

Estimating lending impacts with survey and admin data

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I Read files

Schooling pattern in X1.

0000	0001	000n	0011	001n	00nn	0100	0101	010n	0111	011n	01nn	0nnn	1000	1001	100n
208	36	216	152	33	192	16	4	9	840	105	70	318	64	8	45
1011	101n	10nn	1100	1101	110n	1110	1111	111n	11nn	1nnn					
56	24	86	48	16	84	28	5172	654	326	199					

Description of data:

- ad Administrative data: Up to [-24, 48] months after first loan disbursement.
- X1 Schooling panel with attrition. Aged 6-18 in rd1. Enrolled={0,1} is defined for children aged 6-18 in rd1 by referencing to currently_enrolled and age information.
- X2 Schooling panel after augmenting attrited children to X1. Attrited children are augmented by assuming to be out of school. AssignRegression is group classification: Number of observation is 618, 635, 594, 593, 363, 100 for traditional, large, largeGrace, cow, dropOuts, forcedDropOuts, respectively.
- ros roster to condition the initial status prior to participation.

First, merge admin data ad with roster data ros with hhid, Year, Month as keys. Second, merge ad+ros with X1 or X2.

Year	Arm						
	traditional	large	large	grace	cow	dropOuts	forcedDropOuts
2011	0	1		2	6	2	0
2012	440	692		663	622	495	151
2013	374	25		45	50	2	0
2014	633	134		164	173	470	101
2015	465	111		120	140	339	60
2016	184	18		46	28	120	45
2017	600	125		156	165	436	0
<NA>	2	0		0	0	43	0

year	traditional	large	large	grace	cow	dropOuts	forcedDropOuts
2014	633	134		164	173	467	101
2015	649	129		166	168	462	105
2017	600	125		156	165	436	0

Save roster-admin data.

Save asset-admin data.

	NumberOfHHids
year	1544
2012	2100
2013	806
2014	2282
2015	2024
2017	1797

	ObservedRound			
year	1	2	3	4
2012	2100	0	0	0
2013	806	0	0	0
2014	0	2282	0	0
2015	0	79	1945	0
2017	0	28	107	1662

	ObservedRound				
year	1	2	3	4	5
2012	2903	0	0	0	0
2013	0	2903	0	0	0
2014	0	0	2903	0	0
2015	0	0	0	2903	0
2017	0	0	0	0	2903

	AgeComputed																	
year	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
2012	168	264	279	114	333	77	237	109	104	173	104	43	95	0	0	0	0	0
2013	48	93	90	61	118	60	79	55	46	58	46	14	38	0	0	0	0	0
2014	0	43	222	317	298	211	346	131	234	121	124	152	62	15	6	0	0	0
2015	0	0	42	225	311	291	198	302	118	192	100	93	95	38	11	8	0	0
2017	0	0	0	0	40	218	289	279	186	272	110	171	90	64	51	22	4	1

	AgeComputed																	
year	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
2012	48	261	354	340	232	393	156	291	155	161	219	117	81	95	0	0	0	0
2013	0	48	261	354	340	232	393	156	291	155	161	219	117	81	95	0	0	0
2014	0	0	48	261	354	340	232	393	156	291	155	161	219	117	81	95	0	0
2015	0	0	0	48	261	354	340	232	393	156	291	155	161	219	117	81	95	0
2017	0	0	0	0	0	48	261	354	340	232	393	156	291	155	161	219	117	81
	AgeComputed																	
year	23																	
2012	0																	
2013	0																	
2014	0																	
2015	0																	
2017	95																	

Save roster-admin-schooling data.

II Estimation

Based on admin information on repayment and saving, it is no surprise that impacts on incomes were not detected (See the older estimation file).

II.1 Schooling

If using a1, retain only the complete portion of panel.

TABLE 1: OLS ESTIMATION OF SCHOOL ENROLLMENT

covariates	(1)	(2)	(3)	(4)	(5)	(6)
	X1			X2 (Augmented data)		
primary0512	0.869*** (0.043)	0.866*** (0.043)	0.888*** (0.038)	0.859*** (0.054)	0.871*** (0.054)	0.831*** (0.048)
junior1315	0.882*** (0.052)	0.879*** (0.052)	0.906*** (0.029)	0.736*** (0.074)	0.749*** (0.074)	0.716*** (0.064)
high1618	0.830*** (0.070)	0.828*** (0.070)	0.848*** (0.060)	0.563*** (0.079)	0.576*** (0.078)	0.537*** (0.078)
Large	0.029 (0.029)	0.021 (0.031)	0.007 (0.031)	0.032 (0.044)	0.030 (0.047)	0.027 (0.049)
LargeGrace	0.015 (0.031)	-0.009 (0.036)	-0.015 (0.034)	0.035 (0.043)	0.002 (0.056)	0.005 (0.066)
Cow	0.000 (0.035)	0.010 (0.034)	-0.028 (0.039)	-0.003 (0.046)	0.002 (0.049)	-0.020 (0.062)
Previous 6M mean repay	-0.005 (0.023)	-0.007 (0.023)	-0.006 (0.024)	0.005 (0.030)	0.004 (0.030)	0.005 (0.032)
Previous 6M mean NetSavings	0.035 (0.102)	0.042 (0.100)	-0.053 (0.057)	0.129 (0.154)	0.103 (0.149)	0.010 (0.129)
Previous 6M mean missw	-0.006 (0.007)	-0.006 (0.007)	0.003 (0.007)	-0.015 (0.013)	-0.016 (0.014)	-0.014 (0.015)
junior1315 × Large	-0.024 (0.045)	0.004 (0.046)	-0.003 (0.039)	-0.032 (0.058)	-0.058 (0.061)	-0.064 (0.060)
high1618 × Large	-0.010 (0.070)	-0.011 (0.076)	0.013 (0.078)	-0.030 (0.087)	-0.046 (0.093)	-0.052 (0.093)
junior1315 × LargeGrace	-0.056 (0.050)	-0.081 (0.064)	-0.124** (0.060)	-0.048 (0.062)	-0.085 (0.077)	-0.126 (0.084)
high1618 × LargeGrace	-0.039 (0.073)	-0.040 (0.086)	-0.041 (0.080)	-0.086 (0.087)	-0.124 (0.101)	-0.121 (0.110)
junior1315 × Cow	-0.047 (0.056)	-0.103 (0.068)	-0.101 (0.062)	-0.021 (0.063)	-0.123 (0.076)	-0.112 (0.075)
high1618 × Cow	-0.059 (0.089)	-0.174* (0.106)	-0.175 (0.109)	-0.152* (0.086)	-0.230** (0.095)	-0.212** (0.094)
primary0512 × Large × Female		0.019 (0.018)	0.021 (0.020)		0.005 (0.031)	0.007 (0.033)
junior1315 × Large × Female		-0.038* (0.022)	-0.029 (0.023)		0.054 (0.034)	0.057 (0.035)
high1618 × Large × Female		0.024 (0.046)	0.002 (0.046)		0.060 (0.074)	0.075 (0.076)
primary0512 × LargeGrace × Female		0.046** (0.023)	0.036 (0.023)		0.061 (0.046)	0.066 (0.056)
junior1315 × LargeGrace × Female		0.095* (0.053)	0.122** (0.057)		0.142** (0.058)	0.181*** (0.057)
high1618 × LargeGrace × Female		0.054 (0.074)	0.034 (0.070)		0.181** (0.092)	0.184* (0.097)
primary0512 × Cow × Female		-0.018 (0.031)	0.010 (0.033)		-0.010 (0.037)	0.018 (0.038)
junior1315 × Cow × Female		0.090* (0.052)	0.093* (0.054)		0.193*** (0.056)	0.187*** (0.067)
high1618 × Cow × Female		0.241*** (0.086)	0.255*** (0.093)		0.206** (0.084)	0.237** (0.103)
MeanYearlyCERR			0.032** (0.013)			0.005 (0.028)
number of clusters	80	80	80	80	80	80
R ²	0.95	0.95	0.954	0.806	0.808	0.808
N	2537	2537	2181	3560	3560	3002

Source: Estimated with GUK administrative and survey data.

Notes: 1. Intercept terms are omitted in estimating equations. Year effects are included in estimation.

2. ***, **, * indicate statistical significance at 1%, 5%, 10%, respectively. Standard errors are clustered at group (village) level.

Finding II.1 TABLE 1 shows school enrollment is higher for X1 than X2, indicating nonattriting members are school goers. Cow in all specifications and large grace in some specification show negative impacts for older children, yet not for girls. This may be due to increased labour demand within a family.

II.2 Saving (net of repayment)

Dropped 1958 obs due to NA.

Level covariates:

[1]	Group	HeadAge	HeadLiteracy	LoanYear
[5]	dummyCow	dummyDropOuts	dummyFemale	dummyLarge
[9]	dummyLargeGrace	dummyTraditional	en	groupid
[13]	tee			

TABLE 2: FD ESTIMATION OF NET SAVING

covariates	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative Net Saving				Cumulative net saving + repayment			
Traditional	-2348.6*** (216.8)	-2922.4*** (427.0)			3328.2*** (264.9)	3630.4*** (406.2)		
Large	-3633.3*** (142.6)	-4185.5*** (402.3)			5146.4*** (171.0)	5429.4*** (353.7)		
LargeGrace	-3924.9*** (367.3)	-4476.6*** (510.9)			5277.2*** (277.7)	5559.3*** (435.0)		
Cow	-4195.8*** (248.5)	-4758.2*** (398.0)			5429.0*** (186.9)	5718.7*** (340.6)		
Female	15.8 (107.4)	12.6 (104.6)			-18.6 (103.1)	-14.4 (101.7)		
HeadLiteracy		420.9 (344.7)	278.5 (180.8)	151.4 (167.5)		-298.5 (223.4)	8.4 (176.4)	-165.1 (166.0)
HeadAge		13.1 (8.5)	-1.6 (8.1)	-24.1** (10.4)		-6.5 (7.1)	46.8*** (10.8)	14.7* (7.9)
LoanYear2 × Traditional			-1206.3*** (405.4)	-660.2* (388.3)			296.0 (592.0)	909.4** (438.4)
LoanYear2 × Large			-3137.8*** (314.2)	-3389.3*** (322.6)			3416.3*** (532.3)	3523.8*** (438.6)
LoanYear2 × LargeGrace			239.9 (421.8)	219.4 (341.0)			675.6 (521.8)	885.3** (402.2)
LoanYear2 × Cow			1240.2 (1014.3)	897.4* (496.5)			1242.2 (1032.8)	1030.9* (587.1)
LoanYear3 × Traditional			-2171.6*** (395.5)	-1774.9*** (414.2)			1475.6*** (533.1)	2201.1*** (449.6)
LoanYear3 × Large			-3800.6*** (349.9)	-3867.5*** (317.7)			3391.1*** (417.4)	3748.0*** (383.2)
LoanYear3 × LargeGrace			-5942.5*** (365.1)	-5656.4*** (357.6)			5038.1*** (479.1)	5532.9*** (376.0)
LoanYear3 × Cow			-5839.7*** (550.9)	-5312.1*** (340.2)			4485.4*** (492.2)	5292.6*** (417.1)
LoanYear4 × Traditional			-2644.4*** (541.7)	-2132.2*** (566.4)			1804.5*** (610.3)	2770.4*** (540.0)
LoanYear4 × Large			-4359.3*** (464.9)	-4249.4*** (435.0)			3527.5*** (564.6)	3979.0*** (483.6)
LoanYear4 × LargeGrace			-5284.6*** (395.4)	-4816.1*** (399.6)			4065.2*** (485.7)	4898.4*** (388.1)
LoanYear4 × Cow			-6046.5*** (833.6)	-5309.0*** (563.1)			4334.6*** (650.9)	5325.1*** (585.4)
OtherNetSaving				0.7 (0.8)				-1.1 (0.8)
OtherMisses				-350.5 (213.0)				451.8** (214.1)
CumOtherNetSaving				1.2*** (0.4)				1.3*** (0.2)
T = 2	8	8	8	8	8	8	8	8
T = 3	460	460	460	460	460	460	460	460
T = 4	147	147	147	147	147	147	147	147
R ²	0.609	0.609	0.827	0.849	0.829	0.829	0.874	0.896
N	1369	1367	1336	1336	1369	1367	1336	1336

Source: Estimated with GUK administrative and survey data.

Notes: 1. First-difference estimates. Net saving is taken from administrative data and merged with survey data at Year-Month of survey interviews. Intercept terms are omitted in estimating equations.

2. ***, **, * indicate statistical significance at 1%, 5%, 10%, respectively. Standard errors are clustered at group (village) level.

Finding II.2 TABLE 2 shows net saving decreases, mostly in the later rounds. This reflects the use of saving for repayment.

II.3 Assets

```
Warning in `[.data.table`(as, , `:=`(c("en", "DistDate1"), NULL)): Adding new column 'en'
```

```
Dropped 5 obs due to T<2.  
Dropped 1005 obs due to NA.
```

Level covariates:

[1] LoanYear	dummyCow	dummyDropOuts
[4] dummyForcedDropOuts	dummyLarge	dummyLargeGrace
[7] dummyTraditional	en	groupid
[10] hhid	tee	

Dropped 5 obs due to T<2.

Level covariates:

[1] LoanYear	dummyCow	dummyDropOuts
[4] dummyForcedDropOuts	dummyLarge	dummyLargeGrace
[7] dummyTraditional	en	groupid
[10] hhid	tee	

TABLE 3: FD ESTIMATION OF ASSETS

covariates	(1)	(2)	(3)	(4)	(5)	(6)
	Household asset amount (Tk)			Productive asset amount (Tk)		
Traditional	7141.8*** (1027.3)			-226.5*** (85.8)		
Large	7987.7*** (1176.4)			-7.2 (75.0)		
LargeGrace	8207.0*** (857.7)			-113.4 (106.7)		
Cow	7772.7*** (1300.1)			-171.8* (93.7)		
round 1 - 2 × Traditional		9417.6*** (2453.4)	9954.6* (5949.8)		-149.5 (324.3)	668.4 (761.9)
round 1 - 2 × Large		8341.5*** (1599.0)	12060.5 (7949.2)		788.9* (460.3)	394.6 (639.2)
round 1 - 2 × LargeGrace		8771.6*** (1787.2)	9500.1* (5183.7)		340.2 (422.1)	1040.0 (948.2)
round 1 - 2 × Cow		11684.7*** (3322.9)	10957.7* (6530.1)		-255.1 (244.0)	-1532.1* (864.2)
round 2 - 3 × Traditional		7037.9** (3291.9)	7735.2** (3165.4)		-362.3 (275.8)	-333.4 (250.7)
round 2 - 3 × Large		13089.7*** (2947.4)	14603.7*** (3246.9)		157.1 (428.1)	194.5 (484.5)
round 2 - 3 × LargeGrace		14236.0*** (2379.9)	14408.9*** (3031.6)		31.3 (362.3)	71.3 (526.8)
round 2 - 3 × Cow		11676.1*** (2848.3)	11684.2*** (3058.8)		-97.7 (212.2)	-57.8 (227.6)
round 3 - 4 × Traditional		5033.5*** (1326.2)	5703.3*** (1497.8)		-164.4* (83.9)	-199.5 (129.9)
round 3 - 4 × Large		2502.0 (2008.6)	3756.0 (2378.7)		-968.7*** (341.8)	-940.9*** (325.3)
round 3 - 4 × LargeGrace		1538.6 (1486.3)	1828.6 (1811.8)		-717.2*** (250.9)	-827.0*** (298.9)
round 3 - 4 × Cow		-80.2 (1287.6)	154.7 (1313.3)		-164.4 (114.2)	-47.4 (125.9)
OtherNetSaving			1.3 (8.5)			-2.9* (1.6)
OtherMisses			910.4 (2089.3)			-365.0** (155.7)
CumOtherNetSaving			-1.8 (1.9)			-0.1 (0.2)
T = 2	15	15	39	15	15	39
T = 3	38	38	839	38	38	839
T = 4	1109	1109	232	1109	1109	232
R ²	0.071	0.095	0.083	-0.001	0.003	0.009
N	3418	3418	2413	3418	3418	2413

Source: Estimated with GUK administrative and survey data.

Notes: 1. First-difference estimates. Saving and repayment misses are taken from administrative data and merged with survey data at Year-Month of survey interviews. Intercept terms are omitted in estimating equations. Sample is continuing members and replacing members of early rejecters and received loans prior to 2015 January. Household assets do not include livestock.

2. ***, **, * indicate statistical significance at 1%, 5%, 10%, respectively. Standard errors are clustered at group (village) level.

Finding II.3 TABLE 3 shows household assets increase after receiving the loans. Total increment is largest among the large grace, but standard errors are also large. Increments are mostly in the earlier rounds, suggesting substantial purchase after receiving a loan.

