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The Social Meaning of Mobile Money: Earmarking Reduces the Willingness to Spend in Migrant Households*

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Abstract

Behavioral household finance shows that people are often more willing to spend when using less tangible forms of money like debit cards or digital payments than when spending in cash. We show that this "payment effect" cannot be generalized to mobile money. We surveyed families in rural Northwest Bangladesh, where mobile money is mainly received from relatives working in factories. The surveys were embedded within an experiment that allows us to control for the relationships between senders and receivers of mobile money. The finding suggests that the source of funds matters, and mobile money is earmarked for particular purposes and thus less fungible than cash. In contrast to the expectation of greater spending, the willingness to spend in the rural sample was lower by 24 to 31 percent. In urban areas, where the sample does not receive remittances on net, there are no payment effects associated with mobile money.

Keywords: Payment effect, digital finance, willingness to pay, social meaning of money, earmarks. **JEL Codes:** O15, G41, G50, D91, D14.

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1 Introduction

The digitization of money has brought profound changes to the banking sector and has expanded the range of customers that are served (Feyen et al., 2023). Mobile technologies, in particular, bring new ways to make payments, and they offer banks ways to profitably cut fees, expand geographic reach, and speed up transactions. The concern here is not about that part of the banking revolution, however, but in changes that are, in some ways, more fundamental: Does the digitization of money, in itself, change how individuals and households spend, invest, and save? Specifically, does the form of money (rather than the functionality of mobile money) change perceptions and choices? Is there something importantly different about holding 20 dollars on your mobile phone rather than holding a 20 dollar banknote in your hand?

Economists generally assume that money is fungible; a dollar is a dollar, a peso is a peso, and a taka is a taka (Morduch, 2017), but research on behavioral household finance shows that money is often earmarked or attached to mental accounts in ways that make it nonfungible (Beshears et al., 2018). With regard to digital money, economists and psychologists find evidence for "payment effects" that suggest that a dollar is viewed differently depending on the form of payment (Prelec and Simester 1998, Raghubir and Srivastava 2008, Soman 2003). Specifically, paying with a credit card or debit card often leads to a greater willingness to pay for consumer goods relative to paying with cash. The abstract nature of paying with "plastic" can make it easier to choose to spend compared to a context involving handing merchants physical banknotes from wallets and purses.

We consider paying with mobile money versus paying with cash, and we find results that contrast with the previous literature on payment effects. We anticipated that when consumers think of mobile money, with its more abstract (digitized) form of stored value, they would be more willing to pay for consumer goods (as is generally the case when paying with credit cards) relative to when the spending in cash. But we find lower willingness to pay with mobile money versus cash, and the finding highlights an important difference between mobile money and credit cards: Unlike credit cards, mobile money is loaded onto a card or received from someone else. Remittances are a primary use case for mobile money (Lee et al., 2022). Thus the money held in a digital account can hold a particular meaning or be earmarked for a particular purpose, which, in our context, is tied to the identity of the sender. We show evidence consistent with this kind of earmarking and show how it affects willingness to pay and spend.

The finding aligns with the sociologist Viviana Zelizer's *The Social Meaning of Money*, which describes how money obtained through different channels can be earmarked for certain purposes and thus may not be fungible (Zelizer, 1994). This can lead to different monies being spent in different ways. Her focus is not on the form of money (cash vs. mobile money, say), but it provides an explanation for differentiation. A large theoretical and empirical literature on mental accounting provides evidence primarily in high-income country contexts that different income streams may not be fungible, including Prelec and Loewenstein (1998), Hastings and Shapiro (2013), Hastings and Shapiro (2018) and Abeler and Marklein (2017). Closer to our context, money may not be fungible because of intrahousehold conflict (Duflo and Udry, 2004); if money held in different forms represents different income sources or intended uses, this could lead to different spending patterns conditional on the form of money. Riley (2022) shows, for example, that microfinance loans to female borrowers that were disbursed directly into digital accounts led to 15 percent higher profit relative to when the loans were disbursed in cash—because the money could be separated and earmarked from other money—and the impacts were largest for women who, at baseline, reported pressure to share money with other household members.

In the context of a broader field experiment on mobile money among migrant families and their originating households (Lee et al., 2021), we randomize whether urban and rural residents in Bangladesh are asked to think about paying in mobile money versus paying with cash when considering their willingness to purchase (how large a quantity) and willingness to pay (how high a price) for a set of common consumer goods. We asked the study participants how much they would be willing to purchase in quantities for the following items: coarse rice, fine rice, basmati rice, pulses, milk, eggs and meat. We also asked how much they would be willing to pay for a quantity of fine rice, a good bar of soap, particular pieces of clothing (a *salwar kameez* and a *lungi*), a bag of potato chips, and a packet of biscuits (cookies). The aim is to see whether their choices shift when mobile money is at stake rather than cash. We relate the choices to education, age, gender, and other demographic characteristics, as well as prior exposure to the mobile money technology.

The study was partly inspired by Raghubir and Srivastava (2008) who focus on spending by a sample of college students when using credit cards vs cash, but we turn to a very different context (mobile money in Bangladesh) which, unlike credit cards, does not allow for the possibility that increased willingness to pay is due to credit access. The context

allows us to explore broader elements of payment effects and to analyze a wider set of covariates (including measurement of time and risk preferences). The context also provides experimental variation in the amount of prior experience individuals have with the technology, to test for the effects of learning. We test for these effects in Bangladesh during a period when mobile money had just been introduced and was beginning to spread quickly. During this period, the primary use case for mobile money was for sending and receiving remittances, and we build from that observation in testing for social influences on spending choices.

While the sample was specific to a single migration corridor in Bangladesh, the phenomenon of internal migration is common, with some estimates suggestion that as much as 19.3 percent of the working age population of Bangladesh is internal migrants, with the plurality having migrated for economic reasons (Bangladesh Bureau of Statistics, 2017).

To preview our results, we find evidence of payment effects in both the rural and urban samples. We do not find a greater willingness to pay when spending from digitized money in contrast to Kiernan (2021) and Agarwal et al. (2022) (digital payment platforms); Raghubir and Srivastava (2008) and Boden et al. (2020) (credit cards); Soetevent (2011) and Moore and Taylor (2011) (debit cards); and Jiang (2022) (both credit and debit cards). Instead, we find that when respondents consider decisions in terms of mobile money, they choose to buy less in total measured in kilograms of food per month, and they are less willing to pay for a given basket of consumption goods. These effects also contrast with Liu and Dewitte (2021) and Incekara-Hafalir and Loewenstein (2012) who find no average effects on spending of credit cards and mobile money.

The evidence is consistent with a story of mental accounting where remittances sent through mobile money are earmarked for specific non-consumption purposes, leading to lower demand for consumption goods when using mobile money. This is consistent with the spirit of work in Arcangelis et al. (2015) and Batista et al. (2015) who show that migrants, when given the opportunity, opt to label remittances for specific purposes or adopt direct payments, especially for education, leaving less to spend on general consumption.

The findings are more pronounced in the rural data, where the sample tends to be recipients of transfers via mobile money. In the urban sample, there is some evidence that greater education amplifies the payment effect, with migrants who completed primary school showing a higher differential total expenditure than those who did not.

The fact that we see negative effects of priming people in the rural sample to think of decisions in terms of mobile money suggests that the mental accounting effects dwarf the

kind of "payment effects" that have been found in other contexts. To explore the mechanism, we interact the mobile money treatment with an indicator of whether the migrant had an active mobile money (bKash) account and reported sending remittances for non-consumption purposes (education, savings, investment, health, etc.). We find a significant and large interaction in the rural data – the effects of the mobile money treatment on rural expenditure are greater among these households than in the general population. The decreases in quantities to be purchased and willingness-to-pay with mobile money may also reflect the structural reality of rural markets, where purchases may be more difficult to make in mobile money than in urban contexts. It may also reflect a desire to use mobile money accounts as commitment savings devices (rather than spending the stored funds).

We explore these explanations further in the sections below. Section 2 briefly summarizes related literature. Section 3 describes the study context and experiment. Section 4 describes the data. Section 5 describes the empirical methods. Section 6 details the results and section 7 describes mechanisms and heterogeneity of the results. Finally, section 8 describes broader implications for policy.

2 Related Literature

Our study originally drew inspiration from Raghubir and Srivastava (2008), who present the results of an experiment in which 114 college students were primed to think of decisions in credit cards or cash. We aimed to extend this inquiry to a new payment method, mobile money. In their first study, the students were asked to imagine a restaurant in New Orleans and to indicate how much they would be willing to pay for 9 menu items (a menu was presented to the students without prices). They find that when eliciting willingness-to-pay, subjects display a higher willingness-to-pay for the same items when primed to think about credit, and speculate that credit cards can make it seem like one is spending "play money" or that expenditures are less material. The pain of spending is less salient and immediate.

Feinberg (1986) found similar results, although these results failed to be replicated in Feinberg (1990), Hunt et al. (1990) and Shimp and Moody (2000). Prelec and Simester (1998) find that in genuine transactions of substantial value, the effect of instructing individuals to use a credit card rather than cash for transactions can be large and does not appear to be driven by liquidity constraints. Runnemark et al. (2015) conduct an incentivized experiment to test whether the willingness-to-pay is greater for debit cards than

for cash and find evidence for similar effects on willingness-to-pay as in Feinberg (1986), Prelec and Simester (1998), and Raghubir and Srivastava (2008).

In exploring the mechanisms by which this may happen, Chatterjee and Rose (2012) propose that consumers primed to think about credit cards rather than cash focus on benefits rather than costs when evaluating products. They quantify this by measuring the frequency of recall errors for cost and benefit attributes of products in different priming treatment conditions. Soman (2003) finds that lower payment modality transparency is associated with greater willingness-to-pay. The psychological effects documented in our experiment may have substantive welfare effects if payment modality has large enough effects on the composition or total amount of consumption, or saving. Thomas et al. (2011) argue that the restrictiveness of paying in cash can serve to curb impulsive purchases.

A newer literature extrapolates these effects to a new financial technology, mobile money. The bulk of these papers find evidence for similar effects. For example, Agarwal et al. (2022) find that the switch to digital finance following the Indian demonetization was associated with an increase in consumption expenditure, and relate this to the decreased salience of spending. Boden et al. (2020) extend the earlier willingness-to-pay studies to mobile money in three markets – Germany, India and the United States – and find that convenience mediates the higher willingness-to-pay with mobile money. Jiang (2022) finds that Chinese consumers spend significantly more in supermarkets with mobile money, and that in a lab experiment, mobile payments lead to a significantly higher willingness-to-pay for consumption. Kiernan (2021) finds evidence for similar effects among users of Venmo in the United States.

In contrast to these papers, a few studies fail to confirm the payment effects found in earlier studies, for both credit card and mobile payments. Liu and Dewitte (2021) find that they are unable to replicate the credit card payment effect found in previous studies, and that this effect also does not generalize to mobile money. Incekara-Hafalir and Loewenstein (2012) find in a field experiment where diners are experimentally induced to use credit cards that this has no effect on expenditures.

Finally, our findings relate to a larger literature on mental accounting and how different sources of money or accounts may be viewed differently by individuals (see e.g. Prelec and Loewenstein 1998). Hastings and Shapiro (2018) find evidence that the marginal propensity to consume SNAP-eligible foods out of SNAP benefits is much larger than the marginal propensity to consume these foods out of cash. Hastings and Shapiro (2013) similarly find that commodity price shocks, specifically gasoline price shocks, differentially

affect spending within that category, providing evidence of mental budgets or mental accounts for different expenditures. Abeler and Marklein (2017) show suggestive evidence from the field and lab evidence that attaching labels to a part of a subject's budget leads to more consumption according to the label.

Specific to the experiences of migrants, there is evidence that migrants may intend to direct and wish to label remittances for non-consumption purposes, specifically education. Arcangelis et al. (2015) shows that Filipino migrants in Rome exhibit demand for a product that allows them to label remittances for education. Relatedly, Batista et al. (2015) find that in Mozambique in a modified dictator game played between individuals and the person closest to them outside the household, individuals choose to give a large fraction in-kind rather than in cash when given the option.

3 Study Context & Experiment

The study took place in two sites. The first is Gaibandha District, a rural district in western Bangladesh. The province in which it is loacted, Rangpur, is one of the poorest regions of Bangladesh, with exposure to the *monga*, a seasonal famine that lasts from September through November. Even outside of the *monga* season, Rangpur has significantly lower rates of food consumption per capita than other regions of Bangladesh.

The second site is Dhaka, the capital of Bangladesh and the location of a large garment industry that employs young workers from around the country. For our willingness to pay study, the urban (Dhaka) sample consists of 780 people who migrated from Gaibandha, and the rural sample comprises 787 respondents from sending families (i.e., the families that sent the migrants to Dhaka). The sites are thus connected but the contexts are very different.

We identified our sample population initially starting with a sample of migrants trained through a garment worker training program run by Gana Unnayan Kendra (GUK) in Gaibandha. This training intervention targeted "ultra-poor" households, and many of the sending households had initial incomes of less than $1 per person per day. From this sample, we snowball-sampled a larger population of migrants using referrals. Our final sample of urban migrants is likely to be familiar with mobile technologies and bKash due to their migration status, and we find high rates (99%) of mobile telephone ownership at baseline. As we note in Lee et al. (2021), the particular nature of our sample and snowball sampling potentially limit the external validity of our results, although we note that

our sample is similar in many respects to samples used in work by Bandiera et al. (2017) and Bryan et al. (2014). For example, poverty rates in our sample are similar to those in the Bandiera et al. (2017) study of an intensive "graduation" intervention with ultra-poor households in Bangladesh. Bryan et al. (2014) also use a similar sample of ultrapoor households in Rangpur.

The urban migrants were often in close contact with their rural relatives, but their mobile money accounts were separate. It was not practically possible for the rural sample to share their mobile money accounts with the urban migrants. Nor could urban migrants easily get access to others' phones to check a balance Since the migrants were not co-located with families. At the time of the study, there was also no way to access the accounts of others online.

Half of the sample was exposed to mobile money in the form of encouragement to enroll in a particular service, bKash, in the context of the randomized study described by Lee et al. (2021) and Lee et al. (2022). We achieved high rates of enrollment in that phase of the experiment in our treatment arm. One implication of this is that we are able to experimentally test whether prior familiarity with mobile money affects possible biases in decision-making that may arise due to the electronic, more distant, or unfamiliar nature of mobile money transactions and mobile money. Other dimensions of heterogeneity that may matter include gender, age, education and risk preferences, all of which were measured in a baseline survey.

Within the larger experiment, we implemented a survey to elicit willingness to pay and willingness to buy common items. This took place as part of the midline survey of the larger experiment. We cross-randomized whether respondents received a survey that measured willingness to pay "using mobile banking" (asking respondents to think in terms of spending digital money like bKash) or "using cash" (which primed respondents to think of spending in cash). In the rural sample, 383 households were randomized into the cash priming while 404 households were randomized into the mobile money priming. In the urban sample, 394 migrants were randomized into the cash priming while 386 migrants were randomized into the mobile money priming. The midline surveys took place from July-October 2015, starting approximately two months after the intervention ended in May 2015.

We first asked about the willingness to purchase goods (in quantity units) for one month's worth of groceries: kilograms of coarse rice, kilograms of fine/regular rice, kilograms of *pilau/atap/basmati* rice, kilograms of pulses (beans, lentils), liters of milk, number

of eggs, and kilograms of meat. Respondents were then asked their willingness to pay for the following basket of goods (in Taka): 10 kg of fine/regular rice, one bar of beauty soap, one *salwar kameez* (a traditional outfit worn by women with a loose tunic and trousers), one *lungi* (a traditional type of sarong/skirt worn by men), one bag of potato chips, and one pack of biscuits. The sum gives the value for "Total Expenditure" that is the main outcome for willingness to pay. We are also interested in impacts on the quality of diets and the shift to higher quality foods (i.e., quality upgrading). To study quality upgrading, we construct the quantity of protein in the reported set of food items using conversion factors were obtained from Johns Hopkins Medicine (2019).

Data collection for the baseline and midline surveys took place in 2014 and 2015, a time when mobile money was spreading in Bangladesh, with bKash as the market leader. Enrollment in bKash nationally had grown fast since its inception in 2011, and by 2014, there were 105,000 agent points nationwide providing cash-in and cash-out service and 14 million subscribers. By April 2016, just after our data collection ended, there were 22 million users (Daily Star Business Report , 2016). The service offered by bKash includes money transfer services and a mobile wallet (mobile phone top up, salary deposit, and shopping payment).

4 Data

We implemented a baseline and midline survey to collect data on the urban migrants and their rural sending households in 2014 and 2015. The baseline survey included extensive modules on household composition, age, gender, education, land holdings, and other characteristics.

Panels A and B of Table 1 shows balance on observables for the rural and urban samples, respectively. Out of 20 variables studied, only one variable, the age of the head of the household in the rural sample, showed differences between the treatment and control groups ($p = 0.055$). This is less than what would be expected to happen by chance, and the p-value for the F-test for joint orthogonality is 0.369, indicating that overall, we have good treatment-control balance. As a consequence, we do not use controls in our empirical strategy.

We present summary statistics for the individual components of the baskets of goods used to study willingness to purchase and pay in Panels A and B of Table 2, respectively. Columns (1)-(4) present results for the urban sample, while columns (5)-(8) present results

for the rural sample. For each sample, the first two columns present summary statistics for the cash priming, while the next two columns present statistics for the mobile money priming. While we see differences in the willingness to buy (58.33 versus 56.36) and pay (1,689.75 versus 1,622.44) for the urban sample, we observe even larger differences for the rural sample: 61.73 versus 46.02 for the willingness to buy and 2,132.74 versus 1,661.45 for the willingness to pay. We explore these differences more rigorously through our empirical strategy detailed in the next section.

5 Empirical Methods

We estimate effects using the following specification:

$$Y_{i,t} = \beta_0 + \beta_1 MobileMoneyTreatment_i + \varepsilon_{i,t} \tag{1}$$

where period t refers to the midline survey. $MobileMoneyTreatment_i$ is an indicator variable equal to 1 if the individual was randomized into the mobile money treatment where he/she was primed to look at decisions in terms of mobile money rather than cash. Conversely, the variable takes the value 0 if the individual was primed to look at decisions in terms of cash. The coefficient β_1 is the term of interest. All regressions are run separately for the rural household and urban migrant sample. Since randomization took place at the household level, we do not cluster standard errors. Heteroskedasticity robust standard errors are shown. We do not include control variables in our main specification, but show robustness of our main results to the inclusion of controls in Appendix Table 1.

For our dependent variables $Y_{i,t}$, we study three families of outcomes: first, we asked individuals about their willingness to buy (in quantity units) a set of food items (coarse rice, fine/regular rice, pilau/atap/basmati rice, pulses, milk, eggs and meat). Second, we asked individuals about their willingness to pay (in Taka value) for a different set of consumer goods (10 Kg of fine/regular rice, beauty soap, *salwar-kameez*, *lungi*, potato chips and biscuits). Third, to study quality upgrading, we construct the quantity of protein in the reported set of food items using conversion factors were obtained from Johns Hopkins Medicine (2019).

We transform our dependent variables using logs so that our estimates can be interpreted in terms of percent changes. Furthermore, several studies have noted that individuals tend to overstate their economic valuation of goods by a factor of 1.35–3 when comparing willingness to pay using hypothetical and actual values (List and Gallet, 2001;

Little and Berrens, 2004; Murphy et al., 2005). By using the log transformation and focusing on the percent changes instead of levels, we reduce the risk of this bias by not attaching meaning to the taka value of the differential. Furthermore, we find no evidence to suggest that such bias would be a function of the payment method (cash or mobile money).

To correct for multiple hypothesis testing across the three families of outcomes, we report p-values adjusted using the free step-down resampling methodology of Westfall and Young (1993) when presenting our main results. This procedure controls the familywise error rate and allows for dependence amongst p-values. 10,000 bootstrap replications were used.

To study potential mechanisms, we conduct heterogeneity analyses using interaction terms. To do so, we use the following specification:

$$Y_{i,t} = \beta_0 + \beta_1 MobileMoneyTreatment_i + \beta_2 X_i + \beta_3 MobileMoneyTreatment_i * X_i + \varepsilon_{i,t} \quad (2)$$

where X_i is the dimension of heterogeneity that we explore (for example, the purpose of remittances). The coefficient on the interaction term, β_3, is the term of interest.

One source of potential heterogeneity is exposure to bKash through the initial experiment, which trains participants on the use of mobile money. When studying the interaction with the bKash training experiment, we also estimate local average treatment effects (LATE) using IV. We first define the variable Active bKash account, an indicator that takes the value 1 if the household performed any type of bKash transaction over the 5-month period from June - October 2015 (i.e., up until the last month when midline surveys took place). These transactions include (but are not limited to) deposits, withdrawals, remittances, and airtime top-ups. This variable is constructed using administrative data from bKash that details every transaction recorded in the bKash accounts of the study population. We instrument for Active bKash account using the treatment assignment ($bKashTraining_i$) and similarly instrument for the interaction $MobileMoneyTreatment_i * ActiveAccount_i$ with the interaction $MobileMoneyTreatment_i * bKashTraining_i$. The LATE parameters are treatment effects for households induced by the intervention to become active users.

The exclusion restriction requires that any impact from the treatment acts through active use of bKash accounts. One of the primary ways in which the exclusion restriction might be violated is if the bKash training provided led to active use of other mobile

money providers outside of bKash. However, the time required to learn how to register and use the bKash service was prohibitive and it is unlikely that households in rural areas were able to use two services at the same time. In addition, the larger bKash training intervention consisted of a 30–45-minute training about how to sign up for and use the bKash service. This training was supplemented with basic technical assistance with enrollment in the bKash service. If requested, our field staff assisted with gathering the necessary documentation for signing up for bKash and completing the bKash application form. Since our bKash training intervention was specific to the sign up and use of bKash, it is unlikely that the intervention led to the sign up and use of Dutch Bangla Mobile Banking (DBBL) services. This evidence addresses the concerns about the validity of the exclusion restriction for the IV, which requires that any impact of the bKash training treatment acts through the active use of bKash accounts.[1]

6 Results

We present the main results in Table 3. Column (1) presents the results on the willingness to pay (price) while column (2) presents estimates for the willingness to purchase (quantity) for a set of common goods in mobile money versus cash. We are also interested in whether the form of money affects the quality of consumption, and in column (3) we test how spending mobile money affects the protein level of diets, using protein conversion factors from Johns Hopkins Medicine (2019). The regressions for the rural and urban samples are presented in Panels A and B, respectively.

We find substantial differences in both rural and urban samples in the amount that respondents are willing to pay based on assignment to the mobile money ("Treatment") or cash ("Control") treatments. Column (1) highlights that rural households were willing to pay an economically significant 24% less for a basket of goods consisting of 10 kg of fine/regular rice, a beauty soap, a salwar kameez, a lungi, a bag of potato chips, and a pack of biscuits, when primed to look at decisions in terms of mobile money ($p < 0.01$; Westfall and Young (1993) corrected $p = 0.000$).[2] We present differences in willingness to

[1] We stress that the IV is only used to study one possible mechanism, specifically, whether our main results could be driven by prior exposure to mobile banking (Section 7.2). This does not affect the main results from the survey experiment, which are analyzed using OLS.

[2] While P2P and payment to merchant transactions are free, there is a small fee associated with cash withdrawals from the bKash account. As Table 2 shows, rural households in the control group were willing to pay an average of 2,133 taka for the consumption basket. This would incur an estimated withdrawal fee of 41 taka (at 1.9% fees). This is much smaller than the estimated differences in willingness to pay in our

pay for specific goods in Appendix Table 3. This negative effect contrasts with the hypothesis of a positive payment effect (of the kind documented in the literature on spending with credit or debit cards), as found in the literature that finds evidence for "payment effects" that suggest that a dollar is viewed differently depending on the form of payment (Prelec and Simester, 1998; Raghubir and Srivastava, 2008; Soman, 2003). It is instead consistent with mental accounting or earmarking of funds held as mobile money, as in, for example, Beshears et al. (2018). We do not observe statistically significant differences in the urban sample.

We find correspondingly large negative differences in the average quantities that rural respondents desire to purchase (column 2 of Table 3): if using mobile money, households were willing to purchase 31% less of the basket of goods consisting of coarse, fine, and basmati rice, pulses, milk, eggs, and meat ($p < 0.01$; Westfall and Young (1993) corrected $p = 0.000$). In the urban sample, on the other hand, we do not find significant differences.

Column (3) provides results on whether considering using mobile money changes choices about spending on higher quality foods (more protein). In the rural sample, we find households decreasing their total protein by 32% ($p < 0.01$; Westfall and Young (1993) corrected $p = 0.000$). We find no evidence of quality upgrading, on average, in the urban sample (column 3 of Table 3 shows a small, not statistically significant negative effect).

Appendix Table 1 shows that these results are robust to the inclusion of control variables. The changes in the estimated coefficients and standard errors are very small, and often in the last decimal. For all outcomes, Appendix Table 2 shows that the confidence intervals for the urban and rural samples are non-overlapping and far apart, highlighting that the estimated effects are statistically different between the urban and rural samples.

7 Mechanisms and Heterogeneity

We consider three potential mechanisms that might explain the results. First, we study whether the results can be explained by the earmarking of remittances for specific purposes by migrants. Second, we use experimental variation to assess whether prior exposure to mobile banking, through our training experiment, might be a potential channel. Third, we study the possibility that individuals may be risk averse to new digital technologies such as mobile banking. The second and third explanations would explain the negative treatment effects found in Section 6 through a general reluctance to use mobile

rural sample (471 taka).

money.

The findings below support the hypothesis that earmarking reduces willingness to pay, and the results cannot be explained by prior exposure to mobile banking nor risk aversion. We then show that the treatment impacts are not related to gender, age, or education, with the single exception of education in the sample of urban migrants.

7.1 Earmarking of Remittances for Specific Purposes

In this section, we study the hypothesis that our results may be driven by the earmarking of remittances for non-expenditure purposes by migrants. We use data on the uses of remittances for remittances sent in 2015 (the year in which the midline surveys were conducted); the data show that half (50.2%) of remittances were earmarked for non-consumption purposes. Two points are noteworthy here. First, for our results to be driven by this channel, it is also necessary that individuals have an active bKash account, since remittances sent via other means (even if earmarked for certain purposes) should not lead to differences in the willingness to pay via cash or mobile money. As such, we construct the term "Remittances for non-expenditure purposes with active account", and study treatment heterogeneity by this variable. Non-expenditure purposes include education, health, savings, business, assets, and repayment of debt. Second, the earmarking of remittances sent by the migrant should only impact the willingness to pay of rural households, and not the migrants themselves. This is because rural households may view expenditures through mobile money as coming out of remittances sent by migrants. Thus, we hypothesize that the earmarking channel is significant only for the rural sample.

We present the results in Table 4. Column (1) of Panel A shows a negative and statistically significant interaction term for the rural sample. Households primed to think about mobile money who had active bKash accounts and who received remittances earmarked for non-expenditure purposes were willing to pay 7% less for the basket of goods ($p < 0.1$). This result provides support for the earmarking hypothesis that could, in part, explain our main results. Panel B shows that for the urban sample, in line with our hypotheses, the treatment effect is substantially smaller and we do not find statistically significant interactions between assignment to the mobile money treatment and remittances sent for non-expenditure purposes, among respondents with an active account. These results are consistent with the spirit of work in Arcangelis et al. (2015) and Batista et al. (2015) who show that migrants, when given the opportunity, opt to label remittances for specific purposes or adopt direct payments, especially for education, leaving less to spend

on general consumption.

7.2 Prior Exposure to Mobile Banking

Next, we study the hypothesis that the results may be driven by prior exposure to mobile banking. Individuals with prior exposure to mobile banking may be willing to pay more in mobile money versus cash, owing to familiarity with the technology. In contrast, less experiences respondents may be less willing to spend with mobile money relative to spending in cash. To explore this hypothesis, we leverage experimental variation from our larger experiment, in which half the sample was randomly exposed to mobile money in the form of encouragement to enroll in bKash (see Lee et al. 2021 and Lee et al. 2022). We did not observe statistically significant impacts from the bKash training treatment on the expenditure of specific categories of goods, such as transport, personal hygiene items, food, and smoking (see Appendix Table 4).

Table 5 presents results from the interaction of the mobile money treatment with the bKash training treatment. Overall, we do not find significant interactions in the rural and urban samples. Table 6 presents results from IV regressions from the interaction of the mobile money treatment with active use of the bKash accounts (see Section 5 for details of the empirical strategy). Here too, we do not find significant interactions in the rural and urban samples for differences in the willingness to pay or purchase.

Taken together, the results do not find support for the hypothesis that the results are driven by differences in prior exposure to mobile banking.

7.3 Risk Aversion

In this section, we study the hypothesis that the results in Section 6 may be driven by risk aversion. Individuals with higher risk aversion may be willing to pay less in mobile money versus cash, if mobile banking is seen as a newer, and potentially riskier, technology. To explore this hypothesis, we leverage questions on risk aversion from our baseline surveys that elicited each individual's switching point from a list of choices between a lottery and a guaranteed option. Households were offered the choice between receiving 300 taka for certain or choosing an uncertain outcome. The uncertain outcome started with an unambigously preferable choice (50:50 odds of receiving 450 taka or receiving 300 taka) and proceeded to riskier choices (ending with a choice with a worse expected outcome—50:50 odds of receiving 450 taka or receiving 150 taka). We use the switch point as the

basis of the measure of risk aversion and apply a standard utility function with Constant Relative Risk Aversion $U(x) = \frac{x^{1-r}}{1-r}$ to back out each individual's Coefficient of Relative Risk Aversion (CRRA), r. We then interact the CRRA parameter r with an indicator for having been randomized into the mobile money treatment. We caveat, however, that our measure of risk aversion is not directly linked to technology.

The results are presented in Table 7. We do not find significant differences in the rural and urban samples. If anything, we find results in the opposite direction for the willingness to purchase in the rural sample, where households with 1 unit greater CRRA were willing to purchase 8% more of one month's worth of groceries (corresponding to 8% more protein) when primed to think about mobile money ($p < 0.05$).

Overall, the results do not support the hypothesis that the results are driven by differences in risk aversion.

7.4 Heterogeneity by Gender, Age, & Education

Finally, we report on the heterogeneity of treatment impacts by three key respondent characteristics: gender, age and education. We present the results in Table 8. Our focus is on the interactions between the mobile money treatment and the measures of gender, age, and education. Overall, we do not find significant treatment heterogeneity in the willingness to pay or purchase by age or gender in the rural and urban samples. When studying heterogeneity by education of the household head or migrant, Panel A shows that households heads who completed primary school were willing to purchase 8% less of of one month's worth of groceries ($p < 0.1$). Panel B shows that migrants who completed primary school were willing to pay 7% less for the basket of goods when primed to think about mobile money ($p < 0.1$).

8 Conclusion

Digital technologies are rapidly shifting consumers' relationships with money. Mobile money is making spending easier and quicker for populations around the world—in ways similar to how credit cards transformed payments in high-income countries like the United States.

Like debit cards, mobile money can be expected to have a "payment effect" relative to spending in cash, a hypothesis that we test in both rural and urban Bangladesh. Yet there is at least one important difference that distinguishes debit cards and mobile money.

When people think about spending using debit cards, the payment is not in "cold, hard cash" that is taken from one's purse or wallet. Mobile money has that element but also another. The money held on a mobile phone got there because it was either loaded at an earlier date by the person making the spending decision (like a debit card), or, as was almost always the case in our sample from rural Bangladesh, it was sent to the person by another person. The money may then carry a "social" meaning and be earmarked for a particular kind of spending. Mobile money in our context is not necessarily fungible in the same way that other money is.

We study two contexts. The first is urban Dhaka, where migrants send a large share of their pay as remittances to their families in rural villages. For the migrants, "mobile money" partly means money set aside to send to rural relatives to help them meet their needs. The other context is urban Gaibandha district in western Bangladesh, where the migrants' families live. There, "mobile money" partly means money send by an adult child, spouse, or sibling to help pay for health and education and other needs. Thus, mobile money is differentiated from both credit cards and cash in a way aligned with sociological notions of the "social meaning of money" (Zelizer, 1994), behavioral notions of mental accounts (Prelec and Loewenstein, 1998), and more direct notions of control as shown by Riley (2022)'s demonstration of ways that mobile money can sometimes be better protected from claims made by others.

Mobile money is thus a special kind of money, and it departs from earlier ideas of "payment effects" (Shimp and Moody, 2000). Our findings support the idea that mobile money is earmarked, and, to the extent that is so, the willingness to spend using mobile money is constrained. Mobile money has an important social element, reflecting it's prime use-case as a payment mechanism. Thinking about mobile money cannot then be untethered from thinking about the human relationships that are attached to the money being sent back and forth. Put another way, our findings suggest that a sociological lens may be a useful complement to the standard economic and psychological lenses when considering the implications of digital financial innovations.

Relationships are dynamic, of course, and the study took place at a particular a moment in time when mobile money was spreading rapidly in Bangladesh but when poorer communities, like those in Gaibandha, were only beginning to gain access to mobile financial technologies. We anticipate that as mobile money becomes ubiquitous in people's lives, and used in a greater number and variety of contexts, the strength of the earmarking that we find may start to be diluted.

Still, the findings are a broad reminder that money is not necessarily as fungible as neoclassical economics assumed. One implication is that worries about overspending in contexts like ours did not emerge, despite the abstract nature of mobile money. The study raises questions about implications for other sources of mobile remittances. For example, do digital transfers from the government get earmarked for particular uses? When international remittances arrive digitally, does their digital nature matter to how they are spent? Adding a "social" lens on money can build on and enrich the insights that neoclassical and behavioral economics have delivered.

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Tables

Table 1: Treatment-Control Balance

	Control (Cash)			Treatment (Mobile Money)			Difference
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variable	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**p-value**
Panel A: Rural Sample							
Any mobile telephone	0.99	0.10	383	0.99	0.12	404	0.582
Household size	3.72	1.60	383	3.90	1.66	404	0.138
Number of children	1.19	1.06	383	1.22	1.04	404	0.691
Household head age	45.93	12.59	383	47.73	13.66	404	0.055*
Household head female	0.14	0.35	383	0.11	0.31	404	0.143
Household head education	0.17	0.38	383	0.19	0.39	404	0.627
Decimal (1/100 acre) of owned agricultural land	10.97	33.97	383	9.97	26	404	0.644
Number of rooms of dwelling	1.82	0.74	383	1.82	0.76	404	0.934
Dwelling owned	0.94	0.23	383	0.94	0.24	404	0.793
Living in Gaibandha subdistrict	0.50	0.50	383	0.53	0.50	404	0.389
Living in other subdistrict	0.50	0.50	383	0.47	0.50	404	0.389
p-value of F-test for joint orthogonality = 0.369.							
Panel B: Urban Sample							
Any bank account	0.11	0.31	394	0.11	0.31	386	0.896
Formal employee	0.91	0.29	394	0.89	0.31	386	0.567
Female migrant	0.29	0.45	394	0.31	0.46	386	0.463
Age of migrant	24.12	5.12	394	24.09	5.36	386	0.934
Migrant completed primary school	0.48	0.50	394	0.46	0.5	386	0.554
Tenure at current job	1.74	1.60	394	1.63	1.45	386	0.337
Tenure in Dhaka	2.52	2.02	394	2.39	1.56	386	0.348
Average monthly income ('000 taka)	7.84	2.51	394	7.86	2.52	386	0.903
Remittances sent, past 7 months ('000 taka)	17.93	12.02	394	17.71	12.52	386	0.805
p-value of F-test for joint orthogonality = 0.953.							

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Summary statistics are means for the 394 control and 386 treatment migrants in the urban sample, and 383 control and 404 treatment households in the rural sample. p-values are given for tests of differences in means by treatment status.

Table 2: Summary Statistics

	Urban Sample						Rural Sample					
	Cash			Mobile Money			Cash			Mobile Money		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variable	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**
Panel A: Willingness to Buy												
Coarse rice (kg)	11.98	11.37	394	12.37	10.37	386	0.43	1.34	383	0.00	0.00	404
Fine rice (kg)	23.13	12.99	394	21.49	12.22	386	31.83	6.57	383	25.67	6.97	404
Basmati rice (kg)	1.49	0.92	394	1.42	0.79	386	2.52	0.80	383	1.78	0.77	404
Pulses (kg)	1.17	0.72	394	1.16	0.66	386	2.14	1.40	383	1.60	1.01	404
Milk (liters)	4.15	3.89	394	3.96	3.49	386	4.89	3.04	383	3.00	1.78	404
Eggs (number)	14.44	6.35	394	14.08	6.00	386	17.42	8.95	383	12.32	6.71	404
Meat (kg)	1.97	0.93	394	1.89	0.86	386	2.49	1.31	383	1.66	1.03	404
Total	58.33	24.34	394	56.36	22.75	386	61.73	15.39	383	46.02	12.63	404
Panel B: Willingness to Pay												
Fine/regular rice (10kg)	396.15	77.29	394	397.06	77.48	386	300.86	10.64	383	299.33	11.72	404
Beauty soap	90.35	123.32	394	76.06	102.75	386	368.85	96.12	383	283.69	92.38	404
Salwar kameez	740.11	367.14	394	702.88	315.95	386	876.64	348.84	383	642.9	215.95	404
Lungi	340.42	102.15	394	336.02	85.56	386	383.5	125.45	383	308.03	54.72	404
Potato chips	40.64	39.86	394	38.7	43.54	386	72.77	45.95	383	39.43	28.94	404
Biscuits	82.07	60.05	394	71.73	54.53	386	130.12	72.14	383	88.07	50.95	404
Total	1,689.75	498.78	394	1,622.44	418.08	386	2,132.74	515.59	383	1,661.45	267.46	404

Summary statistics are means for the 394 control and 386 treatment migrants in the urban sample, and 383 control and 404 treatment households in the rural sample. Summary statistics in Panel A are in response to the question: Which of the following items would you buy and what quantity, for a month's groceries? Summary statistics in Panel B are in response to the question: How much would you pay for each of the following items?

Table 3: Main Results

	(1) Log(Total Expenditure)	(2) Log(Total Quantity Purchased)	(3) Log(Protein, Grams)
Panel A: Rural Sample			
Mobile Money Treatment	-0.237***	-0.305***	-0.317***
	(0.0137)	(0.0175)	(0.0182)
	[0.000]	[0.000]	[0.000]
R^2	0.278	0.277	0.275
Observations	787	787	787
Panel B: Urban Sample			
Mobile Money Treatment	-0.0308	-0.0209	-0.0120
	(0.0211)	(0.0298)	(0.0362)
	[0.287]	[0.305]	[0.305]
R^2	0.003	0.001	0.000
Observations	780	780	780

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. Adjusted p-values using the free step-down resampling methodology of Westfall and Young (1993) in square brackets. All dependent variables have been transformed using logs. The dependent variable in column 1 denotes the total willingness to pay for the following basket of goods (in Taka): 10 kg of fine/regular rice, one beauty soap, one salwar kameez, one lungi, one bag of potato chips, and one pack of biscuits. The dependent variable in column 2 denotes the total willingness to purchase for the following basket of goods (in quantity units) for one month's worth of groceries: coarse, fine, and basmati rice, pulses, milk, eggs, and meat. The dependent variable in column 3 denotes the total grams of protein the respondent was willing to purchase, as corresponding to the basket of goods reported in column 2. Protein conversion factors were obtained from Johns Hopkins Medicine (2019). One urban migrant reported a willingness to purchase zero quantity of the basket of groceries. Following the suggestion of an anonymous referee, we use the log(x+1) transformation in columns 2 and 3 of Panel B to retain this observation. These results are qualitatively similar (and statistically insignificant) when using either the log(x) or log(x+1) transformations.

Table 4: Interaction with Purpose of Remittances

	(1) Log(Total Expenditure)	(2) Log(Total Quantity Purchased)	(3) Log(Protein, Grams)
Panel A: Rural Sample			
Mobile Money Treatment	-0.223***	-0.306***	-0.313***
	(0.0153)	(0.0193)	(0.0204)
Remittances for non-expenditure purposes with active account	0.0757**	0.0265	0.0289
	(0.0310)	(0.0261)	(0.0226)
Mobile Money Treatment * Remittances for non-expenditure purposes with active account	-0.0670*	-0.0119	-0.0275
	(0.0373)	(0.0501)	(0.0493)
R^2	0.284	0.285	0.280
Observations	748	748	748
Panel B: Urban Sample			
Mobile Money Treatment	-0.0312	-0.0115	0.000989
	(0.0235)	(0.0339)	(0.0423)
Remittances for non-expenditure purposes with active account	0.00159	0.0634	0.0891
	(0.0430)	(0.0619)	(0.0693)
Mobile Money Treatment * Remittances for non-expenditure purposes with active account	-0.0451	-0.0396	-0.0474
	(0.0601)	(0.0812)	(0.0890)
R^2	0.006	0.002	0.003
Observations	741	741	741

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. "Remittances for non-expenditure purposes with active account" is a dummy variable equal to 1 if the migrant sent any remittances for purposes excluding household expenditures (i.e., for education, health, savings, business, assets, and repayment of debts) and the corresponding urban migrant or rural household had an active bKash account. All dependent variables have been transformed using logs. The dependent variable in column 1 denotes the total willingness to pay for the following basket of goods (in Taka): 10 kg of fine/regular rice, one beauty soap, one salwar kameez, one lungi, one bag of potato chips, and one pack of biscuits. The dependent variable in column 2 denotes the total willingness to purchase for the following basket of goods (in quantity units) for one month's worth of groceries: coarse, fine, and basmati rice, pulses, milk, eggs, and meat. The dependent variable in column 3 denotes the total grams of protein the respondent was willing to purchase, as corresponding to the basket of goods reported in column 2. Protein conversion factors were obtained from Johns Hopkins Medicine (2019). 39 rural households and 39 urban migrants did not report a specific purpose for their remittances, hence the number of observations in Panels A and B are 787-39 = 748, and 780-39=741, respectively. One urban migrant reported a willingness to purchase zero quantity of the basket of groceries. Following the suggestion of an anonymous referee, we use the log(x+1) transformation in columns 2 and 3 of Panel B to retain this observation. These results are qualitatively similar (and statistically insignificant) when using either the log(x) or log(x+1) transformations.

Table 5: Interaction with bKash Training (ITT)

	(1) Log(Total Expenditure)	(2) Log(Total Quantity Purchased)	(3) Log(Protein, Grams)
Panel A: Rural Sample			
Mobile Money Treatment	-0.237***	-0.285***	-0.294***
	(0.0204)	(0.0240)	(0.0262)
bKash Training	0.0114	0.0406*	0.0389*
	(0.0225)	(0.0221)	(0.0215)
Mobile Money Treatment $*$ bKash Training	0.000426	-0.0411	-0.0461
	(0.0275)	(0.0349)	(0.0364)
R^2	0.279	0.280	0.278
Observations	787	787	787
Panel B: Urban Sample			
Mobile Money Treatment	-0.0122	-0.0331	-0.0256
	(0.0285)	(0.0398)	(0.0431)
bKash Training	0.0392	0.0263	0.0325
	(0.0313)	(0.0447)	(0.0583)
Mobile Money Treatment $*$ bKash Training	-0.0356	0.0260	0.0291
	(0.0421)	(0.0594)	(0.0717)
R^2	0.005	0.003	0.002
Observations	780	780	780

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. "bKash Training" is a dummy variable equal to 1 if urban migrant or rural household was assigned to the bKash training arm in the main experiment. All dependent variables have been transformed using logs. The dependent variable in column 1 denotes the total willingness to pay for the following basket of goods (in Taka): 10 kg of fine/regular rice, one beauty soap, one salwar kameez, one lungi, one bag of potato chips, and one pack of biscuits. The dependent variable in column 2 denotes the total willingness to purchase for the following basket of goods (in quantity units) for one month's worth of groceries: coarse, fine, and basmati rice, pulses, milk, eggs, and meat. The dependent variable in column 3 denotes the total grams of protein the respondent was willing to purchase, as corresponding to the basket of goods reported in column 2. Protein conversion factors were obtained from Johns Hopkins Medicine (2019). One urban migrant reported a willingness to purchase zero quantity of the basket of groceries. Following the suggestion of an anonymous referee, we use the log(x+1) transformation in columns 2 and 3 of Panel B to retain this observation. These results are qualitatively similar (and statistically insignificant) when using either the log(x) or log(x+1) transformations.

Table 6: Interaction with bKash Training (LATE)

	(1) Log(Total Expenditure)	(2) Log(Total Quantity Purchased)	(3) Log(Protein, Grams)
Panel A: Rural Sample			
Mobile Money Treatment	-0.235***	-0.265***	-0.274***
	(0.0297)	(0.0341)	(0.0367)
Active Account	0.0266	0.0944*	0.0906*
	(0.0521)	(0.0514)	(0.0504)
Mobile Money Treatment $*$ Active Account	-0.00518	-0.0954	-0.104
	(0.0594)	(0.0708)	(0.0729)
R^2	0.281	0.278	0.275
Observations	787	787	787
Panel B: Urban Sample			
Mobile Money Treatment	0.00978	-0.0319	-0.0233
	(0.0438)	(0.0614)	(0.0693)
Active Account	0.107	0.0716	0.0884
	(0.0848)	(0.121)	(0.158)
Mobile Money Treatment $*$ Active Account	-0.0998	0.0277	0.0285
	(0.100)	(0.142)	(0.177)
R^2	0.007	0.004	0.004
Observations	780	780	780

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. "Active Account" is a dummy variable equal to 1 if urban migrant or rural household performed any type of bKash transaction over the 5-month period from June - October 2015 (i.e., up until the last month when midline surveys took place). These transactions include (but are not limited to) deposits, withdrawals, remittances, and airtime top-ups. All dependent variables have been transformed using logs. The dependent variable in column 1 denotes the total willingness to pay for the following basket of goods (in Taka): 10 kg of fine/regular rice, one beauty soap, one salwar kameez, one lungi, one bag of potato chips, and one pack of biscuits. The dependent variable in column 2 denotes the total willingness to purchase for the following basket of goods (in quantity units) for one month's worth of groceries: coarse, fine, and basmati rice, pulses, milk, eggs, and meat. The dependent variable in column 3 denotes the total grams of protein the respondent was willing to purchase, as corresponding to the basket of goods reported in column 2. Protein conversion factors were obtained from Johns Hopkins Medicine (2019). One urban migrant reported a willingness to purchase zero quantity of the basket of groceries. Following the suggestion of an anonymous referee, we use the log(x+1) transformation in columns 2 and 3 of Panel B to retain this observation. These results are qualitatively similar (and statistically insignificant) when using either the log(x) or log(x+1) transformations.

Table 7: Treatment Heterogeneity by Risk Aversion (CRRA)

	(1) Log(Total Expenditure)	(2) Log(Total Quantity Purchased)	(3) Log(Protein, Grams)
Panel A: Rural Sample			
Mobile Money Treatment	-0.256***	-0.369***	-0.382***
	(0.0325)	(0.0347)	(0.0367)
CRRA	-0.0292	-0.00158	-0.0285
	(0.0272)	(0.0159)	(0.0176)
Mobile Money Treatment $*$ CRRA	0.0182	0.0772**	0.0765**
	(0.0319)	(0.0310)	(0.0338)
R^2	0.282	0.274	0.279
Observations	722	722	722
Panel B: Urban Sample			
Mobile Money Treatment	-0.00701	0.0236	0.0749
	(0.0452)	(0.0843)	(0.135)
CRRA	0.0522*	0.0254	0.0692
	(0.0271)	(0.0645)	(0.112)
Mobile Money Treatment $*$ CRRA	-0.0300	-0.0552	-0.101
	(0.0396)	(0.0748)	(0.120)
R^2	0.009	0.002	0.004
Observations	719	719	719

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. "CRRA" denotes each individual's Coefficient of Relative Risk Aversion (CRRA). It is estimated using data from baseline surveys that elicited each individual's switching point from a list of choices between a lottery and a guaranteed option, and a standard utility function with Constant Relative Risk Aversion $U(x) = \frac{x^{1-r}}{1-r}$. All dependent variables have been transformed using logs. The dependent variable in column 1 denotes the total willingness to pay for the following basket of goods (in Taka): 10 kg of fine/regular rice, one beauty soap, one salwar kameez, one lungi, one bag of potato chips, and one pack of biscuits. The dependent variable in column 2 denotes the total willingness to purchase for the following basket of goods (in quantity units) for one month's worth of groceries: coarse, fine, and basmati rice, pulses, milk, eggs, and meat. The dependent variable in column 3 denotes the total grams of protein the respondent was willing to purchase, as corresponding to the basket of goods reported in column 2. Protein conversion factors were obtained from Johns Hopkins Medicine (2019). Data on risk aversion was not collected for 65 rural households and 61 urban migrants, hence the number of observations in Panels A and B are 787-65 = 722, and 780-61=719, respectively. One urban migrant reported a willingness to purchase zero quantity of the basket of groceries. Following the suggestion of an anonymous referee, we use the log(x+1) transformation in columns 2 and 3 of Panel B to retain this observation. These results are qualitatively similar (and statistically insignificant) when using either the log(x) or log(x+1) transformations.

Table 8: Treatment Heterogeneity by Gender, Age, & Education

	(1) Log(Total Expenditure)	(2) Log(Total Quantity Purchased)	(3) Log(Protein, Grams)	(4) Log(Total Expenditure)	(5) Log(Total Quantity Purchased)	(6) Log(Protein, Grams)	(7) Log(Total Expenditure)	(8) Log(Total Quantity Purchased)	(9) Log(Protein, Grams)
Panel A: Rural Sample									
Mobile Money Treatment	-0.236***	-0.299***	-0.313***	-0.278***	-0.368***	-0.358***	-0.231***	-0.290***	-0.305***
	(0.0147)	(0.0186)	(0.0194)	(0.0494)	(0.0635)	(0.0712)	(0.0150)	(0.0190)	(0.0200)
Household head female	-0.00462	-0.0384	-0.0422						
	(0.0330)	(0.0338)	(0.0318)						
Mobile Money Treatment ∗	-0.0123	-0.0646	-0.0504						
Household head female	(0.0408)	(0.0525)	(0.0546)						
Household head age				0.0000734	0.00103	0.00216***			
				(0.000868)	(0.000749)	(0.000814)			
Mobile Money Treatment ∗				0.000866	0.00128	0.000786			
Household head age				(0.00103)	(0.00128)	(0.00144)			
Household head completed							0.0606**	0.0520*	0.0322
primary school							(0.0302)	(0.0289)	(0.0261)
Mobile Money Treatment ∗							-0.0343	-0.0826*	-0.0692
Household head completed							(0.0369)	(0.0477)	(0.0479)
primary school									
R^2	0.278	0.285	0.281	0.280	0.284	0.288	0.284	0.280	0.277
Observations	787	787	787	787	787	787	787	787	787
Panel B: Urban Sample									
Mobile Money Treatment	-0.0306	-0.0239	-0.0193	0.000471	0.0485	0.0568	0.00429	0.00428	0.0216
	(0.0273)	(0.0371)	(0.0465)	(0.103)	(0.139)	(0.160)	(0.0280)	(0.0414)	(0.0549)
Female migrant	0.0123	0.112**	0.120**						
	(0.0299)	(0.0457)	(0.0545)						
Mobile Money Treatment ∗	-0.00159	0.000832	0.0140						
Female migrant	(0.0405)	(0.0603)	(0.0686)						
Age of migrant				0.00475	0.0151***	0.0168***			
				(0.00296)	(0.00408)	(0.00472)			
Mobile Money Treatment ∗				-0.00129	-0.00286	-0.00283			
Age of migrant				(0.00412)	(0.00550)	(0.00607)			
Migrant completed							0.0840***	0.0402	0.0690
primary school							(0.0313)	(0.0448)	(0.0581)
Mobile Money Treatment ∗							-0.0730*	-0.0533	-0.0705
Migrant completed							(0.0422)	(0.0598)	(0.0719)
primary school									
R^2	0.003	0.016	0.013	0.008	0.030	0.026	0.013	0.002	0.002
Observations	780	780	780	780	780	780	780	780	780

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. "Female migrant" and "Household head female" are equal to 1 if the migrant or household head was female, and 0 otherwise. "Age of migrant" and "Household head age" denote the age of the urban migrant and rural household head, respectively. "Migrant completed primary school" and "Household head completed primary school" are equal to 1 if the migrant or household head completed primary school, respectively, and 0 otherwise. All dependent variables have been transformed using logs. The dependent variables in columns 1, 4, and 7 denote the total willingness to pay for the following basket of goods (in Taka): 10 kg of fine/regular rice, one beauty soap, one salwar kameez, one lungi, one bag of potato chips, and one pack of biscuits. The dependent variables in columns 2, 5, and 8 denote the total willingness to purchase for the following basket of goods (in quantity units) for one month's worth of groceries: coarse, fine, and basmati rice, pulses, milk, eggs, and meat. The dependent variables in columns 3, 6, and 9 denote the total grams of protein the respondent was willing to purchase, as corresponding to the basket of goods reported in column 2. Protein conversion factors were obtained from Johns Hopkins Medicine (2019). One urban migrant reported a willingness to purchase zero quantity of the basket of groceries. Following the suggestion of an anonymous referee, we use the log(x+1) transformation in columns 2-3, 5-6, and 8-9 of Panel B to retain this observation. These results are qualitatively similar (and statistically insignificant) when using either the log(x) or log(x+1) transformations.