Labor Markets and Poverty in Village Economies

Oriana Bandiera [LSE], Robin Burgess [LSE], Narayan Das [BRAC], Selim Gulesci [Bocconi], Imran Rasul [UCL], Munshi Sulaiman [BRAC and Yale]

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Poverty and Labor Markets

- labor is the primary asset the poor are endowed with

- understanding how the poor allocate their time across activities is central to poverty alleviation

- focus on market imperfections of two types:
  - barriers: misallocation and scale
  - distorted prices ($w \neq MPL$): un(der)employment
This Paper: Summary 1

- use an RCT to understand how capital and labor market imperfections determine labor allocations of the rural poor

- RCT is large-scale, long-term, and a partial popn experiment [Moffitt 2001]

- reveal the nature of the poverty trap faced by the poor:
  - barriers to accessing capital that prevents $K$-intense work activities being undertaken at scale
  - exacerbated by constrained $L^D$ in $L$-intense work activities ($L^D$)
This Paper: Summary 2

- relaxing capital constraints on poor allows them to permanently reallocate time across activities

- this big-push intervention impacts village economy:
  - labor market: standard GE channels ($\Delta w$)
  - capital markets: $K$-accumulation, savings, financial intermediation
  - different distributional consequences

- calculate implied welfare cost of capital market imperfection
  - with and without binding $L^D$ constraint ($\underline{L}$)
Labor Choices of the Rural Poor

- the rural poor are landless and derive most of their earnings from casual wage labor

- in the same LM, observe wealthier hhs combining \((L - K)\) in income generating activities [Banerjee and Duflo 2007]

- \(K\)-intense sector has far higher returns that casual labor \((r > w)\)

- misallocation of time across activities:
  - barriers to accessing to capital [poverty trap]
  - lack information on returns to activities [Jensen 2012]

- un(der)employment:
  - constrained aggregate \(L^D\) [exacerbates poverty trap]
  - downward nominal wage rigidity [Lewis 1954, Kaur 2014]
Specific Context: Setting and Data

- **context:** 1400 villages throughout rural Bangladesh
  - landless poor
  - dual labor market: casual wage labor \( f(L) \) and \( K \)-intense activities \( g(L, K) \)

- panel data collected since 2007 from 23,000 hhs in 1409 communities
  - 7,000 eligibles [eligible *ultra poor women*]
  - 16,000 non-eligibles [near poor, middle, upper classes]

- data collection focused on:
  - time devoted to income generating activities, by activity and hh member
  - earnings-assets-wealth-consumption-savings-transfers-social ties
**Context: Intervention**

- collaboration with BRAC NGO

- **randomized intervention** in which eligibles receive:
  - a large injection of capital ($\Delta K > 0$)
  - skills that raise $MP_L$ in the $K$-intensive sector ($g_L(L, K) > 0$)

- use to understand underlying **capital and labor** market constraints the poor face in allocating their time across activities
Outline

- context: features of rural labor markets for women in Bangladesh
- theoretical framework
- intervention description and research design
- labor markets: individual → village level
- capital markets: household → village level
- efficiency cost of capital constraint
- lessons and future research agenda
Four Features of Rural Labor Markets for Women

- dualism: limited range of labor activities
- returns to $K$-intense activities ($r$) > returns from casual wage labor ($w$)
- capital market imperfections
- potential constrained/weak aggregate demand for casual wage labour ($\bar{L}^D$)
- [Figure 1; Tables 1 and 2]
Figure 1: Features of Rural Labor Markets for Women

A. Share of Hours of Casual Labor and Self-Employment by Branch
Figure 1: Features of Rural Labor Markets for Women

B. Returns to Activities by Branch

Hourly Earnings, by Activity

Branch

Livestock rearing (cows/goats)

Casual Wage Labor: Agriculture

Casual Wage Labor: Domestic Maid
C. Returns to Activities by Livestock Value

Notes: All figures are derived using the baseline household survey. Panel C graphs non-parametric regressions of the hourly returns to activities by the value of livestock owned. The vertical lines correspond to the average value of livestock owned by the eligible poor pre- and post-intervention. All monetary amounts are expressed in Bangladeshi Taka, set at 2007 prices and deflated using the rural CPI published by Bangladesh Bank. In 2007, 1USD=69TK.
### Table 1: Access to Capital, by Wealth Class
Means, standard deviation in parentheses

<table>
<thead>
<tr>
<th>Engagement in Financial Markets</th>
<th>(1) Eligible Poor</th>
<th>(2) Near Poor</th>
<th>(3) Middle Class</th>
<th>(4) Upper Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household savings [Tk]</td>
<td>146</td>
<td>404</td>
<td>1618</td>
<td>8608</td>
</tr>
<tr>
<td>Any loans outstanding?</td>
<td>.191</td>
<td>.389</td>
<td>.497</td>
<td>.429</td>
</tr>
<tr>
<td>Value of loans if any outstanding [Tk]</td>
<td>604.9</td>
<td>1896</td>
<td>4857</td>
<td>11060</td>
</tr>
<tr>
<td>Collateral</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own land?</td>
<td>.066</td>
<td>.110</td>
<td>.489</td>
<td>.912</td>
</tr>
<tr>
<td>Value of land if owned [Tk]</td>
<td>3691</td>
<td>9194</td>
<td>126777</td>
<td>741615</td>
</tr>
<tr>
<td>Own livestock (cows/goats)?</td>
<td>.477</td>
<td>.610</td>
<td>.842</td>
<td>.952</td>
</tr>
<tr>
<td>Value of livestock if owned [Tk]</td>
<td>916</td>
<td>2683</td>
<td>13115</td>
<td>31376</td>
</tr>
<tr>
<td>Below the $1.25 a day poverty line?</td>
<td>.530</td>
<td>.492</td>
<td>.367</td>
<td>.121</td>
</tr>
<tr>
<td>Number of households</td>
<td>6732</td>
<td>7340</td>
<td>6742</td>
<td>2215</td>
</tr>
</tbody>
</table>

**Notes:** All statistics are constructed using baseline household data from both treatment and control villages. Wealth classes are based on the participatory rural assessment (PRA) exercise: the eligible (ultra-poor) are ranked in the bottom wealth bins (4th if 4 bins are used, 5th if 5 are used) and meet the program eligibility criteria, the near poor are ranked in the bottom wealth bins and do not meet the program eligibility criteria, the middle class are ranked in the middle wealth bins (2nd and 3rd if 4 are used, 2nd, 3rd and 4th if 5 are used) and the upper classes are those ranked in the top bin. The number of households in each wealth class at baseline is reported at the foot of the table. Household savings refer to value of savings held at home, at any bank, at any MFI and with saving guards. Any loans outstanding refers to loans from both formal and informal sources. Non-livestock wealth includes the value of land, other business assets and non-business assets. All monetary amounts are expressed in Bangladeshi Taka, set at 2007 prices and deflated using the rural CPI published by Bangladesh Bank. In 2007, 1USD=69TK.
Table 2: Features of Rural Labor Markets for Women
Village Level Statistics, Measured Pre-Intervention
Means, standard deviation in parentheses

<table>
<thead>
<tr>
<th></th>
<th>Casual Wage Labor</th>
<th>K-intense Activity</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Agriculture</td>
<td>(2) Domestic Maid</td>
<td>(3) Livestock Rearing [Cows, Goats]</td>
<td>(4) t-test [Col 1 = Col 3]</td>
</tr>
<tr>
<td>Hourly earnings [Tk]</td>
<td>6.35 (1.87)</td>
<td>4.92 (1.99)</td>
<td>13.7 (14.6)</td>
<td>[0.000]</td>
</tr>
<tr>
<td>Days per year</td>
<td>127 (65.9)</td>
<td>166 (89.4)</td>
<td>334 (41.1)</td>
<td>[0.000]</td>
</tr>
<tr>
<td>Hours per day</td>
<td>7.62 (1.15)</td>
<td>7.06 (1.73)</td>
<td>1.83 (.772)</td>
<td>[0.000]</td>
</tr>
</tbody>
</table>

Notes: All statistics are constructed at the village level, using baseline data from both treatment and control villages. Livestock comprises cows and/or goats. To reduce sensitivity to outliers, the hourly earnings and hours per day variables are computed by first taking the median value for each activity in a village, and then average these across all villages. Columns 4 and 5 report p-values on a t-test of the equality of some of these outcomes between the two forms of casual wage labor (agriculture and domestic maid work) and livestock rearing. All monetary amounts are expressed in Bangladeshi Taka, set at 2007 prices and deflated using the rural CPI published by Bangladesh Bank. In 2007, 1USD=69TK.
Theoretical Framework

- develop a model of activity choice and labor supply incorporating these four features of rural LM

- derive (pre-intervention) predictions of how individual activity choices and labor supply correlate to wealth, $r$, $w$, ...

- make precise heterogeneous individual responses to capital/skills injection

- use changes in labor allocation across activities to make inference on underlying constraints:
  - capital constraint: scale of $K$-intense activities
  - labor demand constraint: time devoted to casual wage labor
Solution

- labor supply functions: $L^* = L(I, r, w); \ S^* = S(I, r, w)$

- [Figure 2A: Baseline]

- [Figure 3: NP estimates of $L^S$ wealth gradient: $L^*_I, S^*_I$]

- [Table 3: pre-intervention activities by wealth class]

- [Figure 2B: Bundled $K$ and Skills Injection]
Figure 2A: Activity Choice and Labor Supply

Wealth

Casual wage labor $L^*(r,w)$

Self Employment $S^*(r,w)$

Labor Supply $(L^*, S^*)$

E Wage Labor
D Both occupations
C Both occupations
B SE only
A SE only

K constrained
K and L constrained
K constrained
K constrained
Unconstrained

K and L constrained
Both occupations
Both occupations
SE only
SE only

Figure 2A: Activity Choice and Labor Supply

Casual wage labor $L^*(r,w)$

Self Employment $S^*(r,w)$

$0 \rightarrow I_0(r) \rightarrow I_1(r) \rightarrow I_2(r, w) \rightarrow I_3(r, w) \rightarrow K$
Figure 3: Baseline Labor Market Choices and Wealth

A. Labor Supply by Baseline Wealth, All Wealth Classes

Notes: All figures are derived using the baseline household survey. Panel A shows a non-parametric regression of the labor supply hours of women in two activities at baseline against their baseline household wealth (defined as the combined value of land, livestock, poultry, business and non-business assets). This is done for women across all wealth classes. The two labor supply activities shown are for casual wage labor (in agriculture and domestic maids combined) and for livestock rearing. The vertical lines correspond to the average value of wealth of the eligible poor before and after the transfer. Panel B focuses on eligible women only, and shows a non-parametric estimate of their labor supply in casual wage labor (in agriculture and domestic maids combined) against the household wealth. For each non-parametric regression, bootstrapped 95% confidence intervals are also shown. Monetary amounts are expressed in Bangladeshi Taka, set at 2007 prices and deflated using the rural CPI published by Bangladesh Bank. In 2007, 1USD=69TK.
Figure 3: Baseline Labor Market Choices and Wealth

B. Casual Wage Labor Supply by Baseline Wealth, Eligible Poor

Notes: All figures are derived using the baseline household survey. Panel A shows a non-parametric regression of the labor supply hours of women in two activities at baseline against their baseline household wealth (defined as the combined value of land, livestock, poultry, business and non-business assets). This is done for women across all wealth classes. The two labor supply activities shown are for casual wage labor (in agriculture and domestic maids combined) and for livestock rearing. The vertical lines correspond to the average value of wealth of the eligible poor before and after the transfer. Panel B focuses on eligible women only, and shows a non-parametric estimate of their labor supply in casual wage labor (in agriculture and domestic maids combined) against the household wealth. For each non-parametric regression, bootstrapped 95% confidence intervals are also shown. Monetary amounts are expressed in Bangladeshi Taka, set at 2007 prices and deflated using the rural CPI published by Bangladesh Bank. In 2007, 1USD=69TK.
<table>
<thead>
<tr>
<th></th>
<th>(1) Eligible Poor</th>
<th>(2) Near Poor</th>
<th>(3) Middle Class</th>
<th>(4) Upper Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of population in this wealth class</td>
<td>.157</td>
<td>.182</td>
<td>.519</td>
<td>.141</td>
</tr>
<tr>
<td>Engaged in any income generating activity</td>
<td>.843</td>
<td>.812</td>
<td>.867</td>
<td>.906</td>
</tr>
<tr>
<td><strong>Casual Wage Labor:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours devoted to agricultural labor</td>
<td>257.7</td>
<td>189.9</td>
<td>45.9</td>
<td>2.79</td>
</tr>
<tr>
<td>Hours devoted to domestic maid</td>
<td>388.5</td>
<td>199.6</td>
<td>42.5</td>
<td>.596</td>
</tr>
<tr>
<td><strong>Self Employment:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours devoted to livestock rearing (cows/goats)</td>
<td>121</td>
<td>219</td>
<td>367</td>
<td>403</td>
</tr>
<tr>
<td>Total hours worked in the past year</td>
<td>1134</td>
<td>939</td>
<td>820</td>
<td>821</td>
</tr>
<tr>
<td>Total days worked in the past year</td>
<td>252</td>
<td>265</td>
<td>304</td>
<td>326</td>
</tr>
<tr>
<td><strong>Number of sample households</strong></td>
<td>6732</td>
<td>7340</td>
<td>6742</td>
<td>2215</td>
</tr>
</tbody>
</table>

**Notes:** All statistics are constructed using baseline household data from both treatment and control villages. Wealth classes are based on the participatory rural assessment (PRA) exercise: the eligible (ultra-poor) are ranked in the bottom wealth bins (4th if 4 bins are used, 5th if 5 are used) and meet the program eligibility criteria, the near poor are ranked in the bottom wealth bins and do not meet the program eligibility criteria, the middle class are ranked in the middle wealth bins (2nd and 3rd if 4 are used, 2nd, 3rd and 4th if 5 are used) and the upper classes are those ranked in the top bin. The number of households in each wealth class at baseline is reported at the foot of the table. Engagement in any income generating activity covers all potential activities.
Wealth

Casual wage labor
$L^*(r,w)$

Self Employment
$S^*(r,w)$

$ΔS > 0$

Unconstrained
$ΔL < 0, ΔS > 0$

K constrained

$ΔL=0, ΔS > 0$

K and L constrained

Figure 2Bi: Capital Injection

Casual wage labor
$L^*(r,w)$

Self Employment
$S^*(r,w)$

Labor Supply
$(L^*, S^*)$
Figure 2Bii: Bundled Capital and Skills Injection

Labor Supply
\( (L^*, S^*) \)

- **D**
  - \( \Delta L = 0, \Delta S > 0 \)
  - K and L constrained

- **D, C**
  - \( \Delta L < 0, \Delta S > 0 \)
  - K and L constrained
  - K constrained

- **B**
  - \( \Delta S > 0 \)
  - K constrained

- **B, A**
  - \( \Delta S \) ambiguous
  - K constrained
  - Unconstrained

- **A**
  - \( \Delta S \) ambiguous
  - Unconstrained

Casual wage labor
\( L^*(r, w) \)

Self Employment
\( S^*(r, w) \)

Wealth
\( K \)

\( I_3(r, w) \)
\( I_2(r, w) \)
\( I_1(r) \)
\( I_0(r) \)
The Ultra Poor Program: Capital and Skills Transfers

- designed and implemented by BRAC

- combined bundle of:
  - an asset chosen from a menu of potential asset transfers [livestock, retail,...]
  - $\Delta K > 0$
  - asset specific training [12-18 months, over life cycle of livestock]
  - $dr_{iv} = r_{\theta_i}(\alpha_v, \theta_i)d\theta_i > 0$
**Chosen Bundles**

- 88% chose at least one cow: replicating asset holding of middle/upper classes
  - social norms do **not** prevent them taking such transfers *en masse*

- value of asset transfer = 9500Tk = **US$140** = double baseline wealth

- average value of asset transfers:
  - cows (8566Tk), goats (736Tk), poultry (242Tk)

- delivery of asset specific training valued at **US$140** per beneficiary

- transfers far larger than available through informal loans [Table 1]

- 86% of initially eligible women are given some asset-training bundle
Research Design

- within subdistrict, randomize by BRAC branch
  - mitigates spillovers between villages
- sampling based on pre-baseline census of 144K households
  - 100% sample of eligible poor and near poor households
  - random 10% sample of middle and upper class households

- [Table A1: Balance; Table A2: Attrition]
Results 1: Individual Time Allocation Across Labor Activities

[Table 4: Individual Casual Wage Labor Market Impact, Cols 1-4]

[Figure 4: Casual Labor Hours QTE]

[Table 4: Individual K-intense Activity Impacts, Cols 5-9]
### Table 4: Individual Impacts on Casual Wage Labor

**OLS ITT Estimates: Individual Level Outcomes**  
**Sample: Eligible Women**  
**Standard Errors in Parentheses, Clustered by BRAC Branch Area**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program impact after 2 years</strong></td>
<td>-.026</td>
<td>-42.3</td>
<td>-57.4</td>
</tr>
<tr>
<td></td>
<td>(.024)</td>
<td>(53.0)</td>
<td>(42.9)</td>
</tr>
<tr>
<td><strong>Program impact after 4 years</strong></td>
<td>-.085***</td>
<td>-46.3</td>
<td>-117**</td>
</tr>
<tr>
<td></td>
<td>(.023)</td>
<td>(42.7)</td>
<td>(45.0)</td>
</tr>
<tr>
<td><strong>Baseline mean</strong></td>
<td>.520</td>
<td>269</td>
<td>325</td>
</tr>
<tr>
<td><strong>Four year impact: % change</strong></td>
<td>-16.2%</td>
<td>-17.1%</td>
<td>-36.1%</td>
</tr>
<tr>
<td><strong>Adjusted R-squared</strong></td>
<td>.094</td>
<td>.184</td>
<td>.067</td>
</tr>
<tr>
<td><strong>Number of eligible poor</strong></td>
<td>6732</td>
<td>6732</td>
<td>6732</td>
</tr>
<tr>
<td><strong>Number of observations (clusters)</strong></td>
<td>20196 (40)</td>
<td>20196 (40)</td>
<td>20196 (40)</td>
</tr>
</tbody>
</table>
Notes: Quantile treatment effect (QTE) estimates of the outcome at four-year follow-up are presented in each Panel. Each specification controls for baseline value of the respective outcome, and randomization strata. Bootstrapped 95% confidence intervals (using 500 replications) are based on standard errors clustered by BRAC branch. Panel A shows the QTE estimates for labor supply in agricultural labor. Panel B shows the QTE estimates for the change in labor supply in maid labor. Estimates are reported for individuals who engaged in these activities at baseline.
Notes: Quantile treatment effect (QTE) estimates of the outcome at four-year follow-up are presented in each Panel. Each specification controls for baseline value of the respective outcome, and randomization strata. Bootstrapped 95% confidence intervals (using 500 replications) are based on standard errors clustered by BRAC branch. Panel A shows the QTE estimates for labor supply in agricultural labor. Panel B shows the QTE estimates for the change in labor supply in maid labor. Estimates are reported for individuals who engaged in these activities at baseline.
Table 4: Individual Impacts on Casual Wage Labor and Self Employment

OLS ITT Estimates: Individual Level Outcomes
Sample: Eligible Women
Standard Errors in Parentheses, Clustered by BRAC Branch Area

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program impact after 2 years</strong></td>
<td>-.026 (-.024)</td>
<td>-42.3 (53.0)</td>
<td>-57.4 (42.9)</td>
<td>.588*** (.038)</td>
<td>487*** (30.7)</td>
</tr>
<tr>
<td><strong>Program impact after 4 years</strong></td>
<td>-.085*** (.023)</td>
<td>-46.3 (42.7)</td>
<td>-117** (45.0)</td>
<td>.483*** (.033)</td>
<td>415*** (39.2)</td>
</tr>
<tr>
<td><strong>Baseline mean</strong></td>
<td>.520</td>
<td>269</td>
<td>325</td>
<td>.220</td>
<td>268</td>
</tr>
<tr>
<td><strong>Four year impact: % change</strong></td>
<td>-16.2%</td>
<td>-17.1%</td>
<td>-36.1%</td>
<td>218%</td>
<td>155%</td>
</tr>
<tr>
<td><strong>Adjusted R-squared</strong></td>
<td>.094</td>
<td>.184</td>
<td>.067</td>
<td>.344</td>
<td>.335</td>
</tr>
<tr>
<td><strong>Number of eligible poor</strong></td>
<td>6732</td>
<td>6732</td>
<td>6732</td>
<td>6732</td>
<td>6732</td>
</tr>
<tr>
<td><strong>Number of observations (clusters)</strong></td>
<td>20196 (40)</td>
<td>20196 (40)</td>
<td>20196 (40)</td>
<td>20196 (40)</td>
<td>20196 (40)</td>
</tr>
</tbody>
</table>
Figure 5: Four Year QTE Impacts Related to Self Employment

A. Hours Devoted to Self Employment
### Table 4: Individual Total Impacts

OLS ITT Estimates: Individual Level Outcomes  
Sample: Eligible Women  
Standard Errors in Parentheses, Clustered by BRAC Branch Area

<table>
<thead>
<tr>
<th></th>
<th>All Labor Activities</th>
<th>Net Earnings</th>
<th>Consumption and Poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(7) Total Hours Worked</td>
<td>(8) Total Days Worked in the Past Year</td>
<td>(9) Net Annual Earnings</td>
</tr>
<tr>
<td>Program impact after 2 years</td>
<td>395*** (72.7)</td>
<td>72.4*** (10.0)</td>
<td>1579*** (553)</td>
</tr>
<tr>
<td>Program impact after 4 years</td>
<td>219*** (74.4)</td>
<td>61.1*** (12.5)</td>
<td>1737*** (536)</td>
</tr>
<tr>
<td>Baseline mean</td>
<td>1069</td>
<td>247</td>
<td>4608</td>
</tr>
<tr>
<td>Four year impact: % change</td>
<td>20.5%</td>
<td>25.0%</td>
<td>37.7%</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>.060</td>
<td>.069</td>
<td>.098</td>
</tr>
<tr>
<td>Number of eligible poor</td>
<td>6732</td>
<td>6732</td>
<td>6732</td>
</tr>
<tr>
<td>Number of observations (clusters)</td>
<td>20196 (40)</td>
<td>20196 (40)</td>
<td>20196 (40)</td>
</tr>
</tbody>
</table>
Other Channels

- efficiency wage explanation for increased $L^S$ [Mirrlees 1975, Stiglitz 1976]
- migration as relevant margin of household response
- $K$- and skills transfer lead to misallocation of labor within households
- other constraint: information
  
- [Appendix Tables A3, A4]
Labor Market Impacts on Village Economy

- no longer take \((w, r)\) as exogenous

- provide further evidence on \(\bar{L}^D\) and estimate \(\left| \bar{\epsilon}_{LD, w} \right| > \left| \epsilon_{LD, w} \right|\)

- GE effects in labor markets:
  - \(\Delta w > 0\) : positive pecuniary externality on non-eligibles
  - \(dr_{iv} = r_{\alpha_v}(\alpha_v, \theta_i)d\alpha_v + r_{\theta_i}(\alpha_v, \theta_i)d\theta_i\)
  - price impacts in livestock produce/input markets (\(\Delta \alpha_v\))

- [Figure 6: Constrained Demand for Casual Wage Labor]
Figure 6: Constrained Demand for Casual Wage Labor

Real Wage ($w$)

$L^D$

$L^S_0$

$L^S_1$

$L^S_2$

$w_0$

$w_1$

$w_2$

$L^*$

$L^D$

$L^S$
Results 2: Village Labor Market

[Table 5: Village Wide Labor Market Impacts, Cols 1-4: distn impacts on near poor]

[Table 5: Village Wide K-intense Sector Impacts, Cols 5-9: distn impacts on m/u classes]
Table 5: Labor Market Impacts on the Village Economy

OLS Estimates: Village Level Outcomes
Sample: All Villages
Standard Errors in Parentheses, Clustered by BRAC Branch Area

Village Market for Casual Wage Labor

<table>
<thead>
<tr>
<th></th>
<th>Agriculture</th>
<th>Domestic Maids</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Labor Supply (hours)</td>
<td>(2) Earnings per Hour</td>
</tr>
<tr>
<td>Program impact after 2 years</td>
<td>-524</td>
<td>.623*</td>
</tr>
<tr>
<td></td>
<td>(1187)</td>
<td>(.330)</td>
</tr>
<tr>
<td>Program impact after 4 years</td>
<td>-799</td>
<td>.900**</td>
</tr>
<tr>
<td></td>
<td>(1222)</td>
<td>(.400)</td>
</tr>
<tr>
<td>Baseline mean</td>
<td>6771</td>
<td>6.16</td>
</tr>
<tr>
<td>Four year impact: % change</td>
<td>-11.8%</td>
<td>14.6%</td>
</tr>
<tr>
<td>Four year impact on eligible poor [%]</td>
<td>-525 [65.7%]</td>
<td>-</td>
</tr>
<tr>
<td>Four year impact: % change UP</td>
<td>-16%</td>
<td>-</td>
</tr>
<tr>
<td>Four year impact: % change NUP</td>
<td>-8.9%</td>
<td>-</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>.350</td>
<td>.512</td>
</tr>
<tr>
<td>Number of villages</td>
<td>1409</td>
<td>943</td>
</tr>
<tr>
<td>Number of observations (clusters)</td>
<td>4227 (40)</td>
<td>2216 (40)</td>
</tr>
</tbody>
</table>
Table 5: **Labor Market Impacts** on the Village Economy

OLS Estimates: Village Level Outcomes  
Sample: All Villages  
Standard Errors in Parentheses, Clustered by BRAC Branch Area

<table>
<thead>
<tr>
<th>Village Labor Market Related to K-intense Activity</th>
<th>(5) Labor Supply (hours)</th>
<th>(6) Earnings per Hour</th>
<th>(7) Unit Price of Milk</th>
<th>(8) Transaction Price of Cows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program impact after 2 years</td>
<td>6138**</td>
<td>-1.31</td>
<td>-.039</td>
<td>-355</td>
</tr>
<tr>
<td></td>
<td>(2628)</td>
<td>(1.65)</td>
<td>(.110)</td>
<td>(371)</td>
</tr>
<tr>
<td>Program impact after 4 years</td>
<td>3803</td>
<td>.132</td>
<td>-.048</td>
<td>-513</td>
</tr>
<tr>
<td></td>
<td>(3082)</td>
<td>(1.82)</td>
<td>(.120)</td>
<td>(408)</td>
</tr>
<tr>
<td>Baseline mean</td>
<td>21603</td>
<td>13.1</td>
<td>2.08</td>
<td>8492</td>
</tr>
<tr>
<td>Four year impact: % change</td>
<td>17.6%</td>
<td>3.88%</td>
<td>2.41%</td>
<td>6.03%</td>
</tr>
<tr>
<td>Four year impact on eligible poor [%]</td>
<td>5607 [147%]</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Four year impact: % change UP</td>
<td>346%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four year impact: % change NUP</td>
<td>-8.4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>.157</td>
<td>.038</td>
<td>.259</td>
<td>.174</td>
</tr>
<tr>
<td>Number of villages</td>
<td>1409</td>
<td>1405</td>
<td>1389</td>
<td>1356</td>
</tr>
<tr>
<td>Number of observations (clusters)</td>
<td>4227 (40)</td>
<td>3803 (40)</td>
<td>3743</td>
<td>3253</td>
</tr>
</tbody>
</table>
Labor Markets: Summary

- constrained $L^D$ for casual agricultural wage labor
- weak $L^D$ for maids
- positive pecuniary externality through $\Delta w > 0$ on non-eligibles
- some crowding out of non-poor in $K$-intense activities
- negligible impact on returns to such activities, related input/output markets
Results 3: Household Capital Accumulation

[Table 6: Household Asset Accumulation]
## Table 6: Asset Accumulation

**OLS ITT Estimates: Household Level Outcomes**  
Sample: Households with an Eligible Women  
Standard Errors in Parentheses, Clustered by BRAC Branch Area

<table>
<thead>
<tr>
<th></th>
<th>(1) Value of Livestock</th>
<th>(2) Value of Cows</th>
<th>(3) Rents Land</th>
<th>(4) Owns Land</th>
<th>(5) Value of Other Business Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program impact after 2 years</td>
<td>9984***</td>
<td>9200***</td>
<td>.067***</td>
<td>.005</td>
<td>2151***</td>
</tr>
<tr>
<td></td>
<td>(495)</td>
<td>(427)</td>
<td>(.020)</td>
<td>(.011)</td>
<td>(315)</td>
</tr>
<tr>
<td>Program impact after 4 years</td>
<td>10734***</td>
<td>10097***</td>
<td>.110***</td>
<td>.026*</td>
<td>2916***</td>
</tr>
<tr>
<td></td>
<td>(939)</td>
<td>(866)</td>
<td>(.022)</td>
<td>(.012)</td>
<td>(348)</td>
</tr>
<tr>
<td>Baseline mean [Tk]</td>
<td>916</td>
<td>666</td>
<td>.058</td>
<td>.068</td>
<td>501</td>
</tr>
<tr>
<td>Mean value of assets transfer</td>
<td>9545</td>
<td>8566</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Four year impact: % change (net of transfer)</td>
<td>2.61%</td>
<td>9.37%</td>
<td>190%</td>
<td>38.2%</td>
<td>578%</td>
</tr>
<tr>
<td>Four year impact = Initial transfer [p-value]</td>
<td>.197</td>
<td><strong>.085</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Two year impact = Four year impact [p-value]</td>
<td>.297</td>
<td>.194</td>
<td>.054</td>
<td>.005</td>
<td><strong>.003</strong></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>.328</td>
<td>.314</td>
<td>.077</td>
<td>.034</td>
<td>.138</td>
</tr>
<tr>
<td>Number of eligible poor women</td>
<td>6732</td>
<td>6732</td>
<td>6732</td>
<td>6732</td>
<td>6732</td>
</tr>
<tr>
<td>Observations (clusters)</td>
<td>20196 (40)</td>
<td>20196 (40)</td>
<td>20196 (40)</td>
<td>20196 (40)</td>
<td>14258 (40)</td>
</tr>
</tbody>
</table>
### Table 6: Asset Accumulation

OLS ITT Estimates: Household Level Outcomes  
Sample: Households with an Eligible Women  
Standard Errors in Parentheses, Clustered by BRAC Branch Area

<table>
<thead>
<tr>
<th></th>
<th>(6) In Kind Savings</th>
<th>(7) Cash Savings</th>
<th>(8) Household Savings Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program impact after 2 years</td>
<td>302*</td>
<td>983***</td>
<td>.184***</td>
</tr>
<tr>
<td></td>
<td>(152)</td>
<td>(90.6)</td>
<td>(.022)</td>
</tr>
<tr>
<td>Program impact after 4 years</td>
<td>880***</td>
<td>1051***</td>
<td>.182***</td>
</tr>
<tr>
<td></td>
<td>(164)</td>
<td>(78.4)</td>
<td>(.020)</td>
</tr>
<tr>
<td>Baseline mean [Tk]</td>
<td>817</td>
<td>121</td>
<td>.017</td>
</tr>
<tr>
<td>Four year impact: % change</td>
<td>107.0%</td>
<td>869%</td>
<td>1058%</td>
</tr>
<tr>
<td>Two year impact = Four year impact [p-value]</td>
<td>.009</td>
<td>.530</td>
<td>.939</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>.090</td>
<td>.088</td>
<td>.065</td>
</tr>
<tr>
<td>Number of eligible poor women</td>
<td>6732</td>
<td>6732</td>
<td>6732</td>
</tr>
<tr>
<td>Observations (clusters)</td>
<td>20196 (40)</td>
<td>20196 (40)</td>
<td>18563 (40)</td>
</tr>
</tbody>
</table>
Results 4: Village Capital Market

[Table 7: The Supply of Credit in the Village Economy from the UP]

[Table 7: Village Consumption, Investment and Savings]
Table 7: **The Supply of Credit in the Village Economy**

OLS Estimates: Village Level Outcomes  
Sample: All Villages  
Standard Errors in Parentheses, Clustered by BRAC Branch Area

<table>
<thead>
<tr>
<th>Village Aggregate: Supply of Credit from Ultra Poor</th>
<th>(1) Transfers</th>
<th>(2) Loans</th>
<th>(3) Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program impact after 2 years</td>
<td>115</td>
<td>4623***</td>
<td>4738***</td>
</tr>
<tr>
<td></td>
<td>(110)</td>
<td>(1441)</td>
<td>(1464)</td>
</tr>
<tr>
<td>Program impact after 4 years</td>
<td>190*</td>
<td>7130***</td>
<td>7319***</td>
</tr>
<tr>
<td></td>
<td>(97.8)</td>
<td>(1474)</td>
<td>(1508)</td>
</tr>
<tr>
<td>Baseline mean</td>
<td>129</td>
<td>311</td>
<td>440</td>
</tr>
<tr>
<td>Four year impact: % change</td>
<td>146%</td>
<td>2299%</td>
<td>1663%</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>.020</td>
<td>.059</td>
<td>.062</td>
</tr>
<tr>
<td>Number of villages</td>
<td>1409</td>
<td>1409</td>
<td>1409</td>
</tr>
<tr>
<td>Number of observations (clusters)</td>
<td>3927 (40)</td>
<td>3927 (40)</td>
<td>3927 (40)</td>
</tr>
</tbody>
</table>
## Table 7: Consumption, Investment and Savings in the Village Economy

**OLS Estimates: Village Level Outcomes**  
**Sample: All Villages**  
**Standard Errors in Parentheses, Clustered by BRAC Branch Area**

<table>
<thead>
<tr>
<th>Village Aggregate:</th>
<th>Consumption</th>
<th>Investment</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(4) Consumption</td>
<td>(5) Value of Land Owned</td>
<td>(6) Number of Cows</td>
</tr>
<tr>
<td>Program impact after 2 years</td>
<td>111965</td>
<td>-528981</td>
<td>11.9***</td>
</tr>
<tr>
<td></td>
<td>(119115)</td>
<td>(952821)</td>
<td>(2.34)</td>
</tr>
<tr>
<td>Program impact after 4 years</td>
<td>104570</td>
<td>134818</td>
<td>13.8***</td>
</tr>
<tr>
<td></td>
<td>(177852)</td>
<td>(1297465)</td>
<td>(3.13)</td>
</tr>
<tr>
<td>Baseline mean</td>
<td>3347085</td>
<td>10600000</td>
<td>74.4</td>
</tr>
<tr>
<td>Four year impact: % change</td>
<td>3.1%</td>
<td>1.2%</td>
<td>18.5%</td>
</tr>
<tr>
<td>Four year impact on eligible poor</td>
<td>58548</td>
<td>118104</td>
<td>14.6</td>
</tr>
<tr>
<td>% contribution of eligible poor to village impact</td>
<td>56.0%</td>
<td>87.6%</td>
<td>106%</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>.073</td>
<td>.125</td>
<td>.198</td>
</tr>
<tr>
<td>Number of villages</td>
<td>1409</td>
<td>1409</td>
<td>1409</td>
</tr>
<tr>
<td>Number of observations (clusters)</td>
<td>4227 (40)</td>
<td>4227 (40)</td>
<td>4227 (40)</td>
</tr>
</tbody>
</table>
Results 5: Efficiency Cost of K-constraint
Rate of Return

\[ ROR_t = \frac{(P_t - P_{t-1}) + \pi_t}{P_{t-1}} \]

- \( P_t \): asset value in year \( t \) [retained asset bundle]
  - info on livestock values, assets at baseline, transfer, and follow-up
  - have to make some assumption on training depreciation rate

- \( \pi_t \): profits from retained asset bundle
  - net earnings from livestock rearing (revenues minus input costs)
  - opportunity cost of labor [\( \Delta hours = 219 \)]

- ignore \( \Delta U \) arising from smoothed earnings streams vs lost leisure

- [Figure 7: Rate of Return]
Figure 7: Rate of Return to Asset and Skills Transfers

A. Returns on Transfer: Constrained Labor Demand

Rate of Return (After Two Years)

- 5%
- 70%

ROR: Asset Transfer Only
ROR: Asset and Skills Transfer
Figure 7: *Rate of Return* to Asset and Skills Transfers

B. Returns on Transfer: Unconstrained Labor Demand

- **Rate of Return (After Two Years)**
  - ROR: Asset Transfer Only
    - 5%
  - ROR: Asset and Skills Transfer
    - 38%
  - ROR: Asset Transfer Only
Conclusions
Rural Labor Markets

- **research question**: what determines labor market choices of rural poor?
- misallocation of labor across sectors:
  - access to capital: 40-70% of profitable entrepreneurs left unfinanced
- un(der)employment:
  - constrained aggregate $L^D$: DWL
- other constraints related to information are less relevant
Poverty Alleviation Policy

- poor can escape poverty trap through a big-push intervention:
  - joint relaxation of $K$- and skills constraints
  - commitment to hold assets for some period

- **sustainable**: four year impacts on asset accumulation and village wide savings

- **scalable**: 400K hhs reached by 2011, 250K more to be reached 2012-16

- **replicable**: similar ITT impacts on consumption/well-being in six other settings [Banerjee et al. 2015]
Functioning of Village Labor and Capital Markets

- GE effects in casual wage labor markets: positive pecuniary externality to near poor
- smaller spillovers in K-intense sector [eligibles only 16% of population]
- increased savings of eligible → credit market development → village wide K-accumulation...
  - not going into consumption or bidding up fixed factors
Big Push or Nudge

• distinction is key if root causes of poverty are constraints → poverty trap
• one time big push has lasting impacts: increases savings and savings rate $s$
• cannot rule out that preferences compound the $K$-constraint in the poverty trap:
  – self-control worse with fewer assets [Bernheim et al. 2015]
  – NH prefs: temptation goods as inferior [Banerjee and Mullanaithan 2010]
Future Agenda

- replicating study in Pakistan
  - partial population experiment tracking 20,000 households

- treatment arms:
  - menu of asset/training bundles with and without equivalent UCT

- are there differential responses to in-kind versus cash transfers?

- how much of the wedge is attributable to:
  - market imperfections
  - preferences (biases)