Web Appendix for Poverty and Migration in the Digital Age: Experimental Evidence on Mobile Banking in Bangladesh

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Appendix A A Model of Transfers with Intrinsic Reciprocity

We describe mechanisms in a simple model in which villagers (rural households) receive remittances from migrants over two periods. The first period is the lean season and the second is a "normal" season with greater resources. We derive predictions on the effect of a drop in the cost of sending remittances for consumption, borrowing, remittances, and hours of work. A similar question about the price elasticity of remittances is asked in the literature on international remittances (Yang 2011), although here we interpret "the drop in price" broadly as access to a qualitatively different (more convenient, secure, and flexible) mode of sending money. Please see Appendix G for proofs.

A.1 Setup

A.1.1 Preferences

Let $c_{m,t}$ and $c_{h,t}$ denote the period $t \in \{1,2\}$ consumption of the migrant and villager respectively. In addition, let $l_{m,t}$ and $h_{m,t}$ denote migrant's period t hours of leisure and work respectively, such that $l_{m,t} + h_{m,t} = \bar{h}$, where $\bar{h}$ represents the total number of hours available to allocate between leisure and work (typically, $\bar{h} = 24$). We assume that migrants and villagers have period t felicity functions denoted by

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$u_m(c_{m,t}, l_{m,t})$ and $u_h(c_{h,t})$ respectively. The functions take a Cobb-Douglas form for the migrant such that $u_m(c_{m,t}, l_{m,t}) = (1-\alpha)ln(c_{m,t}) + \alpha ln(l_{m,t})$, where $0 \leq \alpha \leq 1$ represents the weight placed on leisure. For the villager, we abstract from the labor-leisure choice problem and simply let $u_h(c_{h,t}) = ln(c_{h,t})$.

Following Rapoport and Docquier (2005), migrants are assumed to exhibit altruistic preferences of the weighted average form $U_{m,t} = (1-\phi)u_m(c_{m,t}, l_{m,t}) + \phi u_h(c_{h,t})$ where $0 \leq \phi \leq \frac{1}{2}$ represents the weight placed on the paired villager. Villagers do not exhibit altruistic preferences, and derive utility from own consumption $U_{h,t} = u_h(c_{h,t})$. Rapoport and Docquier (2005) refer to such preferences between the migrant and villager as *unilateral altruism*. Following Sobel (2005), this is a case of "intrinsic reciprocity" in which migrants are willing to sacrifice their own consumption to help their family in the village rather than selfishly maximizing their individual utility.[1] This assumption is consistent with the exclusively urban-to-rural direction of remittances observed in our sample.

A.1.2 Timing

Period 1 represents *monga*, or the lean season, a time when rural incomes are particularly low and families sometimes skip meals. We assume that villager income during the lean season is $\underline{y}$.

Period 2 represents the "normal", non-lean season.[2] Rural incomes are higher during these months due to the increased availability of work. We assume that villager income during the non-lean season is $\bar{y}$, where $\bar{y} > \underline{y} > 0$. Migrants earn income $w \cdot h_{m,t}$ in period t, where $w \geq 0$ is the exogenously set hourly wage. Migrants and villagers discount period 2 utility by discount factor $0 \leq \beta \leq 1$. Within each period, the migrant makes choices before the villager. Each period, the villager optimizes taking as given the remittances sent by the migrant.

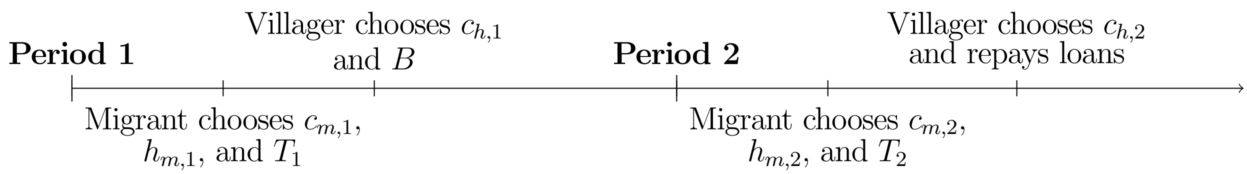
A.1.3 Choices

Migrants choose the amount of remittances to transfer to the paired villager in each period, T_t, in addition to their own consumption, $c_{m,t}$, and hours of work, $h_{m,t}$. For simplicity, we assume that migrants do not borrow or save. As a result, we implicitly assume that migrants cannot choose to set $h_{m,t} = 0$. Migrants incur a cost $p > 0$ proportional to the size of the remittance. The choice of a proportional cost as opposed to a fixed cost maps directly to our setting, where the mobile banking service bKash charges a transaction fee of 1.85% for withdrawals, but p also reflects broader costs including the opportunity cost of time. Villagers have access to credit and can borrow $B \geq 0$ at interest rate $r \geq 0$. Villagers also choose their consumption in each period, $c_{h,t}$.

1. "Intrinsic reciprocity" contrasts with "instrumental reciprocity," where individuals respond to kindness with kindness so as to sustain a profitable long-term relationship (Sobel, 2005).

2. An equivalent way of setting up the problem would be to define period 1 as the non-lean season and period 2 as the lean season. The setup can then be thought of as a savings problem, rather than a borrowing problem.

To summarize, we have the following timeline:



A.2 Theoretical Predictions

Solving the model, we obtain the following theoretical predictions (see Appendix for proofs):

1. Remittances increase with a decrease in p**:** $\frac{\partial T_1}{\partial p} < 0$**,** $\frac{\partial T_2}{\partial p} < 0$**.**Remittances can be thought of as spending on consumption of the paired villager, through which the migrant altruistically derives utility. Thus a decrease in the cost of sending remittances p has positive income and substitution effects on remittances in each period. These predictions require that (i) the hourly wage rate for migrants in each period is sufficiently large that flows of remittances only go from migrants to villagers (and never in the opposite direction), and (ii) the interest rate in each period is sufficiently large to make borrowing, and hence the movement of money from the non-lean season to the lean season, prohibitively costly for villagers.[3] (See Appendix for the exact conditions.)

2. Villager consumption increases with a decrease in p**:** $\frac{\partial c_{h,1}}{\partial p} < 0$**,** $\frac{\partial c_{h,2}}{\partial p} < 0$**.**The extra remittances received (due to the drop in cost p) increases the disposable income of villagers in each period. The positive income effect then raises villager consumption in each period.

3. Villager borrowing decreases with a decrease in p**:** $\frac{\partial B}{\partial p} > 0$**.**In general, remittances reduce villagers' need for loans, but this is not necessarily so if villagers already have good access to credit at low interest rates. The main effect is that a decrease in p leads to an increase in period 1 (lean season) remittances. The income effect then reduces borrowing in period 1. But a decrease in p also leads to an increase in period 2 remittances, and, in order to optimize their inter-temporal consumption problem, villagers would like to borrow more (to move some of this future income to period 1). An interest rate that is large enough deters this inter-temporal smoothing motive by making borrowing prohibitively expensive (see the Appendix for the exact condition). Under the interest rate assumption, the net income effect dominates and villagers decrease borrowing when p falls.

4. Migrant consumption decreases with a decrease in p**:** $\frac{\partial c_{m,1}}{\partial p} > 0$**,** $\frac{\partial c_{m,2}}{\partial p} > 0$**.**If sending remittances becomes less costly, it would seem that migrants would have surplus with which to

3. We do not impose a borrowing constraint in the model, but the restriction that the interest rate be sufficiently large acts as an equivalent credit market imperfection. Large interest rates and borrowing constraints limit the ability of villagers to optimize their inter-temporal consumption problem, leading migrants, who care about villager consumption via altruism, to respond through remittances.

increase their own consumption. This income effect arises for two reasons: (i) the reduction in p leads to a direct income effect, and (ii) as seen below, a reduction in p causes the migrant to work more, thereby increasing income further. At the same time, however, a decrease in p leads to a substitution effect away from migrant's own consumption towards villager consumption. Given the set-up and assumption of intrinsic reciprocity, the substitution effect outweighs the income effect here, leading to decreases in migrant consumption with a decrease in p.

5. Migrant hours of work increase with a decrease in p: $\frac{\partial h_{m,1}}{\partial p} < 0$, $\frac{\partial h_{m,2}}{\partial p} < 0$. A decrease in p leads to a substitution effect, shifting the migrant's own leisure towards villager consumption. This substitution away from leisure leads to an increase in the migrants' hours worked. Effectively, one can think of p as a tax on part of the migrant's spending. A reduction in the tax leads to a positive labor supply effect.

6. Fraction of migrant income remitted increases with a decrease in p: $\frac{\partial\left(\frac{T_1}{wh_{m,1}}\right)}{\partial p} < 0$, $\frac{\partial\left(\frac{T_2}{wh_{m,2}}\right)}{\partial p} < 0$. Both remittances and hours worked by migrants increase in each period with a decrease in p (predictions 1 and 5, respectively). Thus, the impact of a cost reduction on the fraction of migrant income remitted is not immediately clear. Under the assumptions of the model, however, the positive income and substitution effects on remittances outweigh the substitution effect away from leisure, thereby leading to an increase in the fraction of migrant income remitted in each period with a decrease in p.

In sum, the model predicts that an improved remittance technology will lead to increases in remittances and, in turn, rural consumption. For migrants, however, consumption can fall and labor increase as the technnology increases the efficiency of sacrificing to support one's relatives.

Appendix B Analysis of Spillovers

In principle there may be spillovers which would lead to a SUTVA violation. Such spillovers could potentially arise through either a network of risk-sharing or general equilibrium effects. In the presence of such spillovers, we may expect to see a relationship between treatment density and outcomes, as spillovers would be stronger when treatment density would be higher. We analyzed whether adoption of bKash in the control group was influenced by the share of households treated in villages in our study. Because the randomization was not stratified on village, we have naturally occurring experimental variation in the share of households in our study which were treated per village. We find no effects of treatment density on the decision of control households to adopt bKash, or on other outcomes, including consumption. However, we should note that because we have limited variation in treatment density, and because there are only 281 villages, the power for this test is limited. Note that in Meghir et al (2019) the village is identified as the appropriate unit for risk sharing.

Table 1: Analysis of Spillovers - Control Group Only

	(1) Adopted bKash	(2) Active bKash Account	(3) Daily Per Capita Expenditure (Taka)
Panel A: Rural Households			
Treatment Density	-0.0378	-0.0268	0.695
	(0.0978)	(0.0875)	(3.266)
R^2	0.009	0.021	0.202
Control Mean (Endline)	0.303	0.219	44.802
Observations	402	402	402
Panel B: Urban Migrants			
Treatment Density	0.00962	0.0855	-8.759
	(0.168)	(0.163)	(22.19)
R^2	0.073	0.049	0.081
Control Mean (Endline)	0.232	0.207	126.695
Observations	397	397	397

Standard errors in parentheses. All regressions are estimated with baseline control variables and baseline dependent variable. Treatment density is defined as the ratio of the number of treated households (migrants) to the total number of households (migrants) in the sample in each village (upazila), for rural households and urban migrants, respectively.

Appendix C Robustness Checks: Results for SHIREE and Snowball Sub-samples

In this section, we present results by presenting results separately for the SHIREE and snowball sub-samples. We start by showing that within these sub-samples, we have treatment-control balance. We then present our main results for the SHIREE sub-sample, followed by the results for the snowball sub-sample.

C.1 Treatment-Control Balance Within Sub-Samples

We have overall treatment-control balance within the separate SHIREE and snowball sub-samples. The p-values are 0.995 and 0.705 for F-tests of joint orthogonality within the SHIREE and snowball sub-samples, respectively. Of 48 variables tested for treatment-control differences, only 3 variables were statistically significant at the 10% level, while none were statistically significant at the 5% level. By definition, we would expect, on average, 5 out of 48 variables to show differences at the 10% level of significance, so it is not surprising that we see differences for 3 variables. These variables are: (i) decimal of owned agricultural land for the SHIREE sub-sample (p-value = 0.094), (ii) formal employment among migrants for the snowball sub-sample (p-value = 0.083), and (iii) rural poverty rates using the national threshold for the snowball sub-sample (p-value = 0.061).

In Appendix sections C.3 and C.4, we run specifications on the SHIREE and snowball samples separately, and we find similar results on outcomes in both sub-samples.

Table 2: SHIREE Sub-sample: Summary Statistics by Treatment Assignment (Baseline)

	Treatment Mean	Treatment SD	Treatment N	Control Mean	Control SD	Control N	Treatment-Control p-value
Any mobile, rural	0.99	0.13	176	0.97	0.17	175	0.471
Any bank account, urban	0.12	0.33	176	0.10	0.30	175	0.625
Formal employee, urban	0.83	0.38	176	0.81	0.40	175	0.564
Average monthly income, urban (‘000 Taka)	6.75	2.49	176	6.92	2.68	175	0.542
Female migrant	0.43	0.50	176	0.40	0.49	175	0.620
Age of migrant	22.5	4.92	176	22.4	3.81	175	0.860
Migrant completed primary school	0.40	0.49	176	0.40	0.49	175	0.948
Tenure at current job, urban	1.55	1.70	176	1.58	1.62	175	0.900
Tenure in Dhaka, urban	2.36	2.33	176	2.61	2.13	175	0.298
Remittances sent, past 7 months (‘000 Taka)	14.2	10.6	176	15.1	12.2	175	0.471
Daily per capita expenditure, urban	117.5	57.9	176	119.4	45.9	175	0.726
Household size, rural	3.68	1.51	176	3.65	1.49	175	0.849
Number of children, rural	1.10	1.05	176	1.16	1.10	175	0.615
Household head age, rural	46.4	11.7	176	46.0	14.1	175	0.795
Household head female, rural	0.13	0.34	176	0.13	0.34	175	0.984
Household head education, rural	0.13	0.34	176	0.12	0.33	175	0.763
Decimal of owned agricultural land, rural	0.77	6.21	176	4.24	26.6	175	0.094
Number of rooms of dwelling, rural	1.74	0.69	176	1.67	0.70	175	0.348
Dwelling owned, rural	0.92	0.27	176	0.91	0.28	175	0.834
Daily per capita expenditure, rural (Taka)	63.1	33.0	176	63.2	36.2	175	0.988
Poverty rate (national threshold), rural	0.76	0.43	176	0.75	0.44	175	0.878
Poverty rate (global $1.90 threshold), rural	0.48	0.50	176	0.50	0.50	175	0.791
Gaibandha subdistrict	0.37	0.48	176	0.38	0.49	175	0.794
Other subdistrict	0.63	0.48	176	0.62	0.49	175	0.794
p-value of F-test for joint orthogonality = 0.995.							

Notes: This analysis is restricted to the 351 households in the SHIREE sample. The total n = 351, split betweeen 176 in the treatment group and 175 in the control group. Summary statistics are means for households in the treatment and control groups. P-values are given for tests of differences in means by treatment status.

Table 3: Snowball Sub-sample: Summary Statistics by Treatment Assignment (Baseline)

	Treatment Mean	Treatment SD	Treatment N	Control Mean	Control SD	Control N	Treatment-Control p-value
Any mobile, rural	1.00	0.06	237	0.99	0.09	227	0.538
Any bank account, urban	0.10	0.30	237	0.12	0.32	227	0.544
Formal employee, urban	0.97	0.16	237	0.94	0.23	227	0.083
Average monthly income, urban (‘000 Taka)	8.63	2.35	237	8.42	2.02	227	0.284
Female migrant	0.19	0.39	237	0.23	0.42	227	0.251
Age of migrant	25.2	5.23	237	25.3	5.62	227	0.846
Migrant completed primary school	0.53	0.50	237	0.48	0.50	227	0.310
Tenure at current job, urban	1.79	1.48	237	1.73	1.33	227	0.621
Tenure in Dhaka, urban	2.48	1.39	237	2.41	1.37	227	0.626
Remittances sent, past 7 months (‘000 Taka)	19.7	12.3	237	20.7	12.3	227	0.383
Daily per capita expenditure, urban	122.5	32.4	237	121.7	36.2	227	0.813
Household size, rural	3.84	1.73	237	3.98	1.66	227	0.352
Number of children, rural	1.21	0.99	237	1.28	1.04	227	0.454
Household head age, rural	48.0	13.9	237	46.4	12.8	227	0.196
Household head female, rural	0.11	0.32	237	0.13	0.33	227	0.648
Household head education, rural	0.24	0.43	237	0.19	0.39	227	0.219
Decimal of owned agricultural land, rural	15.8	36.1	237	15.9	32.8	227	0.983
Number of rooms of dwelling, rural	1.88	0.75	237	1.93	0.79	227	0.431
Dwelling owned, rural	0.96	0.20	237	0.95	0.21	227	0.922
Daily per capita expenditure, rural (Taka)	63.9	36.8	237	59.2	28.1	227	0.125
Poverty rate (national threshold), rural	0.71	0.45	237	0.79	0.41	227	0.061
Poverty rate (global $1.90 threshold), rural	0.50	0.50	237	0.55	0.50	227	0.296
Gaibandha subdistrict	0.60	0.49	237	0.64	0.48	227	0.381
Other subdistrict	0.40	0.49	237	0.36	0.48	227	0.381

p-value of F-test for joint orthogonality = 0.705.

Notes: This analysis is restricted to the 351 households in the SHIREE sample. The total n = 464, split betweeen 237 in the treatment group and 227 in the control group. Summary statistics are means for households in the treatment and control groups. P-values are given for tests of differences in means by treatment status.

C.2 Summary Statistics for SHIREE and Snowball Sub-Samples

The results in the main text combine evidence from two sub-samples. The two rural samples have identical rates levels of poverty (both 75%) and comparable baseline levels of consumption (63.1 taka daily per capita expenditure for SHIREE households and 61.6 for the snowball sample). The two urban subsamples also have comparable daily per capita expenditure (118.4 taka for SHIREE and 122.1 for the snowball sample), but migrants in the snowball sample differ on other dimensions. In particular, they were more likely to be in formal employment and male, and they earned more and sent more remittances at baseline. Overall, the SHIREE and snowball sub-samples differ significantly in statistical terms (p-value for F-test for joint orthogonality is 0.000). Overall, though, these are differences within a larger context of similarity. Both are very poor and are drawn from the same district in Bangladesh.

In Appendix sections C.3 and C.4 we estimate treatment effects separately for each subsample and find that the results are largely similar (with a few important differences discussed in Section 5), and the patterns from the combined sample are not consistently driven by one or the other of the samples. While we have estimated treatment effects within the SHIREE and snowball subsamples to explore heterogeneity and robustness, we note that the experimental design was not powered for these analyses.

Table 4: Summary Statistics by SHIREE Status (Baseline)

	SHIREE Mean	SHIREE SD	SHIREE N	Non-SHIREE Mean	Non-SHIREE SD	Non-SHIREE N	SHIREE-Non-SHIREE p-value
Any mobile, rural	0.98	0.15	351	0.99	0.08	464	0.046
Any bank account, urban	0.11	0.31	351	0.11	0.31	464	0.957
Formal employee, urban	0.82	0.39	351	0.96	0.20	464	0.000
Average monthly income, urban (‘000 Taka)	6.84	2.59	351	8.53	2.19	464	0.000
Female migrant	0.41	0.49	351	0.21	0.41	464	0.000
Age of migrant	22.4	4.4	351	25.3	5.4	464	0.000
Migrant completed primary school	0.40	0.49	351	0.50	0.50	464	0.004
Tenure at current job, urban	1.57	1.65	351	1.76	1.41	464	0.069
Tenure in Dhaka, urban	2.48	2.22	351	2.45	1.38	464	0.781
Remittances sent, past 7 months (‘000 Taka)	14.7	11.4	351	20.2	12.3	464	0.000
Daily per capita expenditure, urban	118.4	52.2	351	122.1	34.3	464	0.225
Household size, rural	3.7	1.5	351	3.9	1.7	464	0.031
Number of children, rural	1.1	1.1	351	1.2	1.0	464	0.134
Household head age, rural	46.2	12.9	351	47.2	13.4	464	0.287
Household head female, rural	0.13	0.34	351	0.12	0.33	464	0.658
Household head education, rural	0.13	0.33	351	0.21	0.41	464	0.001
Decimal of owned agricultural land, rural	2.5	19.4	351	15.9	34.4	464	0.000
Number of rooms of dwelling, rural	1.71	0.70	351	1.9	0.769	464	0.000
Dwelling owned, rural	0.92	0.27	351	0.96	0.20	464	0.019
Daily per capita expenditure, rural (Taka)	63.1	34.6	351	61.6	32.9	464	0.530
Poverty rate (national threshold), rural	0.75	0.43	351	0.75	0.43	464	0.944
Poverty rate (global $1.90 threshold), rural	0.49	0.50	351	0.53	0.50	464	0.311
Gaibandha subdistrict	0.38	0.49	351	0.62	0.49	464	0.000
Other subdistrict	0.62	0.49	351	0.38	0.49	464	0.000
p-value of F-test for joint orthogonality = 0.0000.							

Notes: Summary statistics are means for the 815 households. P-values are given for tests of differences in means by SHIREE status.

C.3 Results for SHIREE Sub-Sample Only

C.3.1 First Stage

Table 5: First Stage - SHIREE Sub-sample

	(1) Rural: Active bKash Account	(2) Rural: Active bKash Account	(3) Urban: Active bKash Account	(4) Urban: Active bKash Account
bKash Treatment	0.553	0.551	0.535	0.538
	(0.0441)	(0.0437)	(0.0447)	(0.0445)
R^2	0.312	0.333	0.293	0.322
Baseline Controls	No	Yes	No	Yes
Endline Control Group Mean	0.154	0.154	0.151	0.151
Observations	349	349	347	347

Standard errors in parentheses. "Active account use" takes the value 1 if the household performed any type of bKash transaction over the 13 month period from June 2015 - June 2016 (including deposits, withdrawals, remittances, and airtime top-ups), constructed using administrative data from bKash.

C.3.2 Remittances Sent

Table 6: Remittances Sent - SHIREE Sub-sample

	(1) Total, Taka (OLS)	(2) Total, Taka (IV)	(3) bKash, Taka (OLS)	(4) bKash, Taka (IV)	(5) Total, Share (OLS)	(6) Total, Share (IV)
Treatment ∗ Endline	540.6		718.0		0.0462	
	(242.7)		(193.6)		(0.0256)	
Active Account ∗ Endline		1005.4		1335.4		0.0860
		(454.4)		(369.5)		(0.0480)
Endline	-306.9	-461.1	-544.5	-749.3	-0.0277	-0.0409
	(177.0)	(230.2)	(146.0)	(189.5)	(0.0201)	(0.0256)
R^2	0.321	0.319	0.484	0.473	0.263	0.260
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Household Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Baseline Mean	2141	2141	1201	1201	0.25	0.25
Observations	4,505	4,505	4,505	4,505	4,505	4,505

Notes: Standard errors in parentheses, clustered by household. The dependent variable in columns (1) and (2) is total remittances (sent through any means) sent in the prior 7 months as self-reported by urban migrants. The dependent variable in columns (3) and (4) is remittances sent through bKash. The dependent variable in columns (5) and (6) is total remittances as a share of migrant income.

C.3.3 Rural Consumption, Poverty, Education, and Health

Table 7: Rural Consumption, Poverty, Education, and Health - SHIREE Sub-sample

	(1) Poor?	(2) Squared Poverty Gap	(3) Consumption Index	(4) Education Index	(5) Health Index
Intention-to-treat:					
bKash Treatment	-0.00138	-0.0306	0.134	0.147	-0.00614
	(0.0276)	(0.0126)	(0.0732)	(0.114)	(0.0400)
Local average treatment effect:					
Active bKash Account	-0.00250	-0.0554	0.243	0.255	-0.0112
	(0.0497)	(0.0229)	(0.132)	(0.195)	(0.0718)
R^2 (ITT)	0.054	0.171	0.383	0.113	0.012
R^2 (LATE)	0.053	0.149	0.377	0.096	0.012
Baseline Mean	0.751	0.085	0.101	-0.192	-0.15
Observations	349	349	349	167	349

Standard errors in parentheses. Column (1) is an indicator of poverty status. Column (2) is the squared poverty gap calculated for each household. Columns (3), (4), and (5) are indices based on a set of variables transformed as z-scores, standardized relative to their baseline distributions. All regressions are estimated with baseline control variables and the baseline dependent variable.

C.3.4 Rural Borrowing, Saving, and Lean Season (Monga) Consumption

Table 8: Rural Borrowing, Saving, and Lean Season (Monga) Consumption - SHIREE Sub-sample

	(1) Any Borrowing?	(2) Loan Value	(3) Any Saving?	(4) Savings Value	(5) *Monga* Number of Meals	(6) *Monga* Calorie Sufficiency	(7) No *Monga* Problem?
Intention-to-treat:							
bKash Treatment	-0.0219	-0.100	0.487	1.581	0.000322	13.37	0.0119
	(0.0532)	(0.467)	(0.0448)	(0.393)	(0.00810)	(9.723)	(0.0239)
Local average treatment effect:							
Active bKash Account	-0.0398	-0.182	0.886	2.883	0.000585	24.24	0.0217
	(0.0957)	(0.839)	(0.0846)	(0.716)	(0.0146)	(17.45)	(0.0430)
R^2 (ITT)	0.022	0.044	0.277	0.080	0.016	0.427	0.002
R^2 (LATE)	0.025	0.046	0.204	0.065	0.016	0.427	0.000
Baseline Mean	0.536	4.585	0.49	4.381	2.991	-268.273	0
Observations	349	349	349	349	349	349	349

Standard errors in parentheses. All regressions are estimated with baseline control variables. All regressions with the exception of "No *Monga* Problem" are estimated with the baseline dependent variable, as this variable was not captured at baseline. Column (2) dependent variable is the inverse hyperbolic sine of total loan value. Column (4) dependent variable is the inverse hyperbolic sine of total savings value. Column (5) dependent variable is the number of meals per day during the *monga* season. Column (6) dependent variable is the monthly calorie sufficiency (difference between calorie consumption and calorie needs) for all household members, in thousands of calories. Column (7) dependent variable is an indicator for households reporting no difficulty during the lean (*monga*) season in response to a survey question about ways of coping during *monga*.

C.3.5 Rural Household Size and Labor

Table 9: Rural Household Size and Labor - SHIREE Sub-sample

	(1) Household Size	(2) Number Migrating For Work	(3) Any Wage Labor?	(4) Number Self-Employed	(5) Any Child Labor?
Intention-to-treat:					
bKash Treatment	-0.150	0.117	-0.0391	0.0347	-0.0547
	(0.117)	(0.0868)	(0.0467)	(0.0367)	(0.0241)
Local average treatment effect:					
Active bKash Account	-0.272	0.213	-0.0709	0.0630	-0.0910
	(0.212)	(0.157)	(0.0839)	(0.0665)	(0.0400)
R^2 (ITT)	0.481	0.088	0.129	0.373	0.040
R^2 (LATE)	0.479	0.079	0.127	0.364	0.002
Baseline Mean	3.662	0.685	0.719	0.212	0.018
Observations	349	349	349	349	167

Standard errors in parentheses. Column (5) is restricted to households with at least one school-age child. All regressions are estimated with baseline control variables and the baseline dependent variable.

C.3.6 Migrant Poverty, Occupation, Saving, and Health

Table 10: Migrant Poverty, Occupation, Saving, and Health - SHIREE Sub-sample

	(1) Poor?	(2) Garment Worker?	(3) Any Saving?	(4) Value of Saving	(5) Health Index
Intention-to-treat:					
bKash Treatment	-0.00515	0.0978	0.159	0.385	-0.250
	(0.0443)	(0.0528)	(0.0378)	(0.407)	(0.135)
Local average treatment effect:					
Active bKash Account	-0.00959	0.182	0.295	0.716	-0.466
	(0.0816)	(0.0982)	(0.0698)	(0.749)	(0.247)
R^2 (ITT)	0.086	0.068	0.078	0.037	0.152
R^2 (LATE)	0.087	0.050	0.075	0.041	0.161
Baseline Mean	0.254	0.424	0.473	3.662	-0.073
Observations	347	347	347	347	347

Standard errors in parentheses. Column (1) is an indicator of poverty status judged by the 2016 urban poverty line in Bangladesh. Column (2) is a binary indicator for working in a garment factory. Column (3) is a binary indicator for holding any financial saving. Column (4) dependent variable is the inverse hyperbolic sine of savings. Column (5) is an index based on a set of variables transformed as z-scores, standardized relative to their baseline distributions. All regressions are estimated with baseline control variables and the baseline dependent variable.

C.3.7 Migrant Labor Supply

Table 11: Results for Migrant Labor Supply (Intent-to-treat) - SHIREE Sub-sample

	(1) Daily Hours Worked	(2) Daily Hours Worked	(3) Daily Hours Worked	(4) Daily Hours Worked
Treatment * Endline	0.245	-0.270	-0.0239	0.0365
	(0.272)	(0.330)	(0.358)	(0.322)
Treatment * Endline * Garments Worker		0.920		
		(0.547)		
Treatment * Endline * Female Migrant			0.756	
			(0.531)	
Treatment * Endline * Female Garments Worker				0.748
				(0.607)
Endline * Garments Worker		-0.229		
		(0.432)		
Endline * Female Migrant			-0.144	
			(0.421)	
Endline * Female Garments Worker				-0.0867
				(0.522)
Endline	-0.171	-0.0615	-0.119	-0.151
	(0.212)	(0.214)	(0.277)	(0.238)
R^2	0.221	0.223	0.222	0.222
Month Fixed Effects	Yes	Yes	Yes	Yes
Household Fixed Effects	Yes	Yes	Yes	Yes
Baseline Mean	8.282	8.282	8.282	8.282
Observations	7,077	7,077	7,077	7,077

Standard errors in parentheses, clustered by migrant. Regressions include month and migrant fixed effects. Dependent variable in columns (1) - (4) is the average number of hours worked per day in the prior 12 months as self-reported by urban migrants, conditional on working in the given month. Variables such as “Garments Worker”, “Female Migrant”, “Female Garments Worker”, “Treatment * Garments Worker”, “Treatment * Female Migrant”, and “Treatment * Female Garments Worker” are absorbed by the migrant fixed effects.

Table 12: Results for Migrant Labor Supply (Local Average Treatment Effect) - SHIREE Sub-sample

	(1) Daily Hours Worked	(2) Daily Hours Worked	(3) Daily Hours Worked	(4) Daily Hours Worked
Active Account ∗ Endline	0.464	-0.540	-0.0430	0.0669
	(0.514)	(0.660)	(0.644)	(0.591)
Active Account ∗ Endline ∗ Garments Worker		1.704		
		(1.025)		
Active Account ∗ Endline ∗ Female Migrant			1.571	
			(1.044)	
Active Account ∗ Endline ∗ Female Garments Worker				1.484
				(1.174)
Endline ∗ Garments Worker		-0.488		
		(0.559)		
Endline ∗ Female Migrant			-0.276	
			(0.532)	
Endline ∗ Female Garments Worker				-0.227
				(0.636)
Endline	-0.246	0.0386	-0.110	-0.163
	(0.282)	(0.308)	(0.390)	(0.325)
R^2	0.221	0.222	0.223	0.222
Month Fixed Effects	Yes	Yes	Yes	Yes
Household Fixed Effects	Yes	Yes	Yes	Yes
Baseline Mean	8.282	8.282	8.282	8.282
Observations	7,077	7,077	7,077	7,077

Standard errors in parentheses, clustered by migrant. Regressions include month and migrant fixed effects. Dependent variable in columns (1) - (4) is the average number of hours worked per day in the prior 12 months as self-reported by urban migrants, conditional on working in the given month. Variables such as "Garments Worker", "Female Migrant", "Female Garments Worker", "Active Account ∗ Garments Worker", "Active Account ∗ Female Migrant", and "Active Account ∗ Female Garments Worker" are absorbed by the migrant fixed effects.

C.4 Results for Snowball Sub-Sample Only

C.4.1 First Stage

Table 13: First Stage - Snowball Sub-sample

	(1) Rural: Active bKash Account	(2) Rural: Active bKash Account	(3) Urban: Active bKash Account	(4) Urban: Active bKash Account
bKash Treatment	0.427	0.433	0.430	0.423
	(0.0421)	(0.0424)	(0.0420)	(0.0418)
R^2	0.183	0.187	0.186	0.204
Baseline Controls	No	Yes	No	Yes
Endline Control Group Mean	0.269	0.269	0.249	0.249
Observations	464	464	462	462

Standard errors in parentheses. "Active account use" takes the value 1 if the household performed any type of bKash transaction over the 13 month period from June 2015 - June 2016 (including deposits, withdrawals, remittances, and airtime top-ups), constructed using administrative data from bKash.

C.4.2 Remittances Sent

Table 14: Remittances Sent - Snowball Sub-sample

	(1) Total, Taka (OLS)	(2) Total, Taka (IV)	(3) bKash, Taka (OLS)	(4) bKash, Taka (IV)	(5) Total, Share (OLS)	(6) Total, Share (IV)
Treatment ∗ Endline	166.1		132.7		0.0197	
	(220.8)		(172.1)		(0.0212)	
Active Account ∗ Endline		383.2		306.3		0.0454
		(510.6)		(398.3)		(0.0489)
Endline	-297.2	-393.7	186.4	109.3	-0.0283	-0.0398
	(165.0)	(275.0)	(125.5)	(209.9)	(0.0144)	(0.0247)
R^2	0.260	0.259	0.407	0.406	0.231	0.231
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Household Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Baseline Mean	2905	2905	1483	1483	0.30	0.30
Observations	6,021	6,021	6,021	6,021	6,021	6,021

Notes: Standard errors in parentheses, clustered by household. The dependent variable in columns (1) and (2) is total remittances (sent through any means) sent in the prior 7 months as self-reported by urban migrants. The dependent variable in columns (3) and (4) is remittances sent through bKash. The dependent variable in columns (5) and (6) is total remittances as a share of migrant income.

C.4.3 Rural Consumption, Poverty, Education, and Health

Table 15: Rural Consumption, Poverty, Education, and Health - Snowball Sub-sample

	(1)	(2)	(3)	(4)	(5)
	Poor?	Squared Poverty Gap	Consumption Index	Education Index	Health Index
Intention-to-treat:					
bKash Treatment	0.0120	-0.0106	0.110	0.0571	0.00943
	(0.0196)	(0.0119)	(0.0617)	(0.0792)	(0.0335)
Local average treatment effect:					
Active bKash Account	0.0279	-0.0244	0.254	0.128	0.0218
	(0.0453)	(0.0275)	(0.144)	(0.176)	(0.0769)
R^2 (ITT)	0.044	0.188	0.460	0.209	0.039
R^2 (LATE)	0.042	0.179	0.444	0.200	0.040
Baseline Mean	0.75	0.096	-0.076	0.14	0.112
Observations	464	464	464	230	464

Standard errors in parentheses. Column (1) is an indicator of poverty status. Column (2) is the squared poverty gap calculated for each household. Columns (3), (4), and (5) are indices based on a set of variables transformed as z-scores, standardized relative to their baseline distributions. All regressions are estimated with baseline control variables and the baseline dependent variable.

C.4.4 Rural Borrowing, Saving, and Lean Season (Monga) Consumption

Table 16: Rural Borrowing, Saving, and Lean Season (Monga) Consumption - Snowball Sub-sample

	(1) Any Borrowing?	(2) Loan Value	(3) Any Saving?	(4) Savings Value	(5) *Monga* Number of Meals	(6) *Monga* Calorie Sufficiency	(7) No *Monga* Problem?
Intention-to-treat:							
bKash Treatment	-0.0914	-0.900	0.414	1.347	0.00536	14.35	0.0691
	(0.0455)	(0.394)	(0.0397)	(0.338)	(0.00432)	(8.759)	(0.0328)
Local average treatment effect:							
Active bKash Account	-0.211	-2.081	0.960	3.123	0.0124	33.09	0.160
	(0.106)	(0.923)	(0.101)	(0.788)	(0.0101)	(20.15)	(0.0772)
R^2 (ITT)	0.035	0.055	0.194	0.041	0.022	0.468	0.016
R^2 (LATE)	0.010	0.014	0.015	0.016	0.000	0.463	0.000
Baseline Mean	0.638	5.456	0.472	4.195	2.974	-284.938	0
Observations	464	464	464	464	464	464	464

Standard errors in parentheses. All regressions are estimated with baseline control variables. All regressions with the exception of "No *Monga* Problem" are estimated with the baseline dependent variable, as this variable was not captured at baseline. Column (2) dependent variable is the inverse hyperbolic sine of total loan value. Column (4) dependent variable is the inverse hyperbolic sine of total savings value. Column (5) dependent variable is the number of meals per day during the *monga* season. Column (6) dependent variable is the monthly calorie sufficiency (difference between calorie consumption and calorie needs) for all household members, in thousands of calories. Column (7) dependent variable is an indicator for households reporting no difficulty during the lean (*monga*) season in response to a survey question about ways of coping during *monga*.

C.4.5 Rural Household Size and Labor

Table 17: Rural Household Size and Labor - Snowball Sub-sample

	(1) Household Size	(2) Number Migrating For Work	(3) Any Wage Labor?	(4) Number Self-Employed	(5) Any Child Labor?
Intention-to-treat:					
bKash Treatment	-0.133	0.116	-0.0760	0.0441	-0.0413
	(0.103)	(0.0761)	(0.0408)	(0.0283)	(0.0241)
Local average treatment effect:					
Active bKash Account	-0.308	0.267	-0.175	0.102	-0.0943
	(0.237)	(0.177)	(0.0944)	(0.0661)	(0.0571)
R^2 (ITT)	0.546	0.034	0.140	0.464	0.059
R^2 (LATE)	0.539	0.008	0.123	0.451	0.000
Baseline Mean	3.907	0.698	0.698	0.185	0.004
Observations	464	464	464	464	230

Standard errors in parentheses. Column (5) is restricted to households with at least one school-age child. All regressions are estimated with baseline control variables and the baseline dependent variable.

C.4.6 Migrant Poverty, Occupation, Saving, and Health

Table 18: Migrant Poverty, Occupation, Saving, and Health - Snowball Sub-sample

	(1) Poor?	(2) Garment Worker?	(3) Any Saving?	(4) Value of Saving	(5) Health Index
Intention-to-treat:					
bKash Treatment	-0.0759	0.0144	0.194	0.566	-0.0723
	(0.0339)	(0.0441)	(0.0321)	(0.347)	(0.116)
Local average treatment effect:					
Active bKash Account	-0.179	0.0341	0.458	1.340	-0.172
	(0.0798)	(0.103)	(0.0770)	(0.817)	(0.274)
R^2 (ITT)	0.216	0.031	0.106	0.068	0.109
R^2 (LATE)	0.211	0.034	0.063	0.061	0.106
Baseline Mean	0.173	0.644	0.31	2.223	0.055
Observations	462	462	462	462	462

Standard errors in parentheses. Column (1) is an indicator of poverty status judged by the 2016 urban poverty line in Bangladesh. Column (2) is a binary indicator for working in a garment factory. Column (3) is a binary indicator for holding any financial saving. Column (4) dependent variable is the inverse hyperbolic sine of savings. Column (5) is an index based on a set of variables transformed as z-scores, standardized relative to their baseline distributions. All regressions are estimated with baseline control variables and the baseline dependent variable.

C.4.7 Migrant Labor Supply

Table 19: Results for Migrant Labor Supply (Intent-to-treat) - Snowball Sub-sample

	(1) Daily Hours Worked	(2) Daily Hours Worked	(3) Daily Hours Worked	(4) Daily Hours Worked
Treatment ∗ Endline	-0.250	-0.324	-0.283	-0.307
	(0.148)	(0.285)	(0.164)	(0.166)
Treatment ∗ Endline ∗ Garments Worker		0.0951		
		(0.329)		
Treatment ∗ Endline ∗ Female Migrant			0.211	
			(0.384)	
Treatment ∗ Endline ∗ Female Garments Worker				0.436
				(0.344)
Endline ∗ Garments Worker		0.585		
		(0.233)		
Endline ∗ Female Migrant			0.129	
			(0.222)	
Endline ∗ Female Garments Worker				0.150
				(0.223)
Endline	0.267	-0.122	0.238	0.238
	(0.103)	(0.204)	(0.122)	(0.119)
R^2	0.366	0.373	0.367	0.368
Month Fixed Effects	Yes	Yes	Yes	Yes
Household Fixed Effects	Yes	Yes	Yes	Yes
Baseline Mean	8.761	8.761	8.761	8.761
Observations	10,193	10,193	10,193	10,193

Standard errors in parentheses, clustered by migrant. Regressions include month and migrant fixed effects. Dependent variable in columns (1) - (4) is the average number of hours worked per day in the prior 12 months as self-reported by urban migrants, conditional on working in the given month. Variables such as "Garments Worker", "Female Migrant", "Female Garments Worker", "Treatment ∗ Garments Worker", "Treatment ∗ Female Migrant", and "Treatment ∗ Female Garments Worker" are absorbed by the migrant fixed effects.

Table 20: Results for Migrant Labor Supply (Local Average Treatment Effect) - Snowball Sub-sample

	(1) Daily Hours Worked	(2) Daily Hours Worked	(3) Daily Hours Worked	(4) Daily Hours Worked
Active Account ∗ Endline	-0.589	-1.029	-0.715	-0.762
	(0.354)	(0.958)	(0.429)	(0.427)
Active Account ∗ Endline ∗ Garments Worker		0.551		
		(1.019)		
Active Account ∗ Endline ∗ Female Migrant			0.575	
			(0.805)	
Active Account ∗ Endline ∗ Female Garments Worker				1.019
				(0.738)
Endline ∗ Garments Worker		0.408		
		(0.484)		
Endline ∗ Female Migrant			-0.0656	
			(0.326)	
Endline ∗ Female Garments Worker				-0.0912
				(0.329)
Endline	0.412	0.165	0.446	0.451
	(0.178)	(0.450)	(0.235)	(0.226)
R^2	0.360	0.362	0.358	0.357
Month Fixed Effects	Yes	Yes	Yes	Yes
Household Fixed Effects	Yes	Yes	Yes	Yes
Baseline Mean	8.761	8.761	8.761	8.761
Observations	10,193	10,193	10,193	10,193

Standard errors in parentheses, clustered by migrant. Regressions include month and migrant fixed effects. Dependent variable in columns (1) - (4) is the average number of hours worked per day in the prior 12 months as self-reported by urban migrants, conditional on working in the given month. Variables such as "Garments Worker", "Female Migrant", "Female Garments Worker", "Active Account ∗ Garments Worker", "Active Account ∗ Female Migrant", and "Active Account ∗ Female Garments Worker" are absorbed by the migrant fixed effects.

Appendix D Robustness Checks: Varying Definitions of Active Account

In this section, we assess robustness of our results to the definition of active account used. In the paper, we define active use to be an indicator variable equal to 1 if at least 1 transaction was made within the past 13 months. We consider alternative definitions of active account in which at least 1 transaction was made within the past 6 months, 3 months, or 1 month. The impact of these alternative definitions on the first stage is presented in Table 21.

Two things are of note here. First, all estimates are statistically significant at the 1% level, highlighting that treatment-control differences in active use remain regardless of the definition of active account. Second, the decrease in estimated coefficients should not be interpreted as a fade-out of the impact of the intervention. This is because we see a comparable decrease in active use among the control group as well. For example, for rural households, active account use within the control group fell from 22% for the past 13 months to 13% for the past 1 month - a 41% reduction. Meanwhile, active account use within treatment group fell from 70% to 33% - a similarly large 53% reduction. We think that the decrease could be attributed to other factors, including seasonality, rather than a fade-out of the impact of the treatment.

As an additional robustness check, we re-run all our main results using active account use within the past one month. While our LATE estimates scale by approximately $1/0.2=5$, the statistical significance of LATE results remain unchanged. We choose to present the most conservative LATE estimates in the paper and hence use the definition of active use within the past 13 months.

D.1 First Stage

Table 21: First Stage by Varying Definitions of Active Account

	(1)	(2)	(3)	(4)
Active bKash Account Within the Past:	13 Months	6 Months	3 Months	1 Month
Panel A: Rural Households				
bKash Treatment	0.48	0.41	0.27	0.20
	(0.03)	(0.03)	(0.03)	(0.03)
R^2	0.24	0.18	0.10	0.07
Control Mean (Endline)	0.22	0.19	0.17	0.13
Observations	813	813	813	813
Panel B: Urban Migrants				
bKash Treatment	0.48	0.35	0.28	0.18
	(0.03)	(0.03)	(0.03)	(0.03)
R^2	0.25	0.16	0.12	0.07
Control Mean (Endline)	0.21	0.19	0.16	0.13
Observations	809	809	809	809

Standard errors in parentheses. All regressions estimated with baseline control variables. "Active account use" in columns (1) - (4) takes the value 1 if the household performed any type of bKash transaction over the past 13, 6, 3, and 1 month periods respectively (including deposits, withdrawals, remittances, and airtime top-ups), constructed using administrative data from bKash.

D.2 Remittances Sent

Table 22: Remittances Sent

	(1) Total, Taka (OLS)	(2) Total, Taka (IV)	(3) bKash, Taka (OLS)	(4) bKash, Taka (IV)	(5) Total, Share (OLS)	(6) Total, Share (IV)
Treatment * Endline	316.1		385.9		0.0297	
	(163.0)		(130.1)		(0.0163)	
Active Account * Endline		1706.2		2083.2		0.160
		(904.5)		(760.9)		(0.0909)
Endline	-327.8	-549.0	-119.0	-388.9	-0.0301	-0.0508
	(121.7)	(223.8)	(96.76)	(184.6)	(0.0117)	(0.0217)
R^2	0.289	0.282	0.438	0.407	0.241	0.232
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Household Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Baseline Mean	2582	2582	1364	1364	0.28	0.28
Observations	10,526	10,526	10,526	10,526	10,526	10,526

Notes: Standard errors in parentheses, clustered by household. The dependent variable in columns (1) and (2) is total remittances (sent through any means) sent in the prior 7 months as self-reported by urban migrants. The dependent variable in columns (3) and (4) is remittances sent through bKash. The dependent variable in columns (5) and (6) is total remittances as a share of migrant income.

D.3 Rural Consumption, Poverty, Education, and Health

Table 23: Rural Consumption, Poverty, Education, and Health

	(1)	(2)	(3)	(4)	(5)
	Poor?	Squared Poverty Gap	Consumption Index	Education Index	Health Index
Intention-to-treat:					
bKash Treatment	0.008	-0.018	0.117	0.082	0.004
	(0.016)	(0.009)	(0.047)	(0.064)	(0.026)
Local average treatment effect:					
Active bKash Account Within Past 1 Month	0.0380	-0.0904	0.579	0.424	0.0195
	(0.0808)	(0.0450)	(0.246)	(0.300)	(0.126)
R^2 (ITT)	0.043	0.175	0.428	0.174	0.025
R^2 (LATE)	0.038	0.085	0.354	0.093	0.025
Baseline Mean	0.75	0.091	0	0	0
Observations	813	813	813	397	813

Standard errors in parentheses. Column (1) is an indicator of poverty status. Column (2) is the squared poverty gap calculated for each household. Columns (3), (4), and (5) are indices based on a set of variables transformed as z-scores, standardized relative to their baseline distributions. All regressions are estimated with baseline control variables and the baseline dependent variable.

D.4 Rural Borrowing, Saving, and Lean Season (Monga) Consumption

Table 24: Rural Borrowing, Saving, and Lean Season (Monga) Consumption

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Any Borrowing?	Loan Value	Any Saving?	Savings Value	Number of Meals	Calorie Sufficiency	No *Monga* Problem?
Intention-to-treat:							
bKash Treatment	-0.0589	-0.553	0.443	1.426	0.00296	13.89	0.0443
	(0.035)	(0.300)	(0.030)	(0.256)	(0.00427)	(6.492)	(0.022)
Local average treatment effect:							
Active bKash Account	-0.290	-2.716	2.182	7.029	0.0146	68.35	0.218
Within Past 1 Month	(0.171)	(1.491)	(0.311)	(1.518)	(0.0211)	(33.15)	(0.110)
R^2 (ITT)	0.024	0.046	0.224	0.049	0.006	0.451	0.009
R^2 (LATE)	0.005	0.016	0.000	0.000	0.000	0.404	0.000
Baseline Mean	0.594	5.082	0.48	4.275	2.982	-277.784	0
Observations	813	813	813	813	813	813	813

Standard errors in parentheses. All regressions are estimated with baseline control variables. All regressions with the exception of "No *Monga* Problem" are estimated with the baseline dependent variable, as this variable was not captured at baseline. Column (2) dependent variable is the inverse hyperbolic sine of total loan value. Column (4) dependent variable is the inverse hyperbolic sine of total savings value. Column (5) dependent variable is the number of meals per day during the *monga* season. Column (6) dependent variable is the monthly calorie sufficiency (difference between calorie consumption and calorie needs) for all household members, in thousands of calories. Column (7) dependent variable is an indicator for households reporting no difficulty during the lean (*monga*) season in response to a survey question about ways of coping during *monga*.

D.5 Rural Household Size and Labor

Table 25: Rural Household Size and Labor

	(1) Household Size	(2) Number Migrating For Work	(3) Any Wage Labor?	(4) Number Self-Employed	(5) Any Child Labor?
Intention-to-treat:					
bKash Treatment	-0.137	0.116	-0.0595	0.0373	-0.0476
	(0.0771)	(0.0571)	(0.0306)	(0.0226)	(0.0172)
Local average treatment effect:					
Active bKash Account	-0.677	0.573	-0.293	0.185	-0.209
Within Past 1 Month	(0.392)	(0.291)	(0.153)	(0.114)	(0.0874)
R^2 (ITT)	0.519	0.054	0.132	0.418	0.046
R^2 (LATE)	0.482	0.000	0.093	0.389	0.000
Baseline Mean	3.802	0.692	0.707	0.197	0.01
Observations	813	813	813	813	397

Standard errors in parentheses. Column (5) is restricted to households with at least one school-age child. All regressions are estimated with baseline control variables and the baseline dependent variable.

D.6 Migrant Poverty, Occupation, Saving, and Health

Table 26: Migrant Poverty, Occupation, Saving, and Health

	(1) Poor?	(2) Garment Worker?	(3) Any Saving?	(4) Value of Saving	(5) Health Index
Intention-to-treat:					
bKash Treatment	-0.0519	0.0527	0.180	0.465	-0.166
	(0.0272)	(0.0344)	(0.0244)	(0.265)	(0.0888)
Local average treatment effect:					
Active bKash Account	-0.287	0.292	0.999	2.575	-0.927
Within Past 1 Month	(0.155)	(0.194)	(0.191)	(1.481)	(0.510)
R^2 (ITT)	0.138	0.030	0.090	0.039	0.094
R^2 (LATE)	0.077	0.000	0.000	0.011	0.034
Baseline Mean	0.21	0.55	0.38	2.84	0
Observations	809	809	809	809	809

Standard errors in parentheses. Column (1) is an indicator of poverty status judged by the 2016 urban poverty line in Bangladesh. Column (2) is a binary indicator for working in a garment factory. Column (3) is a binary indicator for holding any financial saving. Column (4) dependent variable is the inverse hyperbolic sine of savings. Column (5) is an index based on a set of variables transformed as z-scores, standardized relative to their baseline distributions. All regressions are estimated with baseline control variables and the baseline dependent variable.

D.7 Migrant Labor Supply

Table 27: Results for Migrant Labor Supply (Intent-to-treat)

	(1) Daily Hours Worked	(2) Daily Hours Worked	(3) Daily Hours Worked	(4) Daily Hours Worked
Treatment ∗ Endline	-0.0517	-0.303	-0.188	-0.171
	(0.140)	(0.216)	(0.165)	(0.159)
Treatment ∗ Endline ∗ Garments Worker		0.365		
		(0.283)		
Treatment ∗ Endline ∗ Female Migrant			0.539	
			(0.311)	
Treatment ∗ Endline ∗ Female Garments Worker				0.596
				(0.326)
Endline ∗ Garments Worker		0.310		
		(0.208)		
Endline ∗ Female Migrant			-0.0685	
			(0.229)	
Endline ∗ Female Garments Worker				0.0226
				(0.263)
Endline	0.0912	-0.0912	0.110	0.0866
	(0.105)	(0.148)	(0.126)	(0.118)
R^2	0.272	0.274	0.273	0.273
Month Fixed Effects	Yes	Yes	Yes	Yes
Household Fixed Effects	Yes	Yes	Yes	Yes
Baseline Mean	8.56	8.56	8.56	8.56
Observations	17,270	17,270	17,270	17,270

Standard errors in parentheses, clustered by migrant. Regressions include month and migrant fixed effects. Dependent variable in columns (1) - (4) is the average number of hours worked per day in the prior 12 months as self-reported by urban migrants, conditional on working in the given month. Variables such as "Garments Worker", "Female Migrant", "Female Garments Worker", "Treatment ∗ Garments Worker", "Treatment ∗ Female Migrant", and "Treatment ∗ Female Garments Worker" are absorbed by the migrant fixed effects.

Table 28: Results for Migrant Labor Supply (Local Average Treatment Effect)

	(1) Daily Hours Worked	(2) Daily Hours Worked	(3) Daily Hours Worked	(4) Daily Hours Worked
Active Account ∗ Endline	-0.266	-2.048	-1.057	-0.911
	(0.724)	(1.624)	(0.957)	(0.869)
Active Account ∗ Endline ∗ Garments Worker		2.327		
		(1.821)		
Active Account ∗ Endline ∗ Female Migrant			2.584	
			(1.534)	
Active Account ∗ Endline ∗ Female Garments Worker				2.877
				(1.674)
Endline ∗ Garments Worker		-0.0370		
		(0.444)		
Endline ∗ Female Migrant			-0.328	
			(0.361)	
Endline ∗ Female Garments Worker				-0.242
				(0.392)
Endline	0.127	0.222	0.282	0.224
	(0.190)	(0.378)	(0.268)	(0.235)
R^2	0.271	0.262	0.262	0.262
Month Fixed Effects	Yes	Yes	Yes	Yes
Household Fixed Effects	Yes	Yes	Yes	Yes
Baseline Mean	8.56	8.56	8.56	8.56
Observations	17,270	17,270	17,270	17,270

Standard errors in parentheses, clustered by migrant. Regressions include month and migrant fixed effects. Dependent variable in columns (1) - (4) is the average number of hours worked per day in the prior 12 months as self-reported by urban migrants, conditional on working in the given month. Variables such as "Garments Worker", "Female Migrant", "Female Garments Worker", "Active Account ∗ Garments Worker", "Active Account ∗ Female Migrant", and "Active Account ∗ Female Garments Worker" are absorbed by the migrant fixed effects.

Appendix E Distribution of Treated Households

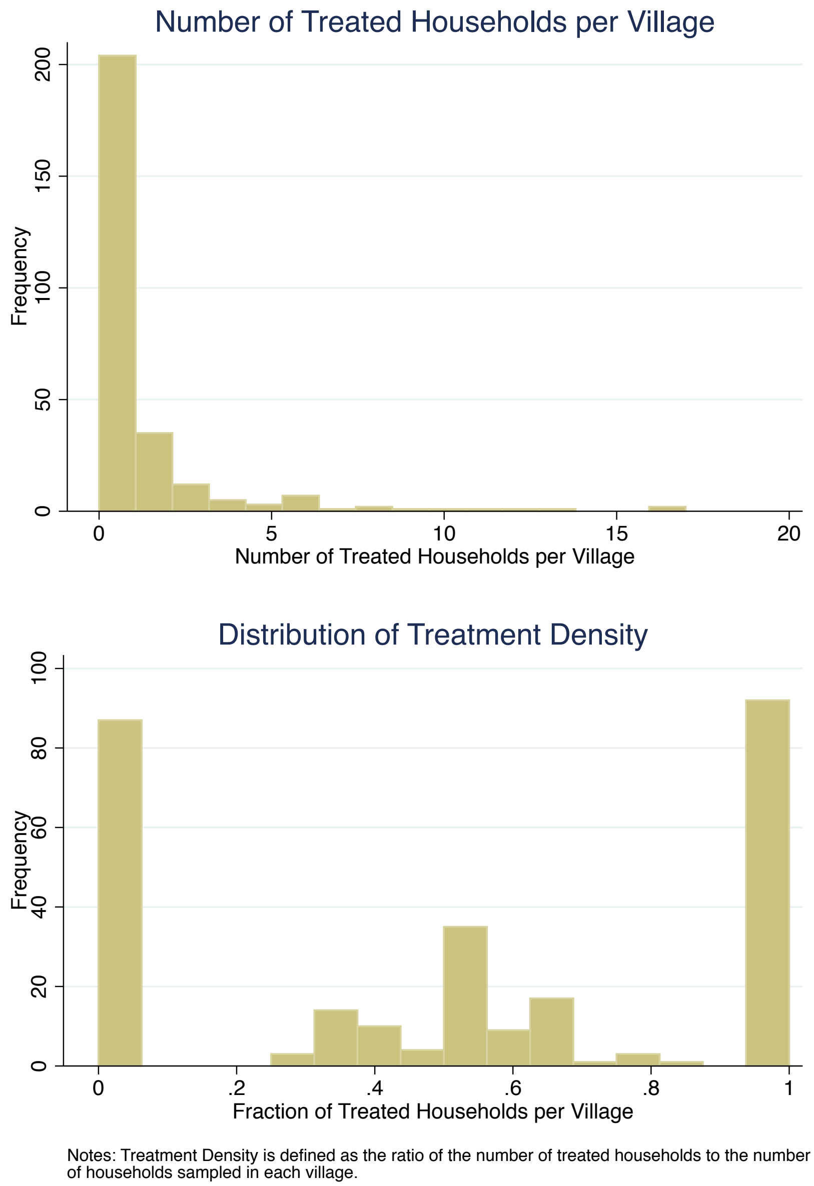


Figure 1: Number and Share of Treated Households in Villages

Appendix F bKash Training Materials

Figure 2: bKash Training Materials

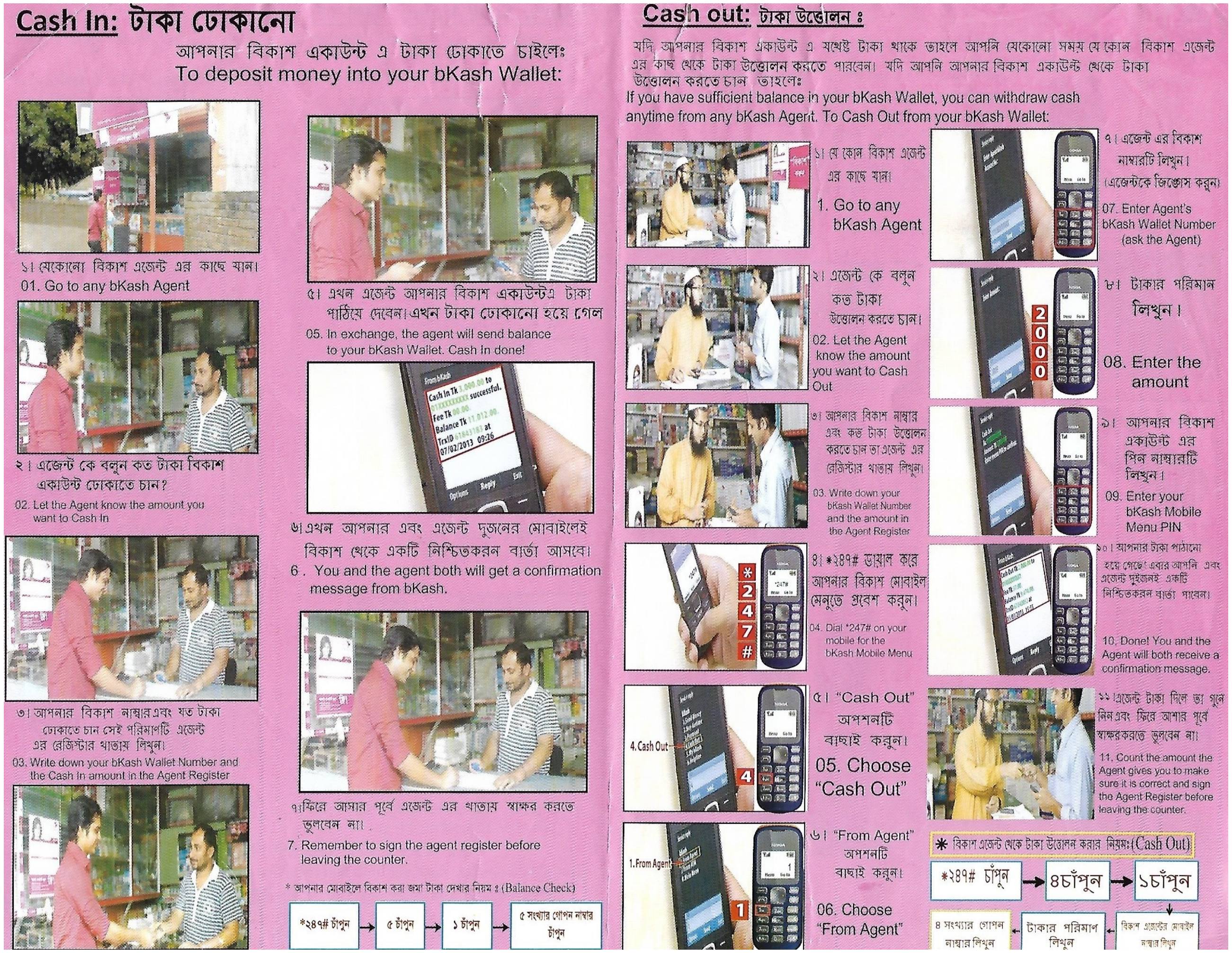


Figure 3: bKash Training Materials (Continued)

Appendix G Proofs for Theoretical Results

G.1 Step 1: Solve for Consumption, Borrowing, Hours of Work, and Remittances

The model is solved by starting at the last stage of the problem and working backwards.

Period 2: Villager (Rural Household) Problem

$$\max_{c_{h,2}} ln(c_{h,2})$$

$$\text{subject to budget constraint: } c_{h,2} \leq \bar{y} + T_2 - B(1+r)$$

In period 2, the villager exhausts its budget constraint, hence:

$$c_{h,2} = \bar{y} + T_2 - B(1+r) \tag{1}$$

Period 2: Migrant Problem

$$\max_{c_{m,2}, T_2, h_{m,2}} (1-\phi)\left[(1-\alpha)ln(c_{m,2}) + \alpha ln(\bar{h} - h_{m,2})\right] + \phi ln(c_{h,2})$$

$$\text{subject to budget constraint: } c_{m,2} \leq wh_{m,2} - T_2(1+p)$$

Using (1) and Lagrange multiplier λ, the Lagrangian for this problem is as follows:

$$\begin{aligned}\mathcal{L} = &(1-\phi)(1-\alpha)ln(c_{m,2}) + (1-\phi)\alpha ln(\bar{h} - h_{m,2}) \\ &+ \phi ln(\bar{y} + T_2 - B(1+r)) - \lambda(c_{m,2} - wh_{m,2} + T_2(1+p))\end{aligned}$$

Assuming interior solutions, we obtain the following first order conditions:

$$\frac{\partial \mathcal{L}}{\partial c_{m,2}} = 0: \qquad \frac{(1-\phi)(1-\alpha)}{c_{m,2}} - \lambda = 0 \tag{2}$$

$$\frac{\partial \mathcal{L}}{\partial T_2} = 0: \qquad \frac{\phi}{\bar{y} + T_2 - B(1+r)} - \lambda(1+p) = 0 \tag{3}$$

$$\frac{\partial \mathcal{L}}{\partial h_{m,2}} = 0: \qquad -\frac{(1-\phi)\alpha}{\bar{h} - h_{m,2}} + \lambda w = 0 \tag{4}$$

$$\frac{\partial \mathcal{L}}{\partial \lambda} = 0: \qquad c_{m,2} - wh_{m,2} + T_2(1+p) = 0 \tag{5}$$

Solving this system of equations, we obtain:

$$T_2 = \frac{\phi w \bar{h}}{1+p} - (1-\phi)\bar{y} + (1-\phi)(1+r)B \tag{6}$$

$$h_{m,2} = \bar{h}\big[1-\alpha(1-\phi)\big] + \frac{\alpha(1-\phi)(1+p)}{w}\Big[(1+r)B - \bar{y}\Big] \tag{7}$$

$$c_{m,2} = (1-\alpha)(1-\phi)\big[w\bar{h} + (1+p)\bar{y} - (1+p)(1+r)B\big] \tag{8}$$

Plugging (6) into (1), we also obtain:

$$c_{h,2} = \phi\bar{y} + \frac{\phi w \bar{h}}{1+p} - \phi(1+r)B \tag{9}$$

Period 1: Villager (Rural Household) Problem

$$\max_{c_{h,1},B} \; ln(c_{h,1}) + \beta ln(c_{h,2})$$

$$\text{subject to budget constraint: } c_{h,1} \leq \underline{y} + T_1 + B$$

Using (9) and Lagrange multiplier μ, the Lagrangian for this problem is as follows:

$$\mathcal{L} = ln(c_{h,1}) + \beta ln\big[\phi\bar{y} + \frac{\phi w \bar{h}}{1+p} - \phi(1+r)B\big] - \mu(c_{h,1} - \underline{y} - T_1 - B)$$

Assuming interior solutions, we obtain the following first order conditions:

$$\frac{\partial \mathcal{L}}{\partial c_{h,1}} = 0: \qquad \frac{1}{c_{h,1}} - \mu = 0 \tag{10}$$

$$\frac{\partial \mathcal{L}}{\partial B} = 0: \qquad -\frac{\beta\phi(1+r)}{\phi\bar{y} + \frac{\phi w \bar{h}}{1+p} - \phi(1+r)B} + \mu = 0 \tag{11}$$

$$\frac{\partial \mathcal{L}}{\partial \mu} = 0: \qquad c_{h,1} - \underline{y} - T_1 - B = 0 \tag{12}$$

Solving this system of equations, we obtain:

$$B = \frac{1}{(1+\beta)(1+r)}\bar{y} - \frac{\beta}{1+\beta}\underline{y} + \frac{w\bar{h}}{(1+\beta)(1+r)(1+p)} - \frac{\beta}{1+\beta}T_1 \tag{13}$$

$$c_{h,1} = \frac{1}{1+\beta}\Big[\frac{1}{1+r}\bar{y} + \frac{w\bar{h}}{(1+r)(1+p)} + \underline{y} + T_1\Big] \tag{14}$$

Plugging (13) into (6), (7), (8), and (9) we also obtain:

$$T_2 = \frac{w\bar{h}(1+\beta\phi)}{(1+p)(1+\beta)} - \frac{\beta(1-\phi)}{1+\beta}\Big[(1+r)(T_1+\underline{y})+\bar{y}\Big] \tag{15}$$

$$h_{m,2} = \bar{h}\Big[1-\frac{\alpha\beta(1-\phi)}{1+\beta}\Big] - \frac{\alpha\beta(1-\phi)(1+p)}{w(1+\beta)}\Big[(1+r)(T_1+\underline{y})+\bar{y}\Big] \tag{16}$$

$$c_{m,2} = \frac{\beta(1-\alpha)(1-\phi)}{1+\beta}\Big[(1+p)\big[(1+r)\underline{y}+\bar{y}\big]+w\bar{h}+(1+p)(1+r)T_1\Big] \tag{17}$$

$$c_{h,2} = \frac{\beta\phi}{(1+\beta)(1+p)}\Big[(1+p)\big[(1+r)\underline{y}+\bar{y}\big]+w\bar{h}+(1+p)(1+r)T_1\Big] \tag{18}$$

Period 1: Migrant Problem

$$\max_{c_{m,1},T_1,h_{m,1}} (1-\phi)\big[(1-\alpha)ln(c_{m,1})+\alpha ln(\bar{h}-h_{m,1})\big]+\phi ln(c_{h,1})$$
$$+\beta\Big[(1-\phi)\big[(1-\alpha)ln(c_{m,2})+\alpha ln(\bar{h}-h_{m,2})\big]+\phi ln(c_{h,2})\Big]$$
$$\text{subject to budget constraint: } c_{m,1} \leq wh_{m,1}-T_1(1+p)$$

Using (14), (16), (17), (18), and Lagrange multiplier ψ, the Lagrangian for this problem is as follows:

$$\begin{aligned}
\mathcal{L} =& (1-\phi)(1-\alpha)ln(c_{m,1})+(1-\phi)\alpha ln(\bar{h}-h_{m,1}) \\
&+\phi ln\Big(\frac{1}{1+\beta}\Big[\frac{1}{1+r}\bar{y}+\frac{w\bar{h}}{(1+r)(1+p)}+\underline{y}+T_1\Big]\Big) \\
&+\beta(1-\phi)(1-\alpha)ln\Big(\frac{\beta(1-\alpha)(1-\phi)}{1+\beta}\Big[(1+p)\big[(1+r)\underline{y}+\bar{y}\big]+w\bar{h}+(1+p)(1+r)T_1\Big]\Big) \\
&+\beta(1-\phi)\alpha\Big(\frac{\bar{h}\alpha\beta(1-\phi)}{1+\beta}+\frac{\alpha\beta(1-\phi)(1+p)}{w(1+\beta)}\Big[(1+r)(T_1+\underline{y})+\bar{y}\Big]\Big) \\
&+\beta\phi ln\Big(\frac{\beta\phi}{(1+\beta)(1+p)}\Big[(1+p)\big[(1+r)\underline{y}+\bar{y}\big]+w\bar{h}+(1+p)(1+r)T_1\Big]\Big) \\
&-\psi(c_{m,1}-wh_{m,1}+T_1(1+p))
\end{aligned}$$

Assuming interior solutions, we obtain the following first order conditions:

$$\frac{\partial \mathcal{L}}{\partial c_{m,1}}=0: \qquad \frac{(1-\phi)(1-\alpha)}{c_{m,1}}-\psi=0 \tag{19}$$

$$\frac{\partial \mathcal{L}}{\partial h_{m,1}}=0: \qquad -\frac{\alpha(1-\phi)}{\bar{h}-h_{m,1}}+\psi w=0 \tag{20}$$

$$\begin{aligned}\frac{\partial \mathcal{L}}{\partial T_1}=0: \qquad & \frac{\phi(1+r)(1+p)}{w\bar{h}+(1+p)\big[(1+r)(T_1+\underline{y})+\bar{y}\big]} \\ & +\frac{\beta(1-\phi)(1-\alpha)(1+r)(1+p)}{w\bar{h}+(1+p)\big[(1+r)(T_1+\underline{y})+\bar{y}\big]} \\ & +\frac{\beta\alpha(1-\phi)(1+r)(1+p)}{w\bar{h}+(1+p)\big[(1+r)(T_1+\underline{y})+\bar{y}\big]} \\ & +\frac{\beta\phi(1+r)(1+p)}{w\bar{h}+(1+p)\big[(1+r)(T_1+\underline{y})+\bar{y}\big]}-\psi(1+p)=0\end{aligned} \tag{21}$$

$$\frac{\partial \mathcal{L}}{\partial \psi}=0: \qquad c_{m,1}-wh_{m,1}+T_1(1+p)=0 \tag{22}$$

Solving this system of equations, we obtain:

$$T_1=\frac{1}{(1+r)(1+\beta)}\Big[\frac{w\bar{h}\big[(1+r)(\phi+\beta)-(1-\phi)\big]}{1+p}-(1-\phi)\big[(1+r)\underline{y}+\bar{y}\big]\Big] \tag{23}$$

$$h_{m,1}=\frac{w\bar{h}\big[1+\beta+r(1+\beta-\alpha(1-\phi))-2\alpha(1-\phi)\big]-\alpha(1+p)(1-\phi)\big[(1+r)\underline{y}+\bar{y}\big]}{w(1+r)(1+\beta)} \tag{24}$$

$$c_{m,1}=\frac{(1-\phi)(1-\alpha)}{(1+r)(1+\beta)}\Big[w\bar{h}(2+r)+(1+p)\big[(1+r)\underline{y}+\bar{y}\big]\Big] \tag{25}$$

We can also use (23) to solve for the following:

$$c_{m,2}=\frac{\beta(1-\alpha)(1-\phi)(\beta+\phi)}{(1+\beta)^2}\Big[w\bar{h}(2+r)+(1+p)\big[(1+r)\underline{y}+\bar{y}\big]\Big] \tag{26}$$

$$c_{h,2}=\frac{\beta\phi(\beta+\phi)}{(1+p)(1+\beta)^2}\Big[w\bar{h}(2+r)+(1+p)\big[(1+r)\underline{y}+\bar{y}\big]\Big] \tag{27}$$

$$h_{m,2}=\frac{w\bar{h}\big[1+\beta\big(2+\beta-\alpha(2+r)(1-\phi)(\beta+\phi)\big)\big]-\alpha\beta(1-\phi)(\beta+\phi)(1+p)\big[(1+r)\underline{y}+\bar{y}\big]}{w(1+\beta)^2} \tag{28}$$

$$\begin{aligned}T_2=&\frac{w\bar{h}}{(1+p)(1+\beta)^2}\Big[1+\beta\big[2-\beta(1+r)+\phi(2+r)\big(\beta-(1-\phi)\big)\big]\Big]\\&-\frac{\beta(1-\phi)(\beta+\phi)}{(1+\beta)^2}\Big[(1+r)\underline{y}+\bar{y}\Big]\end{aligned} \tag{29}$$

$$\begin{aligned}B=&\frac{1}{(1+r)(1+\beta)^2}\Big[\big(1+\beta(2-\phi)\big)\bar{y}-\beta(1+r)(\beta+\phi)\underline{y}\Big]\\&+\frac{w\bar{h}}{(1+p)(1+r)(1+\beta)^2}\Big[1-\beta\big(\beta(1+r)+\phi(2+r)-2\big)\Big]\end{aligned} \tag{30}$$

$$c_{h,1}=\frac{\beta+\phi}{(1+p)(1+r)(1+\beta)^2}\Big[w\bar{h}(2+r)+(1+p)\big[(1+r)\underline{y}+\bar{y}\big]\Big] \tag{31}$$

Ensuring Remittances are Non-Negative:

For $T_1 \geq 0$, we require:

$$w \geq \frac{(1-\phi)(1+p)\big[(1+r)\underline{y}+\bar{y}\big]}{\bar{h}\big[(1+r)(\phi+\beta)-(1-\phi)\big]} \tag{32}$$

For $T_2 \geq 0$, we require:

$$w \geq \frac{\beta(1+p)(1-\phi)(\beta+\phi)\big[(1+r)\underline{y}+\bar{y}\big]}{\bar{h}\Big[1+\beta\big[2-\beta(1+r)+\phi(2+r)\big(\beta-(1-\phi)\big)\big]\Big]} \tag{33}$$

Let $\underline{w_1}=\frac{(1-\phi)(1+p)\big[(1+r)\underline{y}+\bar{y}\big]}{\bar{h}\big[(1+r)(\phi+\beta)-(1-\phi)\big]}$ and $\underline{w_2}=\frac{\beta(1+p)(1-\phi)(\beta+\phi)\big[(1+r)\underline{y}+\bar{y}\big]}{\bar{h}\Big[1+\beta\big[2-\beta(1+r)+\phi(2+r)\big(\beta-(1-\phi)\big)\big]\Big]}$. Then T_1 is non-negative if and only if $w \geq \underline{w_1}$ and T_2 is non-negative if and only if $w \geq \underline{w_2}$. These conditions are needed to prevent flows of remittances from villagers to migrants when migrant income is too low.

G.2 Step 2: Derive Comparative Statics for Changes in the Price of Remittances

Remittances:

$$\frac{\partial T_1}{\partial p} = -\frac{w\bar{h}\left[(1+r)(\phi+\beta)-(1-\phi)\right]}{(1+r)(1+\beta)(1+p)^2}$$

Therefore $\frac{\partial T_1}{\partial p} < 0$ if and only if:

$$\begin{aligned}(1+r)(\phi+\beta)-(1-\phi) &> 0\\ r &> \frac{1-\phi}{\beta+\phi}-1\end{aligned}$$

Let $\underline{r_1} = \frac{1-\phi}{\beta+\phi} - 1$. Then a decrease in p leads to an increase in period 1 remittances received by villagers if and only if $r > \underline{r_1}$.

$$\frac{\partial T_2}{\partial p} = -\frac{w\bar{h}}{(1+p)^2(1+\beta)^2}\left[1+\beta\left[2-\beta(1+r)+\phi(2+r)\big(\beta-(1-\phi)\big)\right]\right]$$

Therefore $\frac{\partial T_2}{\partial p} < 0$ if and only if:

$$\begin{aligned}1+\beta\left[2-\beta(1+r)+\phi(2+r)\big(\beta-(1-\phi)\big)\right] &> 0\\ r &> \frac{1+2\beta-\beta^2+2\phi\beta(\beta-1+\phi)}{\beta\big(\beta-\phi(\beta-1+\phi)\big)}\end{aligned}$$

Let $\underline{r_2} = \frac{1+2\beta-\beta^2+2\phi\beta(\beta-1+\phi)}{\beta\big(\beta-\phi(\beta-1+\phi)\big)}$. Then a decrease in p leads to an increase in period 2 remittances received by villagers if and only if $r > \underline{r_2}$.

Fraction of Income Remitted:

Let the fraction of income remitted in period 1 be $\gamma_1 = \frac{T_1}{wh_{m,1}}$. Then we have:

$$\gamma_1 = \frac{\frac{w\bar{h}}{1+p}\left[(1+r)(\phi+\beta)-(1-\phi)\right]-(1-\phi)\left[(1+r)\underline{y}+\bar{y}\right]}{w\bar{h}\left[1+\beta+r(1+\beta-\alpha(1-\phi))-2\alpha(1-\phi)\right]-\alpha(1+p)(1-\phi)\left[(1+r)\underline{y}+\bar{y}\right]}$$

Let:

$$\theta_0 = (1-\phi)\big[(1+r)\underline{y}+\bar{y}\big] \ ,$$
$$\theta_1 = \frac{w\bar{h}}{1+p}\big[(1+r)(\phi+\beta)-(1-\phi)\big] \ , \text{ and}$$
$$\theta_2 = w\bar{h}\big[1+\beta+r(1+\beta-\alpha(1-\phi))-2\alpha(1-\phi)\big] \ .$$

Then we have:

$$\frac{\partial\gamma_1}{\partial p} = \frac{(\theta_2-\alpha(1+p)\theta_0)(-\frac{\theta_1}{1+p})-(\theta_1-\theta_0)(-\alpha\theta_0)}{(\theta_2-\alpha(1+p)\theta_0)^2}$$

Therefore $\frac{\partial\gamma_1}{\partial p}<0$ if and only if:

$$\alpha\theta_0(\theta_1-\theta_0) < \frac{\theta_1}{1+p}(\theta_2-\alpha(1+p)\theta_0)$$

$$\theta_0 < \theta_1\left[1-\sqrt{1-\frac{\theta_2}{\alpha(1+p)\theta_1}}\ \right] \text{ or } \theta_0 > \theta_1\left[1+\sqrt{1-\frac{\theta_2}{\alpha(1+p)\theta_1}}\ \right]$$

Since $\theta_0 < \theta_1$ by condition (32), the above set of inequalities is satisfied. Therefore a decrease in p will lead to an increase in the fraction of income remitted in period 1.

Let the fraction of income remitted in period 2 be $\gamma_2 = \frac{T_2}{wh_{m,2}}$. Then we have:

$$\gamma_2 = \frac{\frac{w\bar{h}}{1+p}\Big[1+\beta\big[2-\beta(1+r)+\phi(2+r)\big(\beta-(1-\phi)\big)\big]\Big]-\beta(1-\phi)(\beta+\phi)\Big[(1+r)\underline{y}+\bar{y}\Big]}{w\bar{h}\big[1+\beta\big(2+\beta-\alpha(2+r)(1-\phi)(\beta+\phi)\big)\big]-\alpha\beta(1-\phi)(\beta+\phi)(1+p)\big[(1+r)\underline{y}+\bar{y}\big]}$$

Let:

$$\eta_0 = \beta(1-\phi)(\beta+\phi)(1+p)\big[(1+r)\underline{y}+\bar{y}\big] \ ,$$
$$\eta_1 = \frac{w\bar{h}}{1+p}\Big[1+\beta\big[2-\beta(1+r)+\phi(2+r)\big(\beta-(1-\phi)\big)\big]\Big] \ , \text{ and}$$
$$\eta_2 = w\bar{h}\big[1+\beta\big(2+\beta-\alpha(2+r)(1-\phi)(\beta+\phi)\big)\big] \ .$$

Then we have:

$$\frac{\partial \gamma_2}{\partial p} = \frac{(\eta_2 - \alpha(1+p)\eta_0)(-\frac{\eta_1}{1+p}) - (\eta_1 - \eta_0)(-\alpha\eta_0)}{(\eta_2 - \alpha(1+p)\eta_0)^2}$$

Therefore $\frac{\partial \gamma_2}{\partial p} < 0$ if and only if:

$$\alpha\eta_0(\eta_1 - \eta_0) < \frac{\eta_1}{1+p}(\eta_2 - \alpha(1+p)\eta_0)$$

$$\eta_0 < \eta_1\left[1 - \sqrt{1 - \frac{\eta_2}{\alpha(1+p)\eta_1}}\,\right] \text{ or } \eta_0 > \eta_1\left[1 + \sqrt{1 - \frac{\eta_2}{\alpha(1+p)\eta_1}}\,\right]$$

Since $\eta_0 < \eta_1$ by condition (33), the above set of inequalities is satisfied. Therefore a decrease in p will lead to an increase in the fraction of income remitted in period 2.

Consumption:

$$\frac{\partial c_{m,1}}{\partial p} = \frac{(1-\phi)(1-\alpha)\left[(1+r)\underline{y} + \bar{y}\right]}{(1+r)(1+\beta)} > 0$$

$$\frac{\partial c_{m,2}}{\partial p} = \frac{\beta(1-\alpha)(1-\phi)(\beta+\phi)\left[(1+r)\underline{y} + \bar{y}\right]}{(1+\beta)^2} > 0$$

$$\frac{\partial c_{h,1}}{\partial p} = -\frac{w\bar{h}(2+r)(\beta+\phi)}{(1+r)(1+p)^2(1+\beta)^2} < 0$$

$$\frac{\partial c_{h,2}}{\partial p} = -\frac{\beta\phi w\bar{h}(2+r)(\beta+\phi)}{(1+p)^2(1+\beta)^2} < 0$$

Therefore a decrease in p leads to increases in $c_{h,1}$ and $c_{h,2}$ and decreases in $c_{m,1}$ and $c_{m,2}$.

Villager Borrowing:

$$\frac{\partial B}{\partial p} = -\frac{w\bar{h}\left[1 - \beta\big(\beta(1+r) + \phi(2+r) - 2\big)\right]}{(1+r)(1+p)^2(1+\beta)^2}$$

Therefore $\frac{\partial B}{\partial p} > 0$ if and only if:

$$1-\beta\big(\beta(1+r)+\phi(2+r)-2\big)<0$$
$$r>\frac{1+\beta(2-\beta-2\phi)}{\beta(\beta+\phi)}$$

Let $\underline{r_B}=\frac{1+\beta(2-\beta-2\phi)}{\beta(\beta+\phi)}$. Then a decrease in p leads to a decrease in borrowing by villagers if and only if $r>\underline{r_B}$.

Migrant Hours of Work:

$$\frac{\partial h_{m,1}}{\partial p}=-\frac{\alpha(1-\phi)\big[(1+r)\underline{y}+\bar{y}\big]}{w(1+r)(1+\beta)}<0$$
$$\frac{\partial h_{m,2}}{\partial p}=-\frac{\alpha\beta(1-\phi)(\beta+\phi)\big[(1+r)\underline{y}+\bar{y}\big]}{w(1+\beta)^2}<0$$

Therefore a decrease in p leads to increases in $h_{m,1}$ and $h_{m,2}$.