Customized cash transfers: financial lives and cash-flow preferences in rural Kenya

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January 22, 2023*

We examine the preferences of low-income households in Kenya over the structure of unconditional cash transfers. We find, first, that most prefer lumpier transfers, and many prefer delayed receipt—unlike the structures typical of safety-net programs, but consistent with evidence on the financial challenges of poverty. Second, poverty itself affects preferences: a little more financial slack when deciding increases desired delay. Finally, financial slack pays back: some delay—aligning transfers better with the seasonal cycle—increases deliberation, income, and goal progress 1.5 years later. Adapting cash transfer design to recipients' decision-making environment could improve their financial choices and outcomes.

Keywords: cash transfers, revealed preferences, choice architecture, scarcity, seasonality
JEL codes: D91, H53, I38, O2

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1 Introduction

Managing cash flow is a recurring challenge for low-income households in developing countries (Collins et al., 2009). Their low and varying income flows—arising for example from seasonality, unpredictable harvests, or unsteady employment—often do not align temporally with their expenditure needs. Unpredictable, lumpy demands on cash, such as the need to pay for medical treatment, pose a particular challenge. And the financial tools at their disposal to manage these mismatches are often costly or unreliable. For all these reasons, providing low-income households with better tools to manage cash flow is generally seen as a high priority.

One potentially under-exploited way to do so involves the design of anti-poverty programs themselves. Cash transfers, our focus here, are arguably the most widely used poverty alleviation tool in developing countries.[1] These transfers are typically structured as small, regular (e.g. monthly) payments—a format that seems intuitively to address needs for subsistence and stability, but that may not meet other financial needs of low-income households. For instance, it does not address the need to put together lump sums of cash in order to make large purchases, or elevated needs for liquidity during the "lean season" in agricultural areas (Bryan et al., 2014; Fink et al., 2020).

Motivated by these observations, we study the preferences of recipients themselves over the structure of a cash transfer they receive. We worked in rural Kenya, in a setting featuring the kinds of variable income sources, agricultural seasonality, limited formal financial sector penetration, and dependence on informal financial vehicles (e.g. ROSCAS) characteristic of many poor areas. In this setting, the NGO GiveDirectly issued cash transfers to 513 low-income households, fixing the total amount (at approximately USD 1,000) but granting recipients some degree of control over structure: specifically, *tranching* and *timing*. It then randomized the actual structure of transfers delivered to most subjects along these dimensions, conditional on their preferences. This design yields data on *preferences* over structure as well as identification of the *causal effects* of structure on household outcomes.

In contrast to the structure of a typical social protection transfer, most recipients preferred "lumpy" tranching. In fact, almost all preferred to receive funds in one (35.6%) or two (62.6%) large tranches, while almost none (0.4%) preferred to receive twelve monthly installments. Of course, some might have preferred a bit of both had that been an option. That said, this finding parallels demand for lumpiness in private-sector contracts (Brune et al., 2021; Casaburi and Macchiavello, 2019). More broadly, it is consistent with evidence that lumpy asset transfers can play a role in accelerating investment (Banerjee

[1] As of 2007, 97% of developing countries provided some type of cash transfer program and 77% provided unconditional cash transfers as part of their safety net World Bank Group (2017), and cash transfer programming expanded dramatically as part of policy responses to the COVID-19 pandemic Gentilini et al. (2022).

et al., 2015; Haushofer and Shapiro, 2016) if not outright escape from a poverty trap (Balboni et al., 2021).

Most recipients also preferred to receive transfers starting immediately. Yet intriguingly, a sizeable 27% minority preferred at least some *delay*, i.e. transfers commencing in a month after February 2015, the earliest option.[2] Preference for delay is positively associated with measures of cognitive ability and highly correlated across decisions, suggesting it is not mere error. Qualitative responses suggest that some recipients desired delay per se, in order to better plan their spending (consistent with, for example, the predictions and evidence in Thakral and Tô (2020, 2022) that advance notice helps recipients make better use of transfers). Other recipients sought to align transfer timing to seasonal agricultural demands, to ensure (for instance) that money arrived after planting when they would have time for construction projects, or when building materials would be less expensive–narratives that echo the strong influence of seasonality documented in other recent work (e.g. Burke et al. (2018); Fujii et al. (2021); Glennerster and Suri (2022)). Notably, preference for delay is not predicted by household covariates but does strongly predict subsequent income growth, suggesting it may capture something important for progress out of poverty.

Taken together, these results call to mind questions about poverty dynamics: how today's financial situation influences forward-looking choices, which in turn affect tomorrow's financial situation. We examine each link in this causal loop in turn. We first estimate how recipients' contemporaneous financial situation—in particular, cash on hand (or "financial slack")—affected preferences for delay. We do so by exploiting a feature of GiveDirectly's transfer protocol, varying the timing of the small, initial "token" transfers it makes to test payment logistics. Some participants received these roughly four weeks before choosing how to structure the remainder of the transfer, and others, roughly four days before. As one might expect, this induced modest differences (USD 6 on average) in recipients' unspent cash on hand at the moment of decision. More interestingly, it also influenced their preferences: more recent token transfer recipients were 13.6 percentage points (35%) more likely to demand some delay. Several mechanisms may contribute to this finding; we do not aim to quantify them all, but are able to rule out some, and also find evidence consistent with a role for "scarcity," or the financial stresses of extreme poverty itself (Mani et al., 2013).[3]

[2]Delay in this sense is distinct from the unanticipated delay studied, for example, by Bazzi et al. (2015).

[3]Prior work shows that scarcity can impede cognitive function (Mani et al., 2013) and either impair or improve decision-making, depending on the domain (Mullainathan and Shafir, 2013; Fehr et al., forthcoming). Studies of productivity similarly suggest that scarcity can make it difficult to focus and reason clearly (Kaur et al., 2022; Duquennois, 2022). In our setting, cash on hand affects some, but not all, measures of financial stress (difficulty coping with bills) and cognitive performance (Raven's test), and we argue that effects on self-control, planning horizons, or trust in GD cannot fully explain the results.

We then examine whether waiting a little longer for transfers had longer-term benefits, using independent experimental variation in assigned transfer timing. After 1.5 years, recipients whose transfers began a little later in the year reported deliberating more about how to use them, making more progress towards their own overall goals, and in particular, earning more income. Impacts were highest when transfers began after planting but prior to the harvest season. Effect sizes are meaningful: the shift in preferred timing for the *main* transfer induced by recently receiving the *token* transfer was enough to increase annualized earnings by an estimated USD 53, or 5% of the total transfer.[4] At least in this financial sense, slack paid back. These results offer the first causal evidence we are aware of for *two-way feedback* between short term cash flow and decision-making under poverty—and on a decision of considerable consequence.[5] To the extent one accepts that behavioral factors played a role here, this result also contributes to work on the psychology of poverty, where "studies examining effects on economic outcomes and behaviors remain scarce." (Kremer et al., 2019).

Taken together, we see these findings as opening doors for further work in two (related) directions. First, they suggest that it may be possible to (re)design cash transfer programs for greater benefit to recipients without higher fiscal cost. This effort would parallel (and could build on) recent work examining ways to increase the flexibility of micro-credit contracts (e.g. Field et al. (2013); Battaglia et al. (2021); Morduch (2021)). Second, they suggest that designing choice architectures sensitive to the decision-making environments of people living in extreme poverty can lead to better choices and outcomes. We discuss these possibilities further, along with open questions, in the conclusion.

2 Context and design

Our study is set in rural Kenya in Siaya County, where our implementing partner GiveDirectly (GD) has been working for several years. The economy is primarily agricultural; most households engaged in some form of crop farming or animal husbandry as well as potentially a non-agricultural enterprise. There are two main planting seasons (see top panel of Figure 1).

Households in this area primarily use informal financial instruments. In data provided by Egger et al. (forthcoming), for example, only 13% of households have a bank account, but 57% participate in a ROSCA and 35% borrowed money from (29% loaned money to) another household during the past year. In our own data we see borrowing for a variety of reasons, including investment in farm (12%) or non-farm (16%) enterprise, consumption-smoothing in response to large expenses such as medical bills (23%), school

[4]Here and throughout we use the approximate nominal 2015 exchange rate of KES 87 per USD 1.

[5]In a very different, high-income context, (Coffman et al., 2019) similarly find that a few hundred dollars can influence major career choices.

fees (23%) and funerals (8%), and also for buying food (18%). Overall, households appear to face challenges managing financial needs against seasonal cash flows, as typical for those in considerable poverty (Collins et al., 2009). Few would have previously received cash transfers to help with these challenges: participation in the National Safety Net Programme (which provides streams of small payments) was uncommon, and no households had previously received (lump-sum) transfers from GD.

GD enrolled beneficiaries by identifying all households in a program village whose homes had a grass-thatched (as opposed to a metal) roof, an indicator of relative poverty, through a village census and follow-up visits. Each eligible household was issued an unconditional transfer of USD 1000, delivered via the mobile money service M-Pesa. GD structured these transfers as follows: it first made a "token" transfer (USD 35, $< 5\%$ of the total) to ensure the process was working correctly, and then transferred the remaining balance in one or more tranches (after which transfers ceased permanently). Our experiment involves manipulating three features of this structure: the timing of the token transfer, and the timing and tranching of the remainder.

2.1 Project timeline

The study evolved as follows. During enrollment, GD staff conducted a baseline survey of 533 households. Of these, 20 were removed during subsequent eligibility back-checks or attrited for other reasons, leaving 513 households in our study sample. GD staff then conducted a preferences survey with these households in January 2015, eliciting preferences over the structure of transfers and also capturing psychometric and attention measures. All subjects' preferences were elicited at the same time of the year, and timing preferences may reflect both seasonal considerations and "pure" preferences for delay, e.g. in order to plan.

We randomized the timing of the token transfers relative to this preferences survey. Half the participants were assigned to receive their token transfer in December 2014 and the other half in January 2015, resulting in gaps of roughly four weeks or four days, respectively, between the dates of token transfer receipt and preference elicitation (Figure A.1).[6] All households received the same (token) amount—and thus had comparable reason to trust GD's commitment to making the large transfer—but those who received it more recently were likely to have more cash on hand as of the preferences survey.[7]

Staff elicited preferences over the structure of the main (post-token) transfers in two steps.[8] First, they asked about participants' preferred number of tranches among four

[6] A handful of households were surveyed later than scheduled due to logistical issues; omitting them does not substantively change any results.

[7] Potentially reinforcing this effect, early token transfers happened to arrive on 24th December, so may have been spent disproportionately on holiday expenses.

[8] Full instruments with question wording and visualization aids used to explain the options are available via the AEA RCT registry (AEARCTR-0000541).

options: one, two, four or twelve. Next, they elicited their preferred month for the *first* tranche of *each* option. Any subsequent tranches were to be evenly spaced over the remainder of the next 12 months, so that the choice of first month set the month(s) of the subsequent tranches. Conditional on receiving two tranches, for example, a recipient could receive the first of these in months 1-6, and would then receive the second six months after the first. We did not elicit timing preferences for the case of 12 tranches, as there was only one way to space 12 tranches evenly over 12 months.

Staff indicated that GD would implement the two most popular tranche preferences and give each recipient a 55% (45%) chance of receiving their more (less) preferred of these. We implemented this by giving 10% of participants their preferred option and the other 90% a uniform random draw. We similarly gave 10% of participants their preferred timing option, and the other 90% a uniform random draw over the feasible start dates.

In designing this elicitation, we sought to balance several considerations. Implementing preferences with positive probability gives participants meaningful incentives to report thoughtfully and truthfully, while randomizing tranching and timing for most participants allows us to estimate causal effects. Assigning random start dates uniformly ensures that the expected net present value of transfers was constant with respect to tranche count, regardless of discount rate, so that tranching preferences should not be confounded with time preferences.[9] Overall, we sought to give participants a meaningfully broad range of options compared to other (typically fixed) transfer schemes. That said, there may well be other structures participants would have ranked even higher—a series of small transfers during the "lean" season to meet food needs combined with a single lump-sum transfer to finance an investment, for example, or a tranche timed to coincide with the date school fees are due. These would be interesting to explore in future work.

After eliciting preferences, we assigned participants to transfer structures as originally indicated. Since the one- and two-tranche options were the most popular (as discussed below), GD implemented only those; no participant received four or twelve tranches. Table A.1 summarizes the assignment to tranching and timing, distinguishing between the 10% of subjects randomly selected to receive their preferred structures from the 90% who received uniform random draws. GD informed all participants about their assigned transfer structure in February 2015, immediately prior to commencing transfers.

Finally, we conducted an endline survey in July-August 2016, about 1.5 (0.5) years after the first (last) scheduled transfer payment. Of the 513 households in our sample we successfully interviewed 479, or 93%, at endline. To mitigate desirability bias in responses, the survey was conducted by temporary staff hired specifically for the survey, not by the operational GD staff who conducted enrollment. This survey covered participants' deliberation over how to use transfers, actual use of funds, satisfaction with their spending

[9] Our preference elicitation exercise did not aim to capture conventional time preferences, i.e. tradeoffs between (less) resources today versus (more) at a later date.

decisions and outcomes, and current income and assets. We discuss relevant variables in more detail below. Figure (1) summarizes the project timeline and its overlap with the seasonal agricultural cycle.

2.2 Experimental integrity

Randomization successfully balanced household characteristics with respect to the timing of token transfers (Table A.2), the number of tranches (Table A.3), and the timing of transfer onset (Table A.4). The p-values of corresponding F-tests are 0.29, 0.14, and 0.25, respectively.

GD complied exactly with the experimentally assigned tranching (Table A.5).[10] With respect to timing (Table A.6), ten subjects (2%) received transfers 1-2 months later than assigned due to registration delays, and 3 subjects received transfers earlier than assigned. Given these (slight) deviations, we use assigned structure as an instrument for implemented structure below.

Finally, attrition from the endline survey was modest for this context, at 7%, and balanced across treatment arms (Table A.7). In particular, attrition is unrelated to assigned number of tranches ($p = 0.93$) or to assigned timing of transfer onset ($p = 0.96$).

3 Recipient preferences over transfer structures

3.1 Tranching preferences

Our first main finding is that households reported a strong preference for "lumpy" transfers (Figure 2). Overall, just 0.4% of households preferred twelve monthly payments—the structure most similar to a typical social protection program—as their first choice. The most popular first-choice structure was two tranches (62.6%), followed by one tranche (35.6%), with four tranches a distant third (1.4%). Second-through-fourth choice preferences show a similar tendency, and the great majority of participants (86.4%) said that twelve monthly payments was their least-preferred option (Figure A.2 reports the full preference ranking distribution).

There are several reasons, both internal and external to our study, to think that these preferences reflect a genuine demand for lumpiness. It is possible that some participants thought GD *wanted* to give them two tranches (as it had in earlier programs), but this does not explain why they overwhelmingly preferred *one* tranche to twelve tranches. Some may have found the elicitation questions confusing, but the cognitive measures we collected in the preferences survey are weakly *positively* correlated with choosing a single

[10] Five households assigned to receive two tranches had received only one by endline due to issues with mobile money accounts (3 cases), an intra-household dispute (1 case), and a death (1 case). Results are robust to omitting these observations.

tranche, conditional on other characteristics (Figure A.3). Nor can risk aversion over uncertain transfer timing explain preferences: lumpy transfers implied *greater* uncertainty than the twelve-tranche option.

Participants' remarks when asked about these preferences illustrate several coherent rationales for lumpy transfers. Many mentioned the need to finance lumpy investments or economize on fixed costs:

> R17: He prefer[s] to build a house with the money hence needs a lot of money at once.

> R18: She can do all her plans once hence it is cheap in terms of transport.

Some articulated benefits of splitting the money into two tranches rather than one:

> R28: Gives time to evaluate profit from first venture and advise on ne[x]t action steps with the next transfers.

> R39: This will enable me to built a house with the first lumpsum then reorganize myself to start some business with the second lumpsum after settling in my own home.

And when asked why they did *not* prefer their fourth-choice structure, respondents described a number of challenges—both financial and behavioral—that a stream of small payments would create for them:

> R24: It will be hard to save to do the project, the money might be squandered.

> R40: Will bring the hard task of banking to accumulate to reasonable capital.

> R127: Many small transfer may be wasted on daily demands and you may not do any tangible project.

> R132: Too little to solve a big case and keeping money is tricky and dangerous.

These responses align with evidence that savings constraints often bind in rural Kenya (Dupas and Robinson, 2013) and with the idea that periodic spikes in spending—for instance, to build a house or buy a large sack of grain—are sometimes needed to smooth subsequent consumption flows (Morduch, 2021).[11] In some cases they also indicate a degree of psychological sophistication (Laibson, 1997). The preferences observed here have subsequently been corroborated in focus group discussions conducted by GD in Kenya, Liberia, and Malawi, where 73% of recipients preferred two or fewer tranches and 95%

[11] "Kin taxes" may also contribute to saving difficulties, though interestingly Egger et al. do not find evidence of such taxes on GD transfers.

preferred three or fewer.[12] They also echo recent evidence from private-sector contracts in similar settings. In Casaburi and Macchiavello (2019), Kenyan dairy farmers incur sizable costs to receive lumpier payments from buyers in order to solve self-commitment problems. In Brune et al. (2021), Malawian employees opt to partially defer wage payments at 0% interest in order to receive larger tranches and make big-ticket purchases. These examples underscore the point that "building lump sums" is a core financial challenge facing low-income households (Collins et al., 2009).[13]

3.2 Timing preferences

Our second main finding is that a sizeable minority of participants demanded a small but positive amount of delay before receiving transfers, preferring in January to have transfers begin *after* February (Figure 2). Conditional on receiving their first-choice tranching structure, 27% of participants preferred delay of at least one month (reminiscent of demand for commitment savings devices, e.g. Ashraf et al. (2006)). Demand for delay was meaningful for one, two and four tranches, but greatest (at 38%) when receiving one tranche, perhaps because under two- and four-tranche structures at least one installment is "delayed" automatically. The total amount of delay demanded was almost always modest, however; conditional on demanding some delay, 83% of respondents preferred two months or less, and only 2% preferred six months or more (Figure A.2 and Table A.8).

Of course, demand for *any* delay is intriguing. Why would people who discount the future—and typically face very high interest rates—prefer to wait? Enumerators were trained to explain the decision to participants carefully using visual aids designed specifically for this purpose, but one might still worry about errors. The data themselves do not suggest this, however. Cognitive measures from the baseline are significantly *positively* correlated with choosing delay ($p < 0.05$; Figure A.3). Demand for delay is highly correlated across the one-tranche and two-tranche elicitations ($p < 0.001$ from a Fisher exact test, Table A.9), as one would expect if these choices were intentional. And we will see below that preference for delay positively predicts subsequent income growth, and is positively affected by cash on hand, neither of which suggests mere carelessness.

Informal debriefings with survey enumerators highlighted several reasons that participants valued delay. Some wanted time to plan or to consult with family members. Many had reasons related to the agricultural cycle. Some wanted to receive money in March, after planting—either because they would be free then to start their next project, because they expected building materials would be cheaper, or because they viewed this

[12] See `https://www.givedirectly.org/recipient-preference/`, accessed 30 December 2022.

[13] Even assuming that all transfers were cashed out immediately, M-PESA withdrawal fees were unlikely to have been a major factor: it would have cost USD 5 more in total to cash out USD 965 in 12 as opposed to 2 tranches, and only two respondents (0.4%) mentioned this as a consideration.

as the culturally appropriate time to build a home (97% of the sample are Luo). These narratives echo other recent work documenting the importance of seasonality in Kenya (e.g. Burke et al., 2018) and elsewhere in Sub-Saharan Africa (e.g. Glennerster and Suri, 2022), as well as further afield (e.g. Fujii et al., 2021).

3.3 Are preferences predictable?

We next examine to what extent household characteristics predict preferences—specifically, for one tranche (over two) and for any delay (as opposed to none). Our interest is partly pragmatic, to understand the scope for targeting customized cash transfers using the kinds of variables typically available for proxy means testing. It is also conceptual, as strong predictors might provide clues to help connect preferences back to theory—for example, if life-cycle considerations play a role, age might be an important predictor.

In practice, covariates have essentially *no* predictive power for preferences in our data. We learn predictive models using the Generalized Random Forest method of Athey et al. (2019), learning a separate model for each subject using data on all other subjects to obtain out-of-sample predictions. We train these models using either a limited set of baseline covariates akin to those used in proxy means tests or on all baseline covariates. Either way, the resulting error rates are essentially identical to the "naive" benchmark rates we obtain by simply assigning all households the modal preference (Table A.10).

4 Feedback loops: financial slack and financial decision-making

4.1 Effects of financial slack

While preference for delay is hard to predict, we will see below that it itself strongly predicts subsequent income growth. This suggests that it reflects behavioral factors that matter for poverty dynamics. We therefore turn next to examining the causal linkages from today's financial situation, to forward-looking financial decisions, to tomorrow's financial situation.

We look first at how variation in the timing of GD's small token transfer *prior to* the preferences survey impacted participants' financial situation when taking it. Recent token transfer recipients reported having around $6 more unspent out of that transfer, or 13% of the total, at the time preferences were elicited (Figure 3). This is a small amount relative to the overall transfer, of course; it may even be an upper bound on the true extent of "financial slack" broadly defined, if the early token group had more time to convert cash into other relatively liquid balances (e.g. stocking up on food) or to pay

down short-term debt. That said, recent token transfers appear to have induced small but significant increases in financial slack.

Second, token timing significantly altered preferences for delaying the main transfer. Thirty percent of recent token recipient preferred some delay, compared to 17% of less recent token recipients ($p = 0.009$). This difference is quite consistent across timing preferences for 1 versus 2 tranches, and across participants who preferred 1 versus 2 tranches (Table A.11). Overall, across all tranching structures, recent token transfers shifted the preference for delay by an average of 0.37 months.[14]

What explains this sensitivity? While multiple factors may of course be at play, we can rule out several. We see no difference in the time horizon respondents reported considering when making their decisions (Figure A.4), as one might have expected if patience or self-control had been impacted. Impacts working through increased trust in GD's commitment to make the transfer seem unlikely, as *all* recipients had to wait some amount of time for the transfer, and *all* had received their token transfer from GD before they declared their preferences. On the other hand, recent token recipients report lower difficulty dealing with bills as of the preferences survey, though not lower worries about money (Figure 3). They score better on the Raven's test ($p = 0.054$), our preferred measure of cognition, and register positive (but insignificant) effects on other measures (Table A.12). Overall we read these patterns as suggesting that lower "scarcity" played a role in greater preference for delay, potentially among other factors.

That said, our essential point is a broader one: the sensitivity of high-stakes decisions over *future* cash flow to small changes in *current* cash balances illustrates how volatile poverty dynamics can be.

4.2 Downstream impacts

We turn next to endline outcomes, measured six months after the last tranches were disbursed (and 1.5 years after preferences were elicited). We estimate the effects of transfer structure following a pre-analysis plan available at the AEA RCT Registry (AEARCTR-0000541), noting any deviations below. In the interests of brevity, we focus here on the impacts of transfer timing (rather than tranching) since this is the dimension of preferences that was influenced by cash on hand; a full pre-analysis plan report is available at the Registry.

We estimate the relationship between outcomes y_h for household h and transfer timing as follows:

$$y_h = \alpha + \sum_{t=0}^{11} q_{h,t} \left[\beta_1 t + \beta_2 t^2\right] + X_h\gamma + \epsilon_h \tag{1}$$

[14]Token timing did not significantly alter tranching preferences (Figure 3).

where $q_{h,t}$ is the share of the transfer issued to h in month t (centered such that $t = 0$ in February 2015). X_h are controls for number of tranches received and for preferences over structure. As pre-specified, we estimate both a non-linear specification and a linear one (omitting the quadratic term).[15] We use only the 90% of participants assigned a random (rather than their preferred) timing, so that transfer timing is exogenous. We instrument for $q_{h,t}$ to account for (slight) non-compliance, but ITT estimates are generally similar both qualitatively and quantitatively.[16]

We find that *some* delay broadly improves endline outcomes (Table 1). Starting from no delay (i.e. transfer onset in February 2015, the modal preference), delaying an additional month leads to more deliberation about how to use funds (Column 2), more progress against self-defined goals overall (Column 4), and more annual income (Column 6). Impacts on cash *outflows*, which we measure as the sum of impacts on assets and annualized non-durables expenditure, are less precisely estimated but follow the same pattern (Column 8).[17] The implied effect sizes are substantial; for income, moving from no months to one month of delay raises income growth by an estimated USD 148 (KES 12,922), or 17%. There are certainly other important outcomes we do not observe (e.g. nutrition), and no single outcome can capture "welfare" comprehensively. That said, we regard the goals index as reasonably informative about overall well-being given that it is quite broad—covering goals with respect to earnings, assets, and social standing—and based on goals recipients set for themselves.

Prolonged delay, on the other hand, worsens outcomes. The quadratic terms are negative and (in most cases) significant, rejecting the linear model. This is logical, in that *indefinite* delay cannot be beneficial. What is more interesting is that the resulting pattern of returns aligns with the local agricultural cycle. If we group individual month effects (Figure 4, Panel A) according to independent cropping cycle information for Western Kenya (Ndungu et al., 2019), we see that effects are concentrated in the growing season (Panel B).[18]

Interestingly, preferences for delay also strongly predict most outcomes. Recipients

[15] Equation 1 generalizes the model in our pre-analysis plan in which outcomes depend on average month of transfer receipt, so that (for example) two tranches arriving in months 3 and 9 were modelled as a equivalent to the same total amount arriving in month $(3 + 9)/2 = 6$. The data clearly reject this restriction, as outcomes are non-linear in month of transfer receipt (Table 1). Equation 1 includes indicators for preferences in order to examine how these predict outcomes, but (as one would expect given random assignment) results are essentially identical if we omit these (see Table A.13).

[16] First-stage results are in Table A.14.

[17] To accomodate space constraints, estimated effects on assets and expenditure individually, and on two additional pre-specified outcomes (social input and self-reported valuation of items purchased), are in Table A.15. These generally follow the same temporal pattern, though most are imprecise. Effects of timing preference *match* are described in the pre-analysis plan report.

[18] It is possible that the decreasing impacts we see in later months reflect in part the time required for investments to bear fruit, as endline surveys were conducted at the same time for all recipients. This strikes us as unlikely, since even the latest transfers were a full 7 months before endline—but in any case the essential point for our argument is that *some* delay can help.

who preferred some delay subsequently saw better income growth and goal progress, despite deliberating *less*. These patterns are of course purely correlational, but do suggest that a preference for delay may indicate a degree of behavioral sophistication. They are what we might expect if, for example, some less-deliberative but self-aware recipients seek decision aids such as delay to offset it, helping them to achieve better results.

Sample size limits what one can infer about mechanisms, particularly when comparing one transfer structure to another (as opposed to no transfer at all). That said, we briefly summarize a few relevant patterns. First, we see substantial movement between baseline and endline surveys out of farming, fishing and animal husbandry (from 65% to 44%) and into non-farm enterprise (from 10% to 27%) as a primary source of income. Second, the seasonal pattern of income effects is driven by households that report farm or non-farm self-employment (70%), as opposed to wage employment (27%), as their primary occupation. Taken together, this suggests investment in a non-agricultural enterprise as a channel for the impact of delay. Effects on various secondary outcomes are broadly consistent with this: for example, the inverse-U shaped pattern we see for overall income is not mirrored in measures of agricultural earnings or investment, but does appear in the likelihood that a household reported using its transfer to start or invest in a non-agricultural enterprise, as well as the share of spending on durables overall (Figure A.5).

While only exploratory, these results are consistent with the fact that delay until *after* the main agricultural investment period (i.e. planting) is associated with higher income. They also line up with prior evidence that lumpy transfers have driven diversification from farming into non-agricultural enterprise in this area (Egger et al., forthcoming; Orkin et al., 2022).

4.3 Did financial slack pay back?

Combining the results that recent token recipients preferred more delay, and that incremental delay increased earnings growth, we now calculate the expected effect of recent token receipt on endline earnings. Specifically, we use the coefficients from Table 1 to calculate the difference in mean earnings growth under two distributions of transfer onset timings: that actually observed in the early-token transfer group, and the same distribution right-shifted by the average treatment effect on delay of 0.37 months (Figure A.6 illustrates this procedure).

This calculation yields an estimated (annual) income gain of USD 53 (KES 4,576), or 5% of the transfer amount. Loosely, one can thus think of USD 6 more cash on hand as inducing a 5 percentage point better investment decision, on average. Of course, we should not necessarily expect to see similar *absolute* returns to financial slack at times when households do not have such an unusually consequential financial decision

to make.[19] Also, the calculation itself rests on certain assumptions (e.g. homogenous treatment effects). Nevertheless, it indicates how impactful it may be to relieve financial pressures at moments when major financial decisions are being made.

5 Conclusion

Our exploration of "customized" cash transfers has found that most recipients preferred structures different from those typical of social safety net programs—including larger tranches and (for a substantial minority) some delay. These preferences are coherent with what we know about the financial lives of households living in extreme poverty, and with subjects' stated reasoning about the structures that work best for them. That said, preferences need not be the last word in transfer design: we also see that they are malleable, influenced by small changes in financial slack—so much so that slack "paid back" (at least in a financial sense) by inducing delay that in turn accelerated income growth.

One policy implication is that there may be scope for inexpensive reforms that increase the value of existing cash transfer programs. Most programs currently provide small, regular payments. Some have considered how to make them more "graduative," in the sense that participation makes households less likely to need them in future. We find here that recipients themselves demand transfer structures better-suited to financing graduative investments. There may thus be scope to meet this demand while also furthering policy objectives. One such approach would be to allow recipients to simply defer one or more tranches so that they arrive bunched together. This would accommodate demand both for lumpiness and for delay, including delays that help to manage the challenges of seasonal cash flow and risky or imperfect savings devices, while at the same time relaxing government budget constraints by deferring an expense.

More broadly, the results highlight a range of opportunities for ongoing experimentation with the structure of cash transfers. Future work could explicitly price out recipients' valuations of different design features, for example, using richer menus to quantify *how much* they value these. Menus could include contingent structures—with payouts conditional on weather indices, for example—to see whether embedding insurance within a transfer scheme can reduce barriers to take-up, such as distribution costs and liquidity constraints (Casaburi and Willis, 2018). Future work could also elicit preferences in urban settings, where seasonality may loom less large, or when longer-term payment streams such as "basic income" are available (Banerjee et al., 2020). And it could examine how preferences respond to planning aids (Augenblick et al., 2022), or to better availability of financial products (whose absence may explain the preferences we observe). Finally,

[19] Brune et al. (2017) do not detect effects of a smaller delay (1-8 days) in the receipt of a much smaller transfer ($60) to households in Malawi, for example.

it could intersect these questions with issues of intra-household decision-making, yielding policy design that is more equitable within as well as across households.

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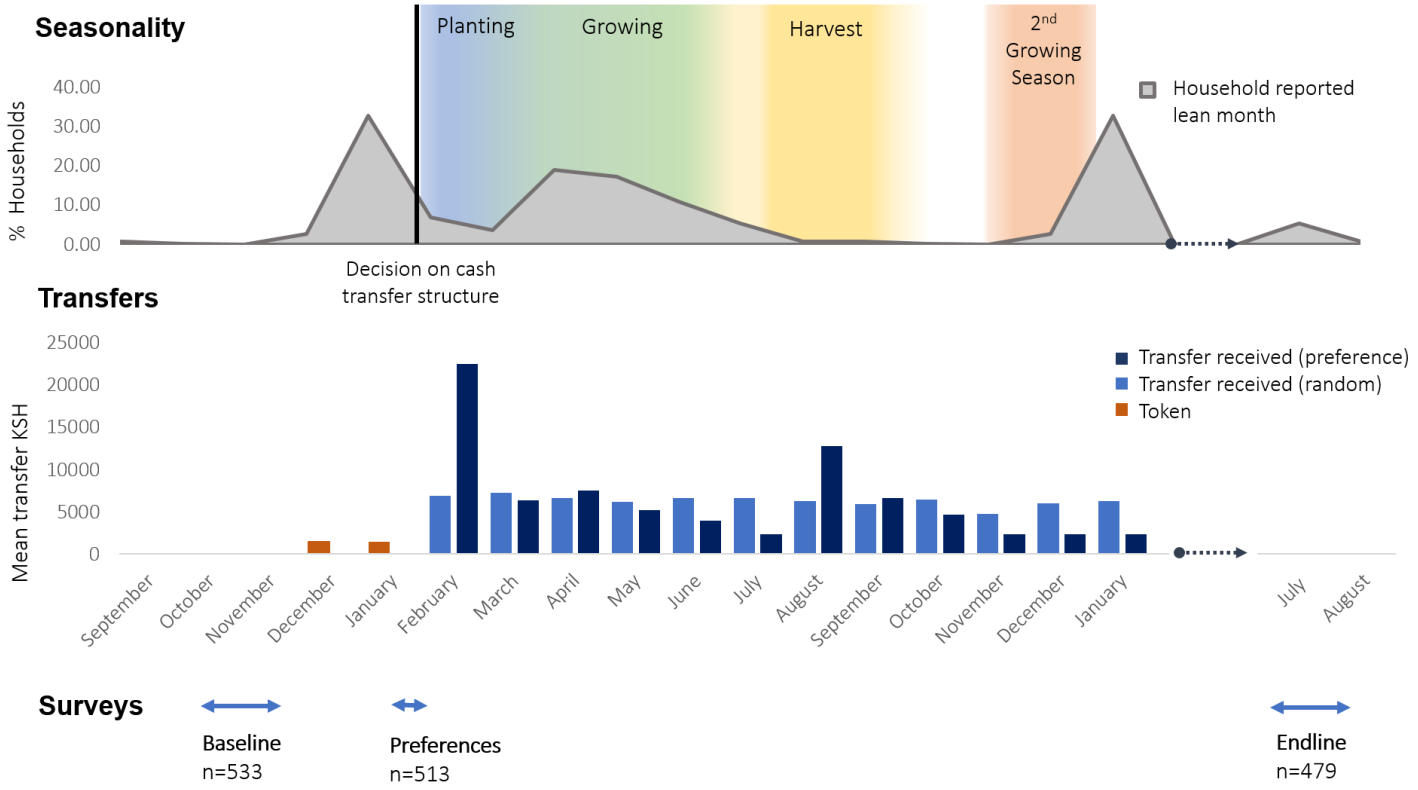
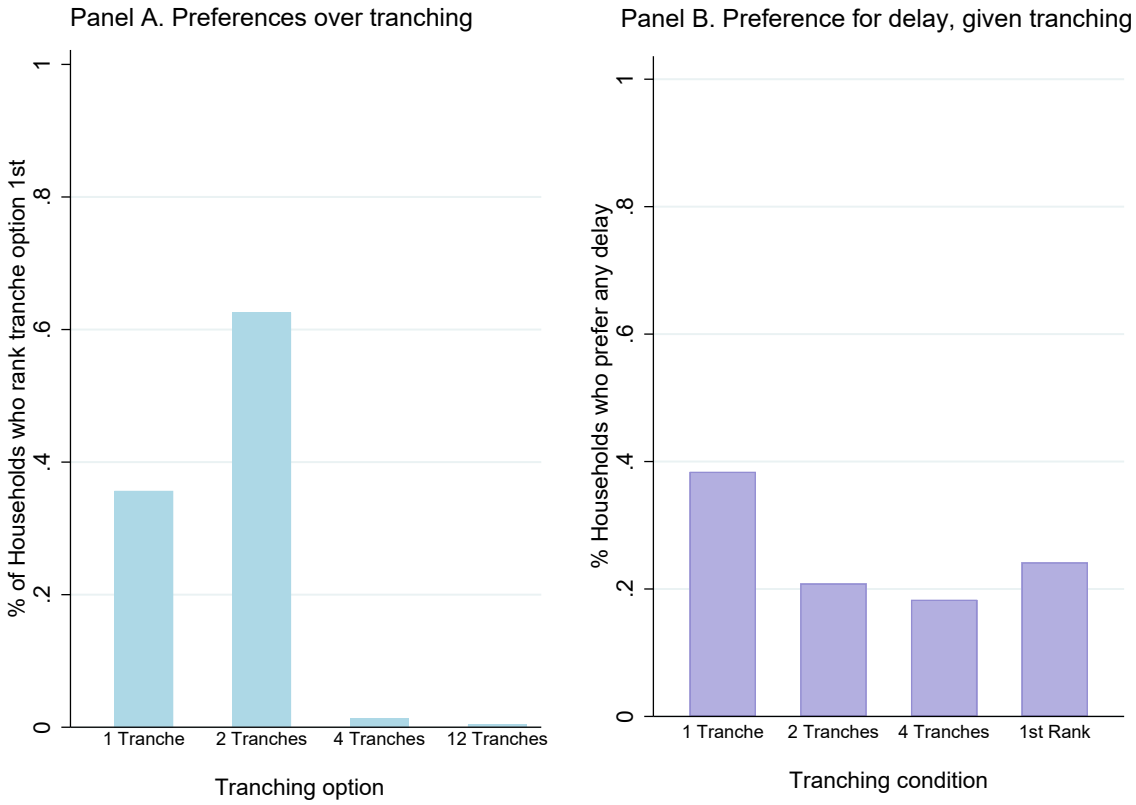
Figure 1: Study Design and Timeline



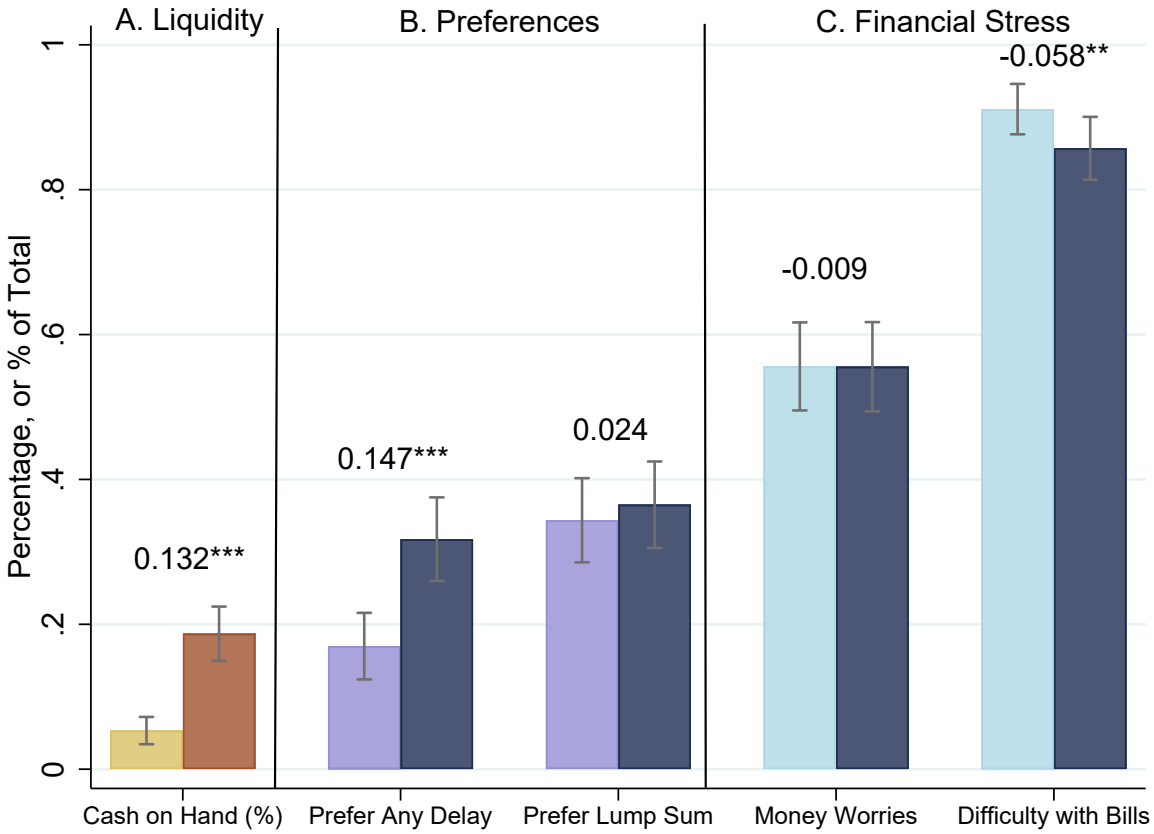
Notes: The figure displays the timeline of our study from September 2014 to August 2016, including the experimental design and the way it overlaps with the seasonal agricultural cycle for maize, the main local crop. The bottom panel, titled "Surveys," indicates the timing of the three surveys conducted over the study period—the baseline survey, preferences survey, and endline survey. The middle panel, titled "Transfers," indicates the mean monthly amount (in KES) transferred to participants, colored to differentiate between the initial token transfers, the main transfers to households that received either their preferred tranching, their preferred timing, or both, and main transfers to households that received random tranching and timing. The top panel, titled "Seasonality," displays phases of the annual agricultural cycle (Ndungu et al., 2019) along with the fraction of respondents who self-reported each month as one that is typically financially "lean" for their household.

Figure 2: Preferences over Cash Transfer Structures



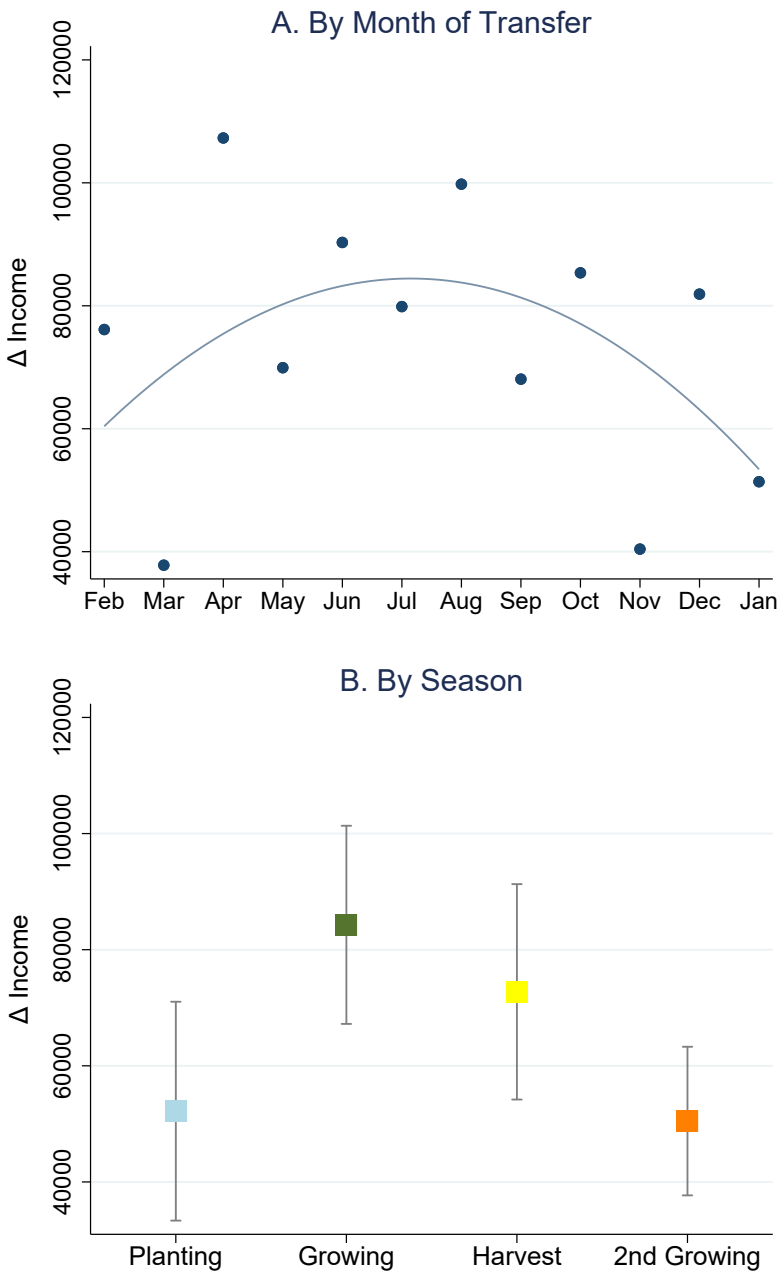
Notes: The figure displays participants' preferences over the number of tranches (1, 2, 4 or 12) and timing of their cash transfer. In the left panel, each bar displays the fraction of study participants who rank the number of tranches given on the x-axis label as their first preferred choice. In the right panel, each bar displays the fraction of households who indicated preference for any delay beyond the first possible month (February 2015) conditional on receiving the number of tranches indicated by the x-axis label. The full distribution of tranching and timing preferences are in Figure A.2.

Figure 3: Effect of Financial Slack



Notes: The figure displays differences between less vs. more recent receipt of the token transfer for three sets of outcomes—liquidity, transfer structure preferences, and measures of financial stress—all measured as part of the preferences survey, i.e. at the time preferences were elicited. In each pair of histograms, the lighter (darker) colored-bar shows the outcome for the less (more) recent token transfer group. Specifically, Panel A shows the fraction of the cash from the token transfer remaining on hand; Panel B shows the fraction of these households with a preference for any delay in receipt of the first main transfer and for a single tranche rather than two; and Panel C shows the fraction of households reporting money worries and difficulty coping with bills (both 0-1 dummy variables). Coefficients reported refer to regressions including village fixed effects, with standard errors clustered at the village level. Baseline variables are included as controls in Panel C. Whiskers indicate 95% confidence intervals for group means, and statistical significance from a test for equality of these means is denoted: $^{***}p < 0.01, ^{**}p < 0.05, ^{*}p < 0.1$.

Figure 4: Delay and Income



Notes: The figure displays the relationship between changes in participants' income between baseline and endline surveys and months of assigned delay in receiving the cash transfer. In the first panel, points represent the mean income change associated with receiving funds in a given month t. The overlaid curve is the quadratic fit obtained by estimating Equation 1. In the second panel, points represent the mean income change associated with receiving funds in a given phase of the agriculture cycle for maize in Western Kenya (as defined in Ndungu et al. (2019)), estimated by regressing Δ income on the share of the transfer received in each season, with whiskers denoting 95% confidence intervals. p-values for tests of differences between planting and other seasonal coefficients are: planting vs. growing $p = 0.007$, planting vs. harvest $p = 0.045$, planting vs. 2^{nd} rainy season $p = 0.865$.

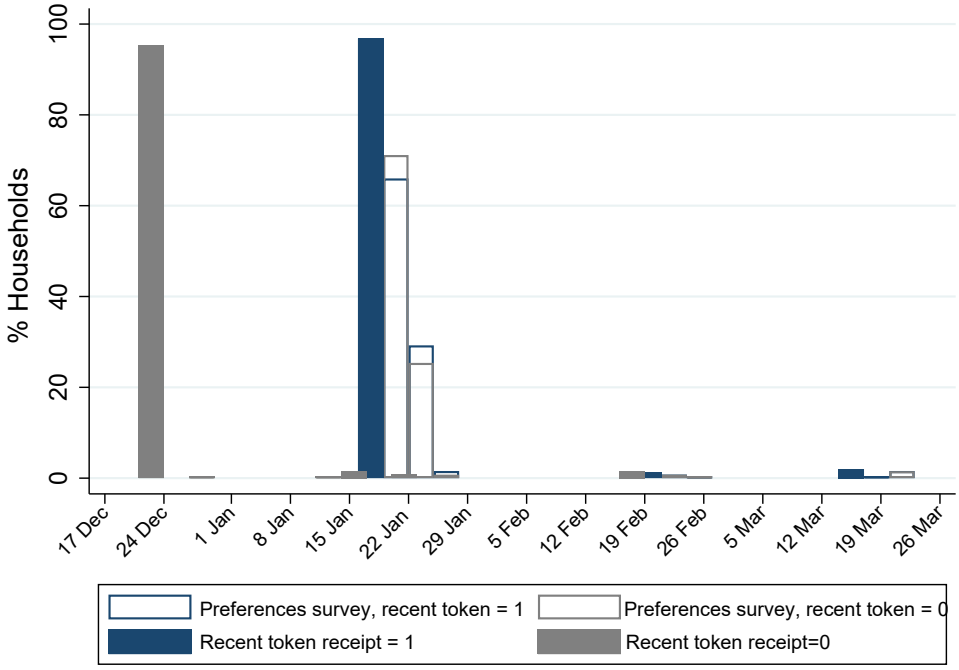
Table 1: Impact of Delay

	Deliberation		Goal Progress		Δ Income		Assets + Expenditures	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
q_t	0.011	0.041	-0.0043	0.013	-534	14114	3081	9114
	(0.0029)	(0.017)	(0.0019)	(0.0037)	(1271)	(2766)	(3609)	(18145)
q_t^2		-0.0024		-0.0014		-1192		-490
		(0.0012)		(0.00046)		(232)		(1434)
Prefer delay	-0.020	-0.019	0.053	0.054	10712	10644	15046	15138
	(0.035)	(0.035)	(0.0058)	(0.0062)	(4749)	(4462)	(14081)	(13773)
Prefer 1 tranche	0.035	0.033	0.0097	0.0086	889	622	20255	19874
	(0.042)	(0.043)	(0.021)	(0.023)	(3993)	(3848)	(26716)	(26773)
N	424	424	424	424	393	393	424	424
Mean	-0.00	-0.00	0.81	0.81	77732	77732	398082	398082

Notes: The table reports the effects of main transfer timing on participants' deliberation, income, assets and expenditures, and goal progress at endline. Results are estimated for the 90% sub-sample for which timing was assigned randomly, using an instrumental variable approach to account for any lack of compliance with assigned delay. The first stage regression is $q_{h,t} = \rho + \delta q_{h,t}^{\text{assigned}} + \mu_{h,t}$, where $q_{h,t}^{\text{assigned}}$ is the share of household h's transfer that it was assigned to receive in month t and $q_{h,t}$ the share it actually received. First stage coefficients and F-tests for instrument relevance are reported in Table A.14. The second-stage regression is then as defined by Equation 1 in the text, with additional controls for receipt of a more recent token transfer and receipt of two (as opposed to one) tranche (not reported). For each outcome the first column presents coefficients from a restricted linear model, while the second presents results from the full non-linear model. Outcomes are defined as follows. *Prefer delay* is an indicator equal to 1 if the individual preferred to receive the transfer with some delay in the follow-up survey. *Prefer 1 tranche* is an indicator equal to 1 if the individual preferred one tranche to two tranches. *Recent token* denotes assignment to receive the token transfer closer to preference elicitation at follow-up. "Deliberation" is a standardized Anderson (2008) index aggregating measures of the extent to which recipients reported planning how to use their transfer (see Appendix B for details). "Δ Income" is the change in participants' total annual income from baseline to endline. "Assets & Expenditures" is the sum of assets owned at endline by the household, and the annualized value of household expenditures at endline. "Goal Progress" is an index aggregating measures of participants' self-reported progress on goals with respect to income, assets, and social status. Standard errors clustered at the preference-for-delay level are reported in parentheses.

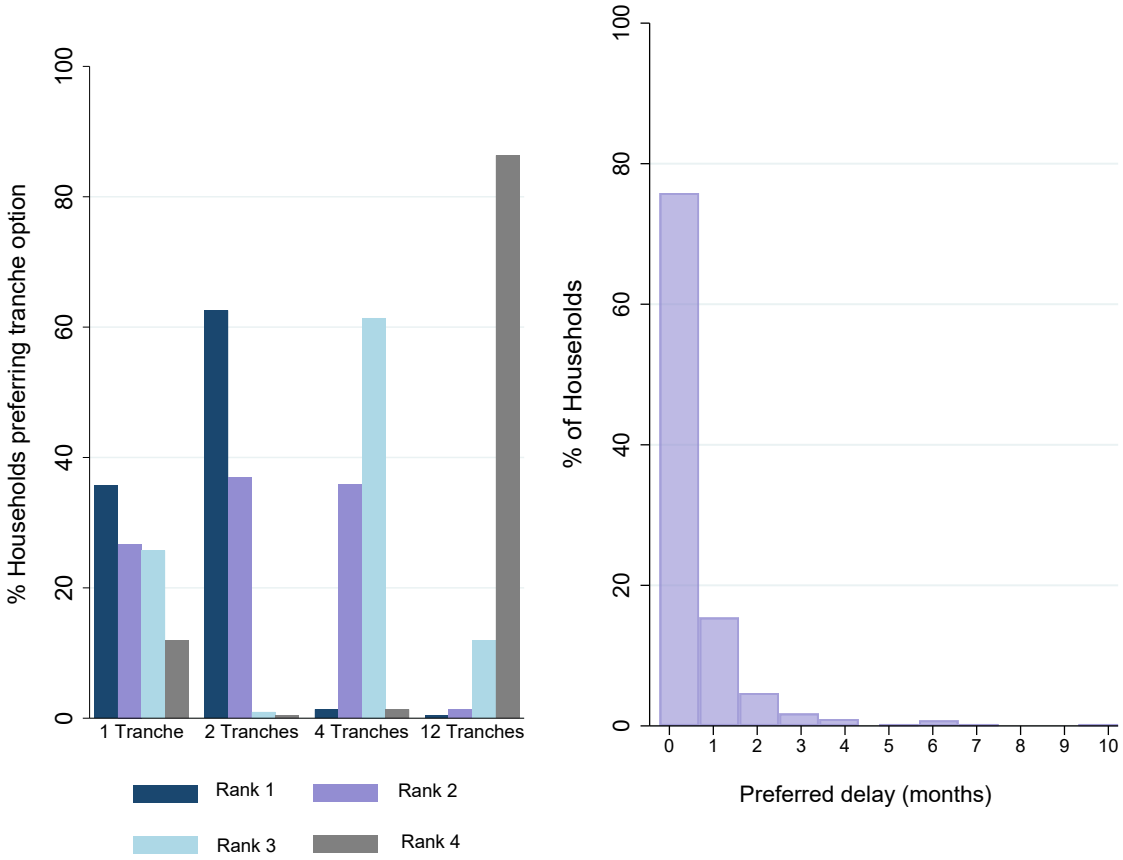
A Additional exhibits

Figure A.1: Preference survey dates and token transfer treatment compliance



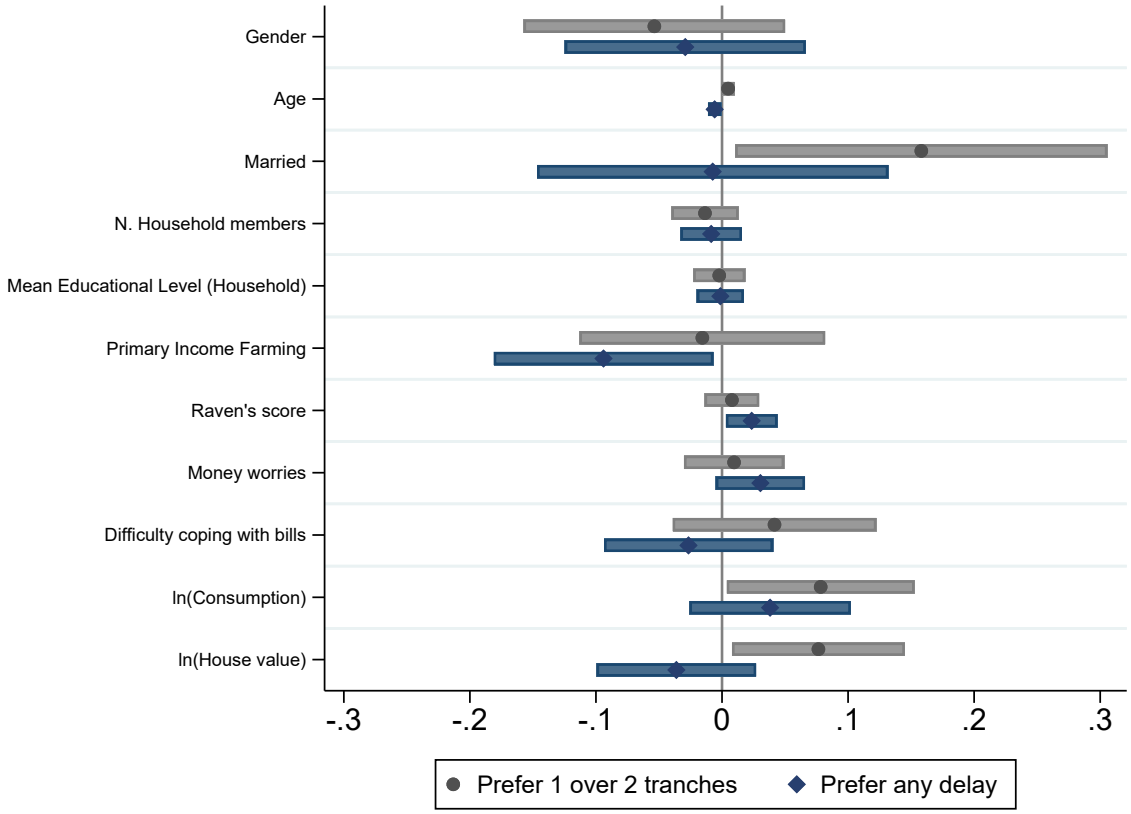
Notes: The figure presents distributions of the timing of token transfers and preference surveys. Solid bars indicate the timing of token transfer receipt for those assigned to less recent (gray) and more recent (blue) token timing. Hollow bars indicate the timing of preference survey interviews, colored using the same convention. The majority of interviews (94%) were conducted between 19-23 January 2015.

Figure A.2: Delay and tranche preferences: Distribution



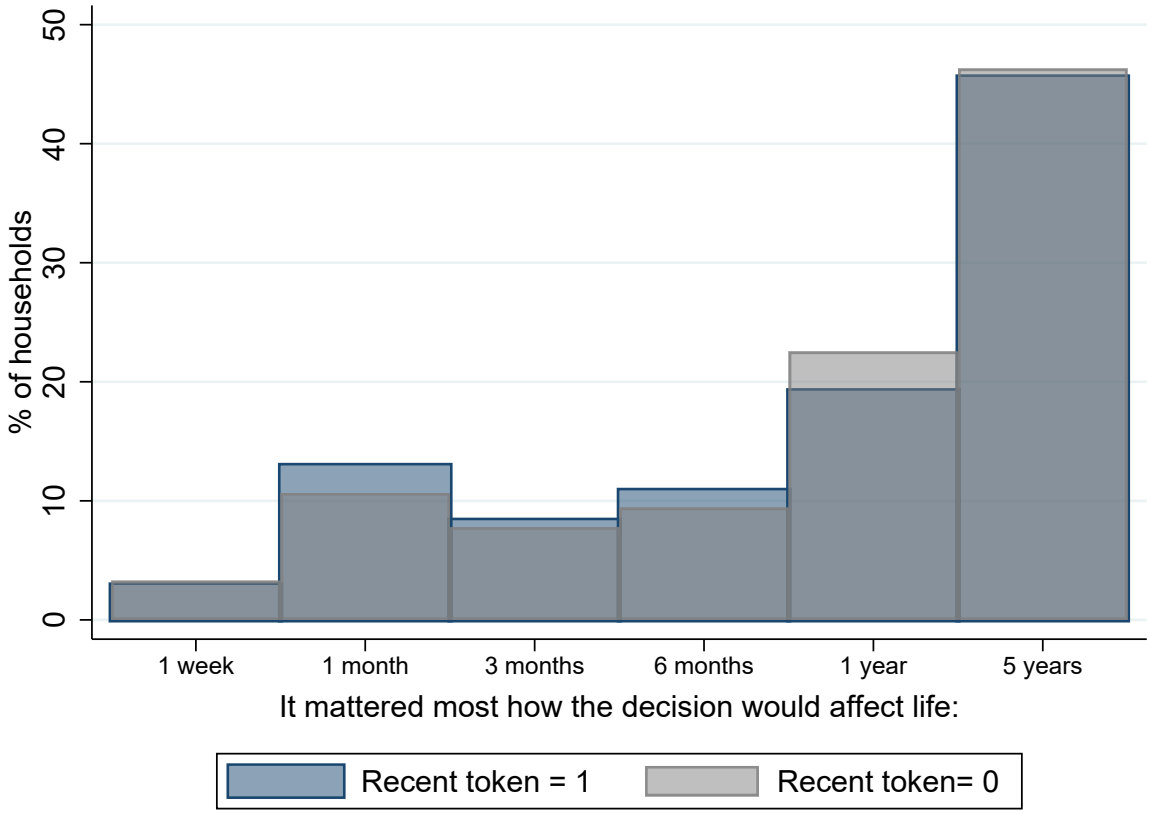
Notes: The figure presents distributions of participants' preference for delay (left panel) and ranking over tranche preferences (right panel). The left panel presents a histogram of the full distribution of delay preferences of participants, where the x-axis represents preferred delay (in months from February 2015, which is denoted as 0). The y-axis represents the percentage of participants having a given preference for delay. The right panel figure presents participants' rankings over the available tranche structures (1, 2, 4 and 12). Each bar displays the share of participants having a given ranking over the tranche structure displayed in the y-axis

Figure A.3: Predictors of preference for single-tranching and for delay



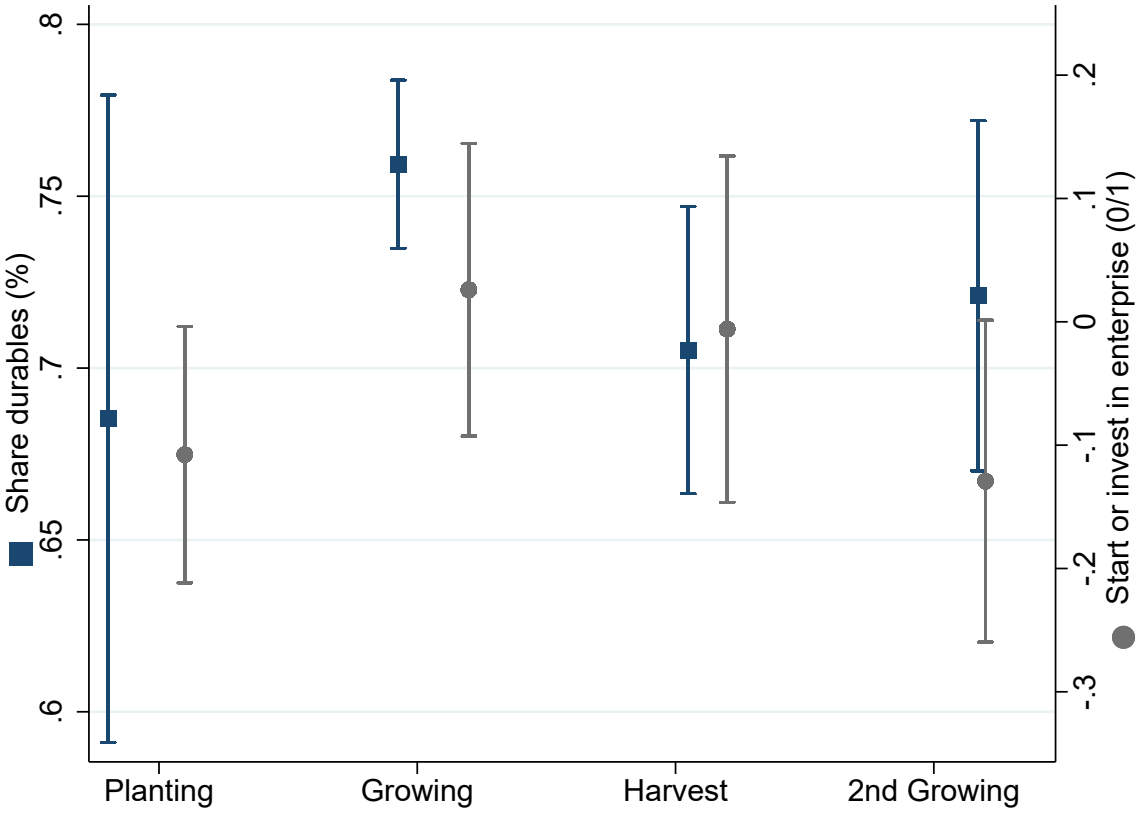
Notes: The figure plots coefficients and confidence intervals from a probit model where the dependent variable is either (i) preference for one over two tranches (1 for preferring one tranche, 0 for preferring 2 tranches); or (ii) preference for any delay (1 for preferring some delay, 0 for preferring no delay), where delay means receiving the first tranche in a month after February 2015. The independent variables are those displayed on the y-axis. The circles and diamonds in the plot represent the coefficient estimate, and the shaded areas are 95% confidence intervals. See Appendix B for more detailed variable definitions.

Figure A.4: Time horizons when planning grant spending



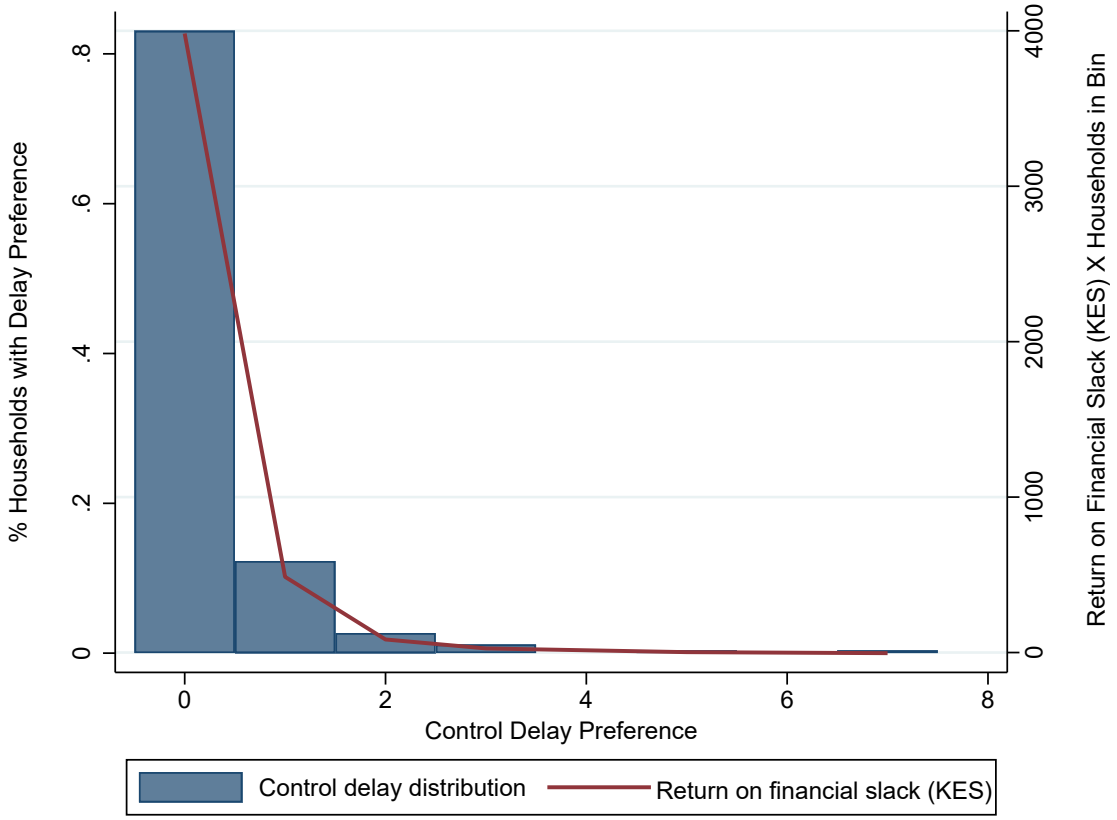
Notes: The figure plots the distribution of participants' answers to the question: "When deciding on how to use the main grant transfer, it mattered most how the decision would affect life .. (i) One week after receiving the transfer; (ii) One month after receiving the transfer; (iii) Three months after receiving the transfer; (iv) One year after receiving the transfer; (v) Five years after receiving the transfer." Distributions are plotted separately for recipients experimentally assigned to receive more recent v.s. less recent token transfers. The p-value for a Kolmogorov-Smirnov test of the null that the distributions are the same is 0.990.

Figure A.5: Impact of delay on expenditure share on durables and non-agricultural enterprise investment



Notes: The figure plots estimated effects of transfer timing on the durables share of expenditure (blue bars, square markers, left axis) and on an indicator for using the transfer to start or invest in a non-agricultural enterprise (gray bars, round markers, right-hand axis), broken out by season. Seasons are defined as in Figure 4. The durables share is calculated as the share of expenditure on construction material, furniture, transportation vehicles, and other durable assets over total expenditures. (Non-durables include food, clothing, household items, airtime, ceremony and funeral expenses, and other pure consumption goods.) Controls include the number of tranches assigned and (in the enterprise regression) the number of enterprises owned by each recipient before receiving the transfer (i.e. the number of enterprises reported as having been started more than 18 months before the endline survey). The F-statistic for equality across all seasons is 13.12 for share of durables investment ($p = 0.0001$) and 7.10 for enterprise investment ($p = 0.0029$). Standard errors are clustered at the preference for delay level (14 clusters). Whiskers denote 95% confidence intervals.

Figure A.6: Distribution of Returns Induced by Recent Token Transfer Assignment



Note: The figure illustrates the calculations performed in Section 4.3 to estimate the average effect of the additional delay induced by recent token transfer receipt on subsequent income growth. Bars represent the shares of households in the less-recent token transfer group (denoted on the left axis) that prefer the number of months of delay represented on the x-axis. Lines represent the incremental return to an additional 0.37 months of delay, calculated for each month using the coefficients from Column 6 in Table 1. The overall average return to delay is the average of these latter incremental returns weighted by the former distribution, i.e. $\frac{1}{n}\sum_h \left[\left(14114 * (D_h + 0.37) - 1191 * (D_h + 0.37)^2\right) - \left(14114 * (D_h) - 1191 * (D_h)^2\right)\right]$ where D_h is the preferred delay reported by household h in the less recent token transfer group, and n the size of that group.

Table A.1: Transfer Tranche & Timing Assignment conditional on preferences

	Assigned preferred		Assigned random		Totals
A. Tranches	1 Tranche	2 Tranches	1 Tranche	2 Tranches	
Preferred 1 tranche	18	0	84	81	183
Preferred 2 tranches	0	33	147	150	330
Totals	18	33	231	231	513
B. Delay	Immediate	Delay	Immediate	Delay	
Preferred immediate	41	0	41	307	389
Preferred delay	0	14	14	96	124
Totals	41	14	55	403	513

Notes: This table describes assignment to main-transfer structure with respect to tranching (Panel A) and timing (Panel B), focusing for conciseness in the latter case on whether or not the subject received transfers with any delay. In both panels the column group "Assigned preference" describes the 10% of subjects who were randomly assigned to receive their preferred transfer structure (so that preferences and assignments are identical) while the column group "assigned to random" describes the 90% of subjects assigned to receive transfer structures drawn uniformly at random from the set of possible structures (so that preferences and assignments are independent).

Table A.2: Randomization Balance: Token Transfer

	Recent = 0	Recent = 1	p-value
Female	0.671	0.639	0.466
	(0.030)	(0.031)	
Age	34.168	34.485	0.787
	(0.798)	(0.861)	
N. Household Members	4.347	4.405	0.757
	(0.131)	(0.134)	
N. Children	2.179	2.379	0.219
	(0.112)	(0.117)	
Education	8.309	7.917	0.193
	(0.223)	(0.202)	
Income	30419.831	30336.759	0.987
	(2700.730)	(4329.068)	
Assets (No Land)	38943.905	39063.197	0.970
	(2238.353)	(2273.315)	
Consumption (Monthly)	11550.200	11442.339	0.890
	(640.860)	(449.965)	
Own Enterprise	0.412	0.367	0.293
	(0.030)	(0.030)	
Cut Meals Kids	0.442	0.426	0.734
	(0.035)	(0.034)	
% Sick Household Members	0.466	0.492	0.376
	(0.021)	(0.021)	
Domestic violence	0.068	0.127	0.107
	(0.022)	(0.030)	
Stroop time	140.825	138.999	0.738
	(3.640)	(4.074)	
Stroop errors	5.918	5.166	0.177
	(0.424)	(0.359)	
Raven's score	5.246	5.148	0.640
	(0.148)	(0.149)	
Working memory score	4.955	5.095	0.158
	(0.062)	(0.078)	
Cognitive failures score	21.494	20.805	0.357
	(0.545)	(0.512)	
N	262	264	
F-test (joint) p-val	0.289		

Note: The table presents results from a randomization balance check for the less versus more recent token transfer treatment. Columns 1 and 2 present the mean and standard errors (in brackets) for the respective groups. Details on the construction of the covariates are in Appendix B. The p-value presented in the third column is from an F-test of joint orthogonality of treatment assignment for each covariate of interest. The F-test of the null of joint orthogonality of all covariates to predict treatment assignment is presented at the bottom of the table.

Table A.3: Randomization Balance: Tranche Assignment

	1 Tranche	2 Tranches	Preferred Tranches	p-value
Female	0.676	0.679	0.510	0.064
	(0.032)	(0.032)	(0.072)	
Age	34.218	34.907	32.283	0.436
	(0.858)	(0.914)	(1.843)	
N. HH Members	4.325	4.476	4.094	0.467
	(0.133)	(0.149)	(0.302)	
N. Children	2.256	2.374	1.962	0.339
	(0.119)	(0.127)	(0.247)	
Education	7.949	8.256	8.434	0.513
	(0.233)	(0.233)	(0.393)	
Income	32010.407	27934.928	35125.000	0.648
	(5020.247)	(2540.528)	(6100.363)	
Assets (No Land)	40125.024	39327.034	31968.851	0.328
	(2613.613)	(2312.316)	(2705.488)	
Consumption (Monthly)	11910.573	10824.267	12801.062	0.237
	(624.729)	(484.907)	(1629.741)	
Own Enterprise	0.410	0.370	0.415	0.638
	(0.032)	(0.032)	(0.068)	
Cut Meals Kids	0.412	0.470	0.452	0.526
	(0.036)	(0.037)	(0.078)	
% Sick Household Members	0.476	0.487	0.467	0.904
	(0.022)	(0.023)	(0.046)	
Domestic violence	0.103	0.103	0.000	0.271
	(0.028)	(0.028)	(0.000)	
Stroop time	136.767	142.016	136.796	0.627
	(3.657)	(4.467)	(7.472)	
Stroop errors	5.136	5.804	5.647	0.518
	(0.415)	(0.429)	(0.781)	
Raven's score	5.248	5.141	5.300	0.853
	(0.164)	(0.156)	(0.299)	
Working memory Score	4.898	5.100	5.245	0.049
	(0.076)	(0.074)	(0.129)	
Cognitive failures Score	21.601	20.705	21.151	0.532
	(0.561)	(0.579)	(1.037)	
Recent Token	0.534	0.476	0.396	0.147
	(0.033)	(0.033)	(0.068)	
N	234	227	53	
F-test (joint) p-val	0.1422			

Note: The table presents results from a randomization balance check for the tranche assignment treatment (1 vs 2 tranches, or assignment to preferred number of tranches). Columns 1 and 2 present the mean and standard errors (in brackets) for each treatment arm. Details on the construction of the covariates are in Appendix B. The p-value presented in Column 4 is from an F-test of joint orthogonality of treatment assignment for each covariate of interest. The F-test of the null of

Table A.4: Randomization Balance: Months of Delay

	0	1	2	3	4	5	6	7	8	9	10	11	Pref	p-val
Female	0.667	0.741	0.632	0.615	0.655	0.661	0.667	0.778	0.706	0.579	0.500	0.667	0.627	0.904
	(0.063)	(0.060)	(0.064)	(0.068)	(0.065)	(0.064)	(0.114)	(0.101)	(0.114)	(0.116)	(0.121)	(0.114)	(0.068)	
Age	34.186	33.883	35.750	33.847	34.203	33.407	30.737	35.158	35.579	33.158	37.158	41.684	32.482	0.583
	(1.603)	(1.769)	(1.996)	(1.952)	(1.554)	(1.533)	(1.913)	(3.656)	(3.464)	(3.451)	(2.676)	(3.999)	(1.603)	
N. Household Members	4.559	4.350	4.717	4.000	4.610	4.458	4.421	3.895	4.316	4.158	4.474	4.158	4.196	0.899
	(0.296)	(0.255)	(0.291)	(0.234)	(0.302)	(0.264)	(0.537)	(0.445)	(0.446)	(0.531)	(0.569)	(0.553)	(0.294)	
N. Children	2.542	2.383	2.300	2.017	2.475	2.271	2.368	1.842	2.368	2.263	2.579	1.895	2.071	0.900
	(0.261)	(0.227)	(0.244)	(0.227)	(0.275)	(0.198)	(0.399)	(0.353)	(0.460)	(0.404)	(0.497)	(0.529)	(0.248)	
Education	8.847	7.533	8.033	8.051	8.576	7.949	8.316	7.632	7.842	7.316	8.421	7.105	8.482	0.659
	(0.484)	(0.411)	(0.416)	(0.510)	(0.400)	(0.496)	(1.003)	(0.668)	(0.727)	(0.726)	(0.998)	(0.898)	(0.361)	
Income	33741.071	30526.786	24037.037	28498.246	42124.561	28203.571	23833.333	19166.667	31294.118	78444.444	15976.471	22823.529	20514.286	0.068
	(5136.750)	(6053.356)	(4168.948)	(5453.805)	(6928.007)	(3633.897)	(7123.674)	(3704.352)	(12236.867)	(54622.664)	(2315.033)	(5837.402)	(2981.011)	
Assets (No Land)	41596.132	37199.293	35287.873	30382.300	48412.308	35925.370	38659.375	38976.071	41317.647	59558.889	42826.471	32940.000	37447.851	0.198
	(4876.808)	(4568.029)	(3466.057)	(3404.627)	(5762.159)	(4031.954)	(7863.610)	(8754.899)	(11786.492)	(16659.207)	(7892.114)	(5223.063)	(3743.620)	
Consumption	11241.870	11993.288	11810.848	11399.916	11615.001	10548.816	11197.801	10065.476	10111.053	12084.363	13048.858	13299.647	11628.132	0.992
	(852.475)	(1314.615)	(1129.706)	(1603.677)	(991.146)	(996.257)	(1385.690)	(1641.775)	(1066.270)	(2155.259)	(2420.123)	(3357.815)	(1089.156)	
Own Enterprise	0.339	0.400	0.417	0.458	0.305	0.373	0.474	0.579	0.263	0.368	0.474	0.316	0.393	0.658
	(0.062)	(0.064)	(0.064)	(0.065)	(0.060)	(0.063)	(0.118)	(0.116)	(0.104)	(0.114)	(0.118)	(0.110)	(0.066)	
Cut Meals Kids	0.340	0.420	0.500	0.438	0.479	0.438	0.444	0.250	0.500	0.538	0.571	0.357	0.409	0.823
	(0.070)	(0.071)	(0.071)	(0.072)	(0.073)	(0.072)	(0.121)	(0.112)	(0.139)	(0.144)	(0.137)	(0.133)	(0.075)	
% Sick in Household	0.516	0.517	0.469	0.470	0.460	0.421	0.512	0.574	0.350	0.430	0.517	0.585	0.469	0.589
	(0.043)	(0.042)	(0.040)	(0.043)	(0.047)	(0.043)	(0.083)	(0.084)	(0.067)	(0.075)	(0.079)	(0.088)	(0.051)	
Domestic Violence index	0.034	0.079	0.067	0.034	0.097	0.185	0.429	0.111	0.091	0.000	0.125	0.200	0.083	0.177
	(0.034)	(0.044)	(0.046)	(0.034)	(0.054)	(0.076)	(0.202)	(0.111)	(0.091)	(0.000)	(0.125)	(0.133)	(0.058)	
Stroop time	129.227	154.046	132.269	134.834	143.688	145.069	138.178	149.622	123.541	126.638	134.999	148.400	145.992	0.595
	(7.741)	(8.536)	(8.462)	(7.945)	(9.076)	(7.690)	(17.518)	(16.248)	(9.923)	(9.853)	(11.084)	(15.345)	(8.218)	
Stroop errors	5.089	5.709	4.627	7.377	5.286	5.250	4.737	4.444	6.056	5.824	5.611	7.067	5.434	0.752
	(0.603)	(0.794)	(0.840)	(1.195)	(0.862)	(0.581)	(1.645)	(1.183)	(2.190)	(1.151)	(1.491)	(1.914)	(0.662)	
Raven's score	5.455	5.000	5.157	5.075	5.673	5.105	5.368	5.222	5.333	5.647	5.529	4.267	4.792	0.710
	(0.276)	(0.301)	(0.325)	(0.282)	(0.298)	(0.368)	(0.563)	(0.515)	(0.600)	(0.521)	(0.570)	(0.613)	(0.323)	
Working memory Score	4.889	4.943	5.163	5.077	5.161	4.930	5.263	4.778	4.944	4.688	5.444	4.600	5.120	0.422
	(0.144)	(0.141)	(0.152)	(0.140)	(0.159)	(0.152)	(0.263)	(0.207)	(0.274)	(0.176)	(0.202)	(0.254)	(0.175)	
Cognitive failures Score	20.966	22.102	22.086	19.000	21.305	19.593	22.158	23.474	22.167	19.579	20.947	24.421	21.089	0.407
	(1.103)	(1.092)	(1.059)	(1.107)	(1.068)	(1.186)	(1.974)	(1.575)	(1.221)	(2.296)	(2.250)	(1.774)	(1.270)	
Recent Token	0.525	0.533	0.533	0.373	0.508	0.475	0.579	0.474	0.579	0.526	0.316	0.474	0.589	0.609
	(0.066)	(0.065)	(0.065)	(0.063)	(0.066)	(0.066)	(0.116)	(0.118)	(0.116)	(0.118)	(0.110)	(0.118)	(0.066)	
N	59	60	60	59	59	59	19	19	19	19	19	19	54	
F-test (joint) p-val	0.2486													

Notes: The table presents results from a randomization balance check for the delay assignment treatment (from 0 to 12 months of delay). A delay of 0 corresponds to being assigned to receive treatment in the first available month (February 2015). Columns 1-12 present the mean and standard errors (in brackets) for each treatment arm. Details on the construction of the covariates are in Appendix B. The p-value presented in the third column is from an F-test of joint orthogonality of treatment assignment for each covariate of interest. The F-test for joint orthogonality of all covariates to predict treatment assignment is presented at the bottom of the table.

Table A.5: Compliance with Tranche Assignment

	Actual Tranches		
Assigned Tranches	1	2	Total
1	234	0	234
2	0	222	222
Total	239	222	456

Notes: The table illustrates compliance with experimentally assigned transfer tranching. The rows represent the number of tranches each household was assigned to receive, and the columns represent the number they actually received. Entries in the diagonal cells are thus compliers, and those in the off-diagonal cells are non-compliers. For details on non-compliance, please refer to section 2.2 in the main paper.

Table A.6: Compliance with Timing Assignment: Transfer Onset

	Adjusted Delay												
Assigned Delay	0	1	2	3	4	5	6	7	8	9	10	11	Total
0	56	0	0	0	0	0	0	0	0	0	0	0	56
1	0	55	1	0	0	0	0	0	0	0	0	0	56
2	0	0	56	0	1	0	0	0	0	0	0	0	57
3	0	0	0	54	1	1	0	0	0	0	0	0	56
4	0	0	0	0	56	1	1	0	0	0	0	0	58
5	0	1	0	0	0	54	0	2	0	0	0	0	57
6	0	0	0	0	0	0	18	0	1	0	0	0	19
7	0	1	0	0	0	0	0	18	0	0	0	0	19
8	0	1	0	0	0	0	0	0	18	0	0	0	19
9	0	0	0	0	0	0	0	0	0	18	0	0	18
10	0	1	0	0	0	0	0	0	0	0	18	0	19
11	0	0	0	0	0	0	0	0	0	0	0	18	18
Total	56	59	57	54	58	56	19	20	19	18	18	18	452

Notes: The table illustrates compliance with experimentally assigned transfer timing. The rows represent the month in which each household was assigned to begin receiving transfers, and the columns represent the months in which they actually began receiving transfers. Entries in the diagonal cells are thus compliers, and those in the off-diagonal cells are non-compliers. For details on non-compliance, please refer to section 2.2 in the main paper.

Table A.7: Attrition

	(1) Tranches	(2) Delay
Assigned preferred # of tranches	-0.00726	
	(0.0630)	
Assigned 1 Tranche	-0.00198	
	(0.111)	
Assigned 2 Tranches	0	
	(0)	
Assigned preferred months of delay		0.0185
		(0.0415)
Assigned 0 months of delay		-0.0198
		(0.0444)
Assigned 1 month of delay		0.0307
		(0.0890)
Assigned 2 months of delay		-0.00292
		(0.0654)
Assigned 3 months of delay		0.0479
		(0.103)
Assigned 4 months of delay		0.0134
		(0.0610)
Assigned 5 months of delay		-0.00471
		(0.0844)
Assigned 6 months of delay		-0.00292
		(0.0109)
Assigned 7 months of delay		-0.00292
		(0.0154)
Assigned 8 months of delay		0.0497
		(0.0531)
Assigned 9 months of delay		-0.0556
		(0.0693)
Assigned 10 months of delay		-0.00292
		(0.00453)
Assigned 11 months of delay		0
		(0)
N	512	512
F-statistic	0.000317	0.07
p-value	0.986	0.935

Notes: The table presents attrition by treatment arm. Each column reports the results of a separate regression. The outcome in each regression is an indicator equal to one if the household was

Table A.8: Preferences for Cash Transfer Structures

	1st Ranked Tranche Structure				
Delay Preference	1	2	4	12	Total
0	131	253	3	2	389
1	29	47	3	0	79
2	11	12	1	0	24
3	3	6	0	0	9
4	2	3	0	0	5
5	1	0	0	0	1
6	4	0	0	0	4
7	1	0	0	0	1
10	1	0	0	0	1
Total	183	321	7	2	513

Notes: The table presents the joint distribution of recipients first-choice preferences over transfer tranches (column) and timing (rows), where timing preferences are described in months of delay relative to February 2015.

Table A.9: Token Transfer Timing and Delay Preferences: A Nonparametric Test

Panel A. First timing choice (1 lump sum)			
1 Transfer Month	Recent token	Less recent token	
Feb-15	131	176	
Mar-15	52	35	
Apr-15	31	22	
May-15	7	8	
Jun-15	9	5	
Jul-15	2	2	
Aug-15	8	3	
Sep-15	0	1	
Oct-15	3	0	
Nov-15	0	1	
Dec-15	1	0	
Jan-16	1	0	
Total	245	253	498
Fisher's exact test p-value = 0.009			
Panel B. First timing choice (2 transfers)			
1st transfer month	Recent token	Less recent token	
Feb-15	186	210	
Mar-15	32	34	
Apr-15	14	6	
May-15	7	2	
Jun-15	5	1	
Jul-15	1	0	
Total	245	253	498
Fisher's exact test p-value = 0.040			

Notes: The table presents the full distribution of timing preferences for both the recent and less recent token transfer groups, along with results from a Fisher's exact test for a difference in these distributions. The first panel reports preferences conditional on receiving one tranche, and the second reports preferences conditional on receiving two tranches. Each row shows the number of participants preferring to receive the transfer in the indicated month. Columns divide participants into those assigned to receive a recent token transfer and a less recent token transfer. The p-values at the bottom of each panel are from Fisher's exact tests of the null of no difference between the distributions in the second and third columns.

Table A.10: Random Forest Classification Results

	Modal preference	PMT Covariates	All Covariates
Tranching	0.36	0.36	0.35
Delay	0.24	0.24	0.24

Notes: The table presents results from models trained to predict recipient preference for one rather than two tranches (first row) and for some rather than no delay (second row). The first column ("Modal preference") reports the error rate obtained if we simply predict that each household prefers the modal choice (which is two transfers with no delay). The second column reports the error rate obtained using a Generalized Random Forest model (Athey et al., 2019) trained on a limited set of baseline covariates akin to those commonly use in proxy means tests. The third column reports the error rate obtained using a GRF model trained on all available baseline covariates.

Table A.11: Effect of token transfer timing on delay preferences, by tranche preference

	(1)	(2)	(3)	(4)
Preferred Delay (months)	Get 1 - Prefer 1	Get 1 - Prefer 2	Get 2 - Prefer 1	Get 2 - Prefer 2
Recent token transfer	0.50**	0.42**	0.056	0.26***
	(0.21)	(0.19)	(0.12)	(0.080)
N	183	321	183	321
Mean	0.62	1.01	0.31	0.31

Notes: The table presents estimated effects of assignment to more recent token transfer receipt on participants' preferences for delay. Effects are presented separately for households that preferred to receive one tranche (Columns 1 & 3) versus two tranches (Columns 2 & 4), and for preferences over delay conditional on actually receiving one tranche (Columns 1 & 2) and versus two tranches (Columns 3 & 4). Statistical significance is denoted: $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.1$.

Table A.12: Impact of Financial Slack on Cognition

	(1) Raven's score	(2) CF score	(3) WM score	(4) Stroop time	(5) Stroop errors
Recent token	0.28*	0.50	0.12	-0.14	0.073
	(0.16)	(0.62)	(0.083)	(2.63)	(0.32)
N	455	507	476	458	458
Mean	5.41	19.5	5.02	116	4.21

Notes: The table presents estimated effects of a more recent token transfer receipt on measures of cognitive performance captured during the preferences survey. "Raven's score" refers to participants' score on Raven's progressive matrix test. "CF Score" refers to the Cognitive Failures score, a measure of self-reported cognitive failures experienced by participants in their daily life. "WM Score" refers to participants' working memory score, "Stroop time" and "Stroop errors" record the time to complete a Stroop test and the number of errors, respectively. Appendix B provides detailed variable definitions. "Recent Token" is equal to 1 for recipients assigned to receive the cash transfer 4 days (as opposed to 4 weeks) before the preference survey, and equal to 0 otherwise. Heteroskedasticity-robust standard errors are reported in parentheses. Statistical significance is denoted: $^{***}p < 0.01, ^{**}p < 0.05, ^{*}p < 0.1$.

Table A.13: Impact of Delay: Robustness to Omitting Controls

	Deliberation		Goal Progress		Δ Income		Assets + Expenditures	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
q_t	0.01***	0.04**	-0.005***	0.01***	-626	14400***	2818	9646
	(0.003)	(0.02)	(0.002)	(0.003)	(1122)	(2708)	(3494)	(17898)
q_t^2		-0.002**		-0.002***		-1222***		-555
		(0.001)		(0.0004)		(212)		(1424)
Tranches[= 2]	0.02	0.03**	0.03*	0.04*	12192*	18919*	-1281	1726
	(0.02)	(0.01)	(0.02)	(0.03)	(6720)	(10677)	(20521)	(21572)
N	424	424	424	424	393	393	424	424
Dependent variable mean	-0.00	-0.00	0.8	0.8	77732	77732	398082	398082

Notes: The table presents results analogous to those in Table 1 but omitting the additional covariates (an indicator for preference for one tranche, an indicator for preference for any delay, and assignment to recent token transfer) included there. Standard errors are clustered at the delay preference level by tranche assignment (14 clusters in total). Statistical significance is denoted: $^{***}p < 0.01,^{**} p < 0.05,^{*} p < 0.1$.

Table A.14: First-stage results

	Deliberation			Goal Progress			Δ Income			Assets + Expenditures		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
q_t	0.99***	1.00***	1.50	0.99***	1.00***	1.50	1.00***	1.01***	1.51	0.99***	1.00***	1.50
	(0.0039)	(0.019)	(1.26)	(0.0039)	(0.019)	(1.26)	(0.0034)	(0.019)	(1.23)	(0.0039)	(0.019)	(1.26)
q_t^2		-0.00076	0.97***		-0.00075	0.97***		-0.00085	0.98***		-0.00075	0.97***
		(0.0014)	(0.016)		(0.0014)	(0.016)		(0.0015)	(0.015)		(0.0014)	(0.016)
N	422	422	422	424	424	424	393	393	393	424	424	424
F-statistic	64003	1200		64003	1200		88094	1200		64003	1200	

Notes: The table presents results from the first-stage regressions underlying the estimated effects of delay in Table 1). Note that non-compliance with assigned transfer timing was slight (13 observations, see Table A.6 for details) and the estimated relationship are thus very strong. Each column group reports results for the sample for which the stated outcome is observed (and results are thus very similar across column groups). F-statistics reported in the final row are calculated using the method of Olea and Pflueger (2013) in cases with a single instrument and using the method of Kleibergen and Paap (2006) in cases with multiple instruments. Statistical significance is denoted: $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.1$.

Table A.15: Impact of Delay on Additional Outcomes

	Social Input		Assets		Expenditure		RVP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
q_t	-0.00074	0.015	5127.1**	11057.4	-2308.8	-1411.8	726.3	61598.8
	(0.0028)	(0.010)	(2392.1)	(13243.3)	(1429.8)	(9048.3)	(4644.0)	(49056.3)
q_t^2		-0.0013*		-481.8		-72.9		-4950.3
		(0.00072)		(1097.4)		(713.2)		(3785.8)
Tranches[= 2]	0.020**	0.027**	-3592	-979.8	2311	2706.1	-71417.6***	-44303.4**
	(0.0095)	(0.012)	(10750.3)	(13394.7)	(12194)	(10987.1)	(25207.1)	(17650.8)
N	424	424	424	424	424	424	417	417
Dependent variable mean	0.60	0.60	239509.5	239509.5	158572.7	158572.7	215781.9	215781.9

Notes: The table presents estimated effects of delay using the same specifications as in Table 1 but for additional outcomes. "Social input" is an index indicating the extent to which a participant consulted their social network when deciding on the use of the grant transfer. "Assets" is the value of assets owned by the participant at endline. "Expenditure" is the annualized value of the participant's expenditure at endline. "RVP" is the restrospective valuation (in KES) respondents assigned to the things they purchased using the transfer. Appendix B provides more detailed descriptions of these variables. Standard errors are clustered at the delay preference level by tranche assignment (14 clusters in total). Statistical significance is denoted: $^{***}p < 0.01, ^{**}p < 0.05, ^{*}p < 0.1$.

B Variable definitions

- The *cash unspent %* variable equals one minus the ratio of the amount of the token transfer the household reported having spent to the amount of the token transfer it was issued.

- The *current income* variable corresponds to the answer, in KES, to the endline survey question, "What is your current level of annual income (in the last 12 months)?" The variable Δ *income* variable is equal to current income minus the analogous value from the baseline survey.

- The *cut meals kids* variables corresponds to participants' answer to the question whether kids under 14 in the household skipped or cut size of meals during the last month (Yes or No).

- The *deliberation index* is constructed from questions asking about agreement with the following statements, all recorded on a scale from 1 = strongly disagree to 5 = strongly agree:

  - Looked for information on how to best use the money
  - Asked other people for advice on how to use the money
  - When deciding how to use this money, thought very carefully about it
  - When deciding how to use this money, thought about a specific goal
  - Thought a lot about how to use the money, even before receiving the first transfer
  - Made a quick decision on how to spend the money

  Responses to the last question were inverted so that 1 (5) implied the least (most) deliberation. All responses were standardized by creating a z-score for each variable, and aggregated as in an inverse covariance weight index following Anderson 2008.

- The *financial stress index* is constructed from responses to the following questions:

  - Money worries: how often respondent worried about money in the last 7 days (recorded on a scale from 1 = none of the time to 5 = all of the time)
  - Coping with bills: how much difficulty household had coping with bills/expenses in the last 7 days (recorded on a scale from 1 = a lot of difficulty to 3 = no difficulty)

  Responses to these questions were re-scaled linearly to the unit interval $[0, 1]$ and then averaged.

- The *domestic violence* variable is the response to the question whether the respondents' spouse was physically violent towards them during the last 1 month.

- The *goal progress* index is constructed from answers to the following questions, all recorded on a scale from 1 = no progress to 5 = a lot of progress:

  - Think about your goal for how much annual income you would like to achieve in your life. Since receiving the transfers, how much progress do you feel like you have made towards that goal?
  - Think about your goal for the assets you would like to achieve in your life. Since receiving the transfers, how much progress do you feel like you have made towards that goal?
  - Think about your goal for the social status you would like to achieve in your life. Since receiving the transfers, how much progress do you feel like you have made towards that goal?

  Responses to these questions were re-scaled linearly to the unit interval $[0, 1]$ and then averaged.

- The *cognitive failures score* is constructed from answers to questions about the frequency of the following events, all recorded on a scale from 0 = never to 4 = very often:

  - Forget whether did something simple in the last 7 days
  - Say something unintentionally insulting in the last 7 days
  - Fail to hear someone speaking while distracted in the last 7 days
  - Lose temper and regret later in the last 7 days
  - Forget which way to turn on road in the last 7 days
  - Cannot find something in the house in the last 7 days
  - Have trouble making decision in the last 7 days
  - Forget where put something in the last 7 days
  - Daydream in the last 7 days
  - Forget people's names in the last 7 days
  - Get distracted into doing something else in the last 7 days
  - Can't remember something on the tip of tongue in the last 7 days

  Responses to these questions were summed to arrive at a total score, where a lower score corresponds to fewer failures experienced and a higher score to more failures

experienced. The minimum score is 0, corresponding to no failures (answering "never" to each of the 12 questions), and the maximum score is 48, corresponding to many failures (answering "very often" to each of the 12 questions).

- The *Raven's score* corresponds to the sum of correct answers to ten Raven's progressive matrix puzzles. These puzzles were preceded by the following explanation, which enumerators read aloud:

  > In each puzzle the objective is to decipher the pattern in the upper box and complete the puzzle by choosing the correct box among the choices below. By looking at the way the pieces change from left-to-right and up-to-down, you can understand the pattern and find the symbol that completes the rightmost column and bottom row. We will now work through the first five puzzles together. Please ask any questions during the examples; once you begin the final 10 puzzles, I will no longer be able to answer your questions.

  The enumerator showed 5 examples of solved puzzles, and asked for questions. After this, the participant provided answers to 10 new puzzles sequentially, and the answers were recorded for each puzzle. Each correct answer is assigned a score of 1, each incorrect answer is assigned a score of 0. Hence, the minimum Raven's test total score is 0, and the maximum Raven's total score is 10.

- The *Stroop time* and *Stroop errors* outcomes were obtained from a game in which the respondent was presented with a series of rows of numbers and asked to identify the number of digits in each row. The enumerator first worked through a few examples with the respondent to ensure they understood the task, and then conducted a series of three Stroop tasks each consisting of 25 rows to be counted. During each task the enumerator used a stopwatch to measure the total amount of time, in seconds, taken to complete it, and also recorded the number of errors made. Our measure of time spent is the sum of the recorded times spent on these three Stroop tasks, and our measure of errors is the sum of the number of errors made. The minimum possible number of errors is 0, and the maximum possible is $3 \times 25 = 75$.

- The *Social input index* is constructed from answers to two groups of questions. The first were question about agreement with the following statements, all recorded on a scale from 1 = strongly disagree to 5 = strongly agree.

  - I asked other people (other than myself) for advice on how to use this money
  - The final decision on how to spend the money was one I made alone
  - When deciding how to spend the money, I thought a lot about whether other people would agree with the decision that I made

Responses to the second question were then reversed so that higher values indicated more input from other people. Responses were then re-scaled linearly to the unit interval $[0, 1]$. The second group of questions were about counts of categories of other people, as follows:

- When deciding how to spend the money, were you thinking about anyone in particular (including yourself)? Answer options included "myself," "my spouse," "my children," "my parents," "my other relatives," "my neighbors," "my friends," and "other, specify," with multiple responses allowed.
- Who do you think will benefit the most from how you decided to spend the money, in the long run? Answer options were as above.

We create a variable from these responses equal to the share of categories (other than "myself") mentioned, counting "other" as a single category. We then average all five variables to obtain our overall index.

- The *Restrospective valuation of things purchased (RVP)* variable was elicited as follows:

  > Think about everything that you spent the money on. Imagine that all of those things were in front of you right now (even the things that you might have consumed). Looking back from what you now know, how much would they have to pay you for you to be willing to give those things to them?"

  The answer to this question was recorded in KES.