.22 (2.05)	0.11 (1.30)	0.00 (0.03)
Talk to other suppliers of customer at least monthly		0.19 (2.36)	0.19 (2.63)	0.18 (2.31)	0.27 (3.18)	0.04 (0.26)	−0.19 (1.31)	0.31 (3.20)
First information from family member	0.04 (0.60)	−0.01 (0.17)	−0.08 (1.34)	−0.13 (2.11)	−0.13 (1.91)	0.02 (0.17)	0.00 (0.01)	−0.15 (2.15)
Alternative explanations:								
Manufacturer sets prices by relationship w/customer			0.02 (0.53)	0.08 (1.69)	0.06 (1.13)	−0.05 (0.48)	0.14 (1.62)	0.00 (0.03)
Customer is retail store/wholesaler			0.07 (1.62)	0.03 (0.60)	0.11 (2.25)	0.02 (0.20)	0.20 (2.11)	0.03 (0.57)
Log firm age + 1 (years)			−0.09 (1.76)	−0.10 (1.57)	−0.11 (1.91)	−0.25 (1.62)	0.01 (0.04)	−0.06 (1.04)
Log employment			−0.02 (0.98)	−0.06 (2.28)	−0.04 (1.50)	0.05 (1.15)	−0.10 (0.95)	−0.07 (1.86)
Manufacturer receives credit from bank			−0.02 (0.36)	−0.03 (0.53)	−0.01 (0.10)	0.05 (0.55)	−0.04 (0.45)	0.15 (2.02)
% of bill paid to suppliers after delivery (0–2)			0.40 (6.27)	0.47 (6.23)	0.40 (5.45)	0.13 (1.08)	0.35 (2.74)	0.39 (5.25)
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Manager controls	No	No	No	Yes	No	No	No	No
Number of observations	224	224	224	204	153	71	76	148
% obs not censored	31.70%	31.70%	31.70%	31.37%	35.95%	22.54%	34.21%	30.41%
χ^2	73.5	82.6	134.5	152.0	114.7	48.7	64.1	112.5
p-value	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001

Regression are two-tailed Tobits. Coefficients are marginal effects, t-values are in parentheses.

a. All regressions include industry dummies (8), and indicators of first customer and location in Hanoi.

b. Regression 4 also includes % sales represented by main product, manager speaks Chinese, % sales to SOEs, % supplies from SOEs, 100% family-owned, collective, manager formerly worked for SOE, age of manager, and manager attended university.

Question 3: Corruption

The evidence shows that corruption is rampant in developing countries, so much that several international aid agencies have made aid disbursements conditional on a country's corruption record. However, measuring corruption is not an easy task.

a) Name at least two ways of measuring corruption described in Olken and Pande (2012). "Corruption in Developing Countries", *Annual Review of Economics*, 4, 479-509. Discuss the potential problems of those measures and illustrate with examples. Discuss at least two types of efficiency costs of corruption on economic activity.

The questions below refer to the analysis and results in Olken (2007). "Monitoring Corruption: Evidence from a Field Experiment in Indonesia" *Journal of Political Economy*, 115(2), 200-249.

b) Table 1 displays the basic experimental design in Olken (2007). Describe the identification strategy used in the paper.

TABLE 1
NUMBER OF VILLAGES IN EACH TREATMENT CATEGORY

	Control	Invitations	Invitations Plus Comment Forms	Total
Control	114	105	106	325
Audit	93	94	96	283
Total	207	199	202	608

NOTE.—Tabulations are taken from results of the randomization. Each subdistrict faced a 48 percent chance of being randomized into the audit treatment. Each village faced a 33 percent chance of being randomized into the invitations treatment and a 33 percent chance of being randomized into the invitations plus comment forms treatment. The randomization into audits was independent of the randomization into invitations or invitations plus comment forms.

c) Tables 4 and 11 present some of the main results reported in Olken (2007). What are the main conclusions to be drawn from these tables? Discuss the implications of the result.

TABLE 4
AUDITS: MAIN THEFT RESULTS

PERCENT MISSING[a]	CONTROL MEAN (1)	TREATMENT MEAN: AUDITS (2)	NO FIXED EFFECTS		ENGINEER FIXED EFFECTS		STRATUM FIXED EFFECTS	
			Audit Effect (3)	p-Value (4)	Audit Effect (5)	p-Value (6)	Audit Effect (7)	p-Value (8)
Major items in roads ($N = 477$)	.277 (.033)	.192 (.029)	−.085* (.044)	.058	−.076** (.036)	.039	−.048 (.031)	.123
Major items in roads and ancillary projects ($N = 538$)	.291 (.030)	.199 (.030)	−.091** (.043)	.034	−.086** (.037)	.022	−.090*** (.034)	.008
Breakdown of roads:								
Materials	.240 (.038)	.162 (.036)	−.078 (.053)	.143	−.063 (.042)	.136	−.034 (.037)	.372
Unskilled labor	.312 (.080)	.231 (.072)	−.077 (.108)	.477	−.090 (.087)	.304	−.041 (.072)	.567

NOTE.—Audit effect, standard errors, and p-values are computed by estimating eq. (1), a regression of the dependent variable on a dummy for audit treatment, invitations treatment, and invitations plus comment forms treatments. Robust standard errors are in parentheses, allowing for clustering by subdistrict (to account for clustering of treatment by subdistrict). Each audit effect, standard error, and accompanying p-value is taken from a separate regression. Each row shows a different dependent variable, shown at left. All dependent variables are the log of the value reported by the village less the log of the estimated actual value, which is approximately equal to the percent missing. Villages are included in each row only if there was positive reported expenditures for the dependent variable listed in that row.
[a] Percent missing equals log reported value − log actual value.
* Significant at 10 percent.
** Significant at 5 percent.
*** Significant at 1 percent.

TABLE 11
PARTICIPATION: MAIN THEFT RESULTS

PERCENT MISSING[a]	CONTROL MEAN (1)	TREATMENT MEAN (2)	NO FIXED EFFECTS		ENGINEER FIXED EFFECTS		STRATUM FIXED EFFECTS	
			Treatment Effect (3)	p-Value (4)	Treatment Effect (5)	p-Value (6)	Treatment Effect (7)	p-Value (8)
			A. Invitations					
Major items in roads ($N = 477$)	.252 (.033)	.230 (.033)	−.021 (.035)	.556	−.030 (.034)	.385	−.026 (.034)	.448
Major items in roads and ancillary projects ($N = 538$)	.268 (.031)	.236 (.031)	−.030 (.032)	.360	−.032 (.032)	.319	−.029 (.032)	.356
Breakdown of roads:								
Materials ($N = 477$)	.209 (.041)	.221 (.041)	.014 (.038)	.725	.008 (.037)	.839	.005 (.037)	.882
Unskilled labor ($N = 426$)	.369 (.077)	.180 (.077)	−.187* (.098)	.058	−.215** (.094)	.024	−.143* (.086)	.098
			B. Invitations Plus Comments					
Major items in roads ($N = 477$)	.252 (.033)	.228 (.026)	−.022 (.030)	.455	−.024 (.029)	.411	−.015 (.030)	.601
Major items in roads and ancillary projects ($N = 538$)	.268 (.031)	.238 (.026)	−.026 (.032)	.409	−.025 (.030)	.406	−.027 (.031)	.385
Breakdown of roads:								
Materials ($N = 477$)	.209 (.041)	.180 (.032)	−.028 (.034)	.414	−.022 (.032)	.496	−.010 (.033)	.754
Unskilled labor ($N = 426$)	.369 (.077)	.267 (.073)	−.099 (.087)	.255	−.132 (.087)	.131	−.090 (.091)	.323

NOTE.—See the note to table 4. Results come from estimating eq. (1), a regression of the dependent variable on a dummy for audit treatment, invitations treatment, and invitations plus comment forms treatments. Each invitations effect and invitations plus comments effect comes from a separate regression, with the dependent variable listed in the row and the fixed effects specification listed in the column heading. Robust standard errors are in parentheses. Regressions without stratum (i.e., subdistrict) fixed effects include a variable for audits and allow for clustering of standard errors by subdistrict.
[a] Percent missing equals log reported value − log actual value.
* Significant at 10 percent.
** Significant at 5 percent.
*** Significant at 1 percent.