Show Me the Money! Preferences for Cash vs. Digital Payments: A Pre-Analysis Plan

Kate Ambler, Mehrab Bakhtiar, and Jeff Bloem

In rural areas of low and middle-income countries cash is the dominant form of payments. By contrast, in high-income countries and in many urban areas around the world, payments are primarily—and, in some cases, almost exclusively—digital. Governments, companies, and international organizations all tend to agree that shifting existing cash payments to digital payments carries the potential to improve the lives of people living in rural areas of low-income countries, especially women (see, e.g., the Better Than Cash Alliance). In contexts where physical banking networks are limited and the use of traditional bank accounts, ATMs, and debit/credit cards is low, many view mobile money as a potential technology enabling a shift away from dependence on cash payments (Suri et al. 2021).

Much of the existing literature that compares cash and digital payments focuses on studying the effects of sending one-way transfers digitally relative to distributing physical cash. These studies tend to find that digital transfers can lead to benefits for the transfer program, such as increased efficiency due to reduced leakage (Muralidharan, Niehaus, and Sukhtankar 2016) and benefits for recipient households, such as increased diet diversity, food consumption, and intrahousehold bargaining power for women primarily due to the reducing travel costs associated with receiving the transfer (Aker, Boumnijel, McClelland, and Tierney 2016).

Contrary to one-way transfers, two-way transactions (i.e., where a good or service is exchanged for payment) often require travel to facilitate the transaction even with a digital payment. Because digital two-way transactions do not come with a reduction in travel costs relative to cash transactions, it is unclear what—if any—benefit there is for digital payments over cash payments and preferences for cash or digital payments might reflect this ambiguity. The existence of a wedge in willingness to accept a digital payment relative to a cash payment highlights potential design features, structural weaknesses, or other constraints that limit the adoption—and increased use—of digital payment systems in largely cash-based economies.

In this project, we aim to study preferences for digital payments relative to cash payments by embedding an experiment at the end of a household survey in Bangladesh. The core experiment involves randomizing, at the individual level, the amount and mode of appreciation payment distributed to our survey respondents after they complete our survey. Importantly, this payment takes place where both parties (i.e., the enumerator and the survey respondent) are physically in the same location, which removes the reduction in transaction costs associated with digital payments in previous studies. This design allows us to compare preferences for digital payments vs. cash payments while removing confounding variation in travel costs associated with digital payments.

Specifically, we offer a choice between a payment of 200 Taka via cash or X via mobile money, with $X = 200, 220, 250, 300, 350,$ and 400. This generates six groups, each representing varying wedges between the cash and digital payment (i.e., parity, 110%, 125%, 150%, 175%, and 200%). Pre-testing revealed that the relative size of the wedge mattered most, rather than the level of the baseline cash payment offer. Table 1 illustrates this experimental design.

Table 1: Experimental Design

	X (digital payment)					
	100%	**110%**	**125%**	**150%**	**175%**	**200%**
200 Taka cash payment	C: 200 cash or 200 mobile money.	T1: 200 cash or 220 mobile money.	T2: 200 cash or 250 mobile money.	T3: 200 cash or 300 mobile money.	T4: 200 cash or 350 mobile money.	T5: 200 cash or 400 mobile money.

We stratify our randomization by gender and pre-existing mobile money account ownership (i.e., as measured in the midline survey) to ensure equal gender and mobile money account ownership distribution within each treatment group. Given a sample size of the survey in Bangladesh is roughly 1,700 people with a roughly equal number of men and women, we will have over 100 men and 100 women per treatment group.

Our main outcome variable is a binary variable indicating if the respondent chooses to accept the payment digitally via mobile money. This experimental design allows us to investigate two main questions about preferences for digital payments relative to cash payments that are not confounded by a reduction in travel costs.

The first question is, holding the payment amount equal, what is the share of respondents that prefer to receive the payment digitally relative to a cash payment? To answer this question, we will simply report the share of respondents who choose to accept the digital payment in the control group.

The second question is, how much does the preference for digital payments change when we increase the digital payment amount and hold the cash payment amount constant? This question can be answered with the following regression specification.

$$y_i = \alpha + \beta_1 T1_i + \beta_2 T2_i + \beta_3 T3_i + \beta_4 T4_i + \beta_5 T5_i + \lambda_i + \epsilon_i$$

In this regression the dependent variable y_i is a binary variable indicating if the respondent chooses to accept the payment digitally. With the control group representing the comparison group where the cash and mobile money amounts are equal, β_k with $k = 1,2,3,4, and\ 5$ are coefficients estimating the difference in the share of respondents who prefer the digital payment in each treatment group, respectively. The variable λ_i represents stratification fixed effects that account for the respondent's gender and mobile pre-existing mobile money account ownership.

Heterogeneity: To explore heterogeneity by gender and pre-existing mobile money account ownership, we also estimate augmented versions of the regression specification above by interacting each of the treatment group indicator variables with the gender indicator variable to test if preferences for digital payments vary by gender, and the mobile money account ownership indicator variable to test if preferences for digital payments vary based on account ownership.

Additional descriptive analysis: Our survey will also include a module that asks respondents about their preferences for digital payments relative to cash payments. This module will include a series of questions that aim to document stated reasons for these preferences and any existing constraints

on the use of digital payments. We will report the respondent's answers to these questions to contextualize and explain the results from the survey experiment.

Missing Values: In all our specifications, if either the gender or mobile money account ownership variables are missing, we will "dummy out" that missing value by setting the missing values to zero and including an additional control variable that indicates values for that variable being missing.

References:

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