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

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We examine the preferences of low-income households in rural Kenya over the structure of cash transfers they receive. We have three key findings. First, most prefer large, lumpy tranches, and many prefer some delay before receiving funds. These structures are quite different from those commonly used in public safety net programs, but coherent with other evidence on the financial lives of households in extreme poverty. Second, poverty itself affects choices over the timing of cash transfers: just a little financial slack (cash on hand) at the time of decision-making increases recipients' willingness to delay the cash transfer. Finally, financial slack pays back: some delay in transfer increases recipients' income (via better alignment with the seasonal agricultural cycle), improves deliberation over the use of funds (through time for planning) and progress towards their goals. Adapting the design of cash transfers to the decision-making environment of recipients has the potential to improve their financial choices and outcomes.

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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 and Masiye, 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 rich 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 recent work documenting demand for lumpiness in private-sector contracts (Brune et al., 2021; Casaburi and Macchiavello, 2019). More broadly, it is consistent with work showing that lumpy asset transfers can play a role in accelerating investment (Banerjee et al., 2015; Haushofer and Shapiro, 2016) if not escape outright from a poverty trap (Balboni et al., 2021).

Most recipients also preferred to receive transfers starting immediately (as many models would predict). Yet intriguingly, a sizeable 27% minority preferred at least some *delay*, i.e. transfers commencing in a month after February 2015, the earliest option. 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

[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).

per se, in order to better plan their spending (consistent with, for example, the predictions and evidence in Thakral and Tô (2020, 2022) that more advance notice of a transfer reduces consumption overall and of temptation goods in particular). Other recipients sought to align transfer timing to seasonal agricultural demands, for instance, to ensure 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, hinting at potential behavioral factors influencing progress out of poverty.

These patterns call to mind questions of poverty dynamics: ways in which today's financial situation influences forward-looking choices (Coffman et al., 2019), which in turn affect tomorrow's financial situation. The mechanisms at play here may be quite subtle. For example, recent evidence has illustrated how the experience of "scarcity" itself, or the financial stresses of extreme poverty, can impede cognitive function (Mani et al., 2013) and either impede or sharpen decision-making, depending on the domain (Mullainathan and Shafir, 2013; Fehr et al., forthcoming).[2] However, full causal feedback loops are yet to be traced, since "studies examining effects on economic outcomes and behaviors remain scarce" (Kremer et al., 2019).

To examine this loop, 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. They also reported fewer difficulties coping with bills and scored higher on Raven's tests of cognitive ability, suggesting that scarcity played some (if not the only) role here.

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.[3] 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.

Taken together, we see these findings as opening doors for further work in two (related)

[2]Studies of productivity similarly suggests that scarcity can make it difficult to focus and reason clearly (Kaur et al., 2021; Duquennois, 2022).

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

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 (henceforth GD) had been working for several years. The economy is primarily agricultural, with 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, which we discuss further below.

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.[4] In our own data we see borrowing for a variety of reasons, including investment in farm (12%) or non-farm (16%) enterprise as well as consumption-smoothing purposes such as paying medical expenses (23%), school fees (23%), for food (18%), and for funerals (8%). Overall, households appear to face challenges managing seasonal cash flows and financial shocks typical for those living in or near extreme 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 each 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. 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 (Figure 1). During enrollment GD staff conducted a baseline survey of 533 households. Of these, 20 were subsequently removed during back-checks conducted to verify eligibility, 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 pref-

[4]Interestingly, Egger et al. do not find evidence of a "kin tax" on GD transfers. Family and friends may of course still play an important role in households' financial decision-making.

erences 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 or "pure" preferences for delay, e.g. to have time to plan.

We randomized the timing of the token transfers relative to this preferences survey. Half the participants were randomly 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).[5] 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.[6]

Staff elicited preferences over the structure of the main (post-token) transfers in two steps.[7] First, they asked about participants' preferred number of tranches among four 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.

To motivate participants to declare their true preferences, 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 (the same) 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. 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 we had told them we would. Because the one- and two-tranche options were (as we discuss below) the

[5] Note that a handful of households were surveyed later than scheduled due to various logistical delays; omitting these households does not substantively change any of the results.

[6] Potentially reinforcing this effect, the December group happened to receive token transfers on 24th December, so may have been more likely to spend them on holiday expenses.

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

most popular, 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. 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 decisions and outcomes, and current income and assets. Of the 513 households in our sample we successfully interviewed 479, or 93%, at endline. We discuss relevant variables in more detail below along with the corresponding results; a full description of the data collected is in Appendix B.

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).[8] With respect to timing (Table A.6), ten subjects (2%) received transfers 1-2 months later than assigned due to delays registering with GD and M-Pesa, 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 report 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, with the great majority of participants (86.4%) saying (for example) that twelve monthly payments was their least-preferred option (see Figure A.2 for 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

[8] 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.

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 tranche, conditional on other characteristics (Figure A.3). Also, choosing lumpy transfers actually exposed recipients to *greater* uncertainty about when they would arrive—timing was most certain under the twelve-tranche option.

Participants' qualitative remarks when asked about these preferences illustrate several coherent rationales for lumpy transfers. Many mentioned the need to finance lumpy investments or to 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 who preferred two tranches to one described benefits of splitting the money in this way:

> 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 are consistent 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). In some cases they also indicate a degree of psychological sophistication (Laibson, 1997).[9]

[9] A stream of small transfers would also have resulted in slightly higher M-PESA withdrawal fees for a recipient who cashed out each transfer separately, but the difference was small (e.g. USD 5 more in total to cash out USD 965 in 12 as opposed to 2 tranches) and only two respondents (0.4%) mentioned the issue, suggesting that it was not a major factor.

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% preferred three or fewer.[10] 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 commitment problems. In Brune et al. (2021), Malawian employees opt to partially defer wage payments at 0% interest, consequently receiving larger tranches and purchasing more lumpy goods. These examples underscore the point that "building lump sums" is a core financial challenge facing low-income households (Collins et al., 2009).

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 results on demand for commitment savings devices, e.g. Ashraf et al. (2006)). Demand for delay was meaningful for one, two, or 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 is almost always small, 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 are not easy to reconcile with this interpretation, however. Cognitive measures from the baseline are significantly *positively* correlated with choosing delay ($p < 0.05$; see 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 spoke of gaining 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 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). They also point to another potentially Pareto-improving way to refine cash transfer designs: small, optional delays to accommodate seasonality (and other factors) could

[10] See `https://www.givedirectly.org/recipient-preference/`.

benefit participants while at the same time deferring public expenditures.

3.3 Are preferences predictable?

We next examine to what extent household characteristics explain variation in preferences over transfer structure. 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—if life-cycle considerations play a role, for example, we might expect age to be an important predictor.

In practice, we find that covariates have essentially *no* predictive power for preferences in our data. We learn models to predict preference for one tranche (over two) and for any delay (as opposed to none) 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 an out-of-sample prediction. 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. In either case 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 not predicted by other characteristics, it strongly predicts (we will see below) 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 the effects of variation in the timing of the small token transfer that GD issued to participants *before* eliciting their preferences. 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, and may even be an upper bound on the true impact on "financial slack" broadly defined, to the extent the early token group simply had more time to convert cash into other relatively liquid balances (e.g. stocking up on food) or 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.[11]

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

What explains this sensitivity? Recent token receipt did reduce self-reported difficulty dealing with bills as of the preferences survey, though not worries about money generally (Figure 3). It had a positive and significant ($p = 0.054$) impact on respondents' Ravens score, our preferred measure of cognition, as well as generally positive (but insignificant) effects on other measures (Table A.12). It did not affect the time horizon respondents reported considering when making their decisions (Figure A.4), as one might expect if it affected self-control or patience. We read these patterns as suggesting that "scarcity" played a role here. 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 may be.

4.2 Downstream impacts

To complete our examination of this causal loop 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) and noting any deviations. In the interests of brevity, we focus 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 online.

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

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

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 including an indicator for number of tranches received and indicators for preferences over structure. As pre-specified we estimate a non-linear specification as well as a linear one, omitting the quadratic term.[12] We use only the 90% of participants assigned a random (as opposed to preferred) timing, so that assigned 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.[13]

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).[14] The implied effect sizes are

[12] Equation 1 generalizes the model in our pre-analysis plan, which specified outcomes as a function of the average month of transfer receipt. Here, outcomes are an average of a function of the months of transfer receipt. This latter order of operations is more appropriate given that (in the data) mean outcomes are non-linear in month of transfer receipt. Equation 1 also adds 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).

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

[14] Given space constraints we report estimated effects on assets and expenditure individually, and on two

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, the goals index is quite broad—covering goals with respect to earnings, assets, and social standing—and based on recipients' own definitions of goals rather than ours; in these senses we see it as reasonably informative about overall well-being.

Too much delay, on the other hand, reduces 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 how 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).[15]

Interestingly, preferences for delay also strongly predict most outcomes. Recipients that preferred some delay subsequently saw more income growth and goal progress, despite deliberating *less*. These patterns are of course purely correlational. But they 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 recipients are aware of this trait and seek decision supports such as delay to offset it, helping them to achieve better results.

Sample size limits what we can confidently say about the mechanisms, particularly given our focus on the effects of fairly subtle differences in the structure of a *given* transfer, as opposed to transfer receipt per se. That said, we briefly summarize here 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 an non-agricultural enterprise investment channel for the impact of delay. Effects on various secondary outcomes are broadly consistent with this: the inverse-U shaped pattern we see for overall income is not mirrored in measures of agricultural earnings or agricultural investment, for example, but is for a simple indicator of non-agricultural investment: whether the household started or invested in a non-agricultural enterprise using its transfer (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 other studies in the area, where lumpy transfers drive structural transformation through diversification from farming into non-agricultural enterprise (Egger et al., forthcoming; Orkin et al., 2022).

additional pre-specified outcomes (a social input index, and self-reported valuation of items purchased), in Table A.15. These generally follow the same pattern we see here, though most are imprecise.

[15] 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—even the very latest transfers were a full 7 months before endline—but in any case the essential point for our argument here is that *some* delay can be beneficial.

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 (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 recipients received. Loosely, one can thus think of the USD 6 impact on 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.[16] And the calculation itself is subject to important caveats: it presumes homogenous treatment effects, for example. 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 of these currently provide small, regular payments. Some have asked how to make them more "graduative," in the sense that participation makes households less likely to need them in the 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.

More broadly, the results highlight a range of opportunities for ongoing experimentation with the structure of transfer programs. Future work could explicitly price out recipients' valuations of different design features, for example, using richer menus to quantify *how much* more they value some over others. Menus could include contingent structures—with payouts conditional on weather indices, for example—to see whether embedding insurance within a transfer scheme

[16] 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.

can reduce barriers to take-up (including both direct 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, or to better availability of financial products (whose absence may explain the preferences we observe). Finally, it could intersect these questions with issues of intra-household decision-making, informing policy design that is more equitable within as well as across households.

References

Anderson, Michael L, "Multiple inference and gender differences in the effects of early intervention: A reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects," *Journal of the American statistical Association*, 2008, *103* (484), 1481–1495.

Ashraf, Nava, Dean Karlan, and Wesley Yin, "Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines," *Quarterly Journal of Economics*, May 2006, *121* (2), 635–672.

Athey, Susan, Julie Tibshirani, and Stefan Wager, "Generalized random forests," *The Annals of Statistics*, 2019, *47* (2), 1148 – 1178.

Balboni, Clare, Oriana Bandiera, Robin Burgess, Maitreesh Ghatak, and Anton Heil, "Why Do People Stay Poor?*," *The Quarterly Journal of Economics*, 12 2021, *137* (2), 785–844.

Banerjee, Abhijit, Esther Duflo, Nathanael Goldberg, Dean Karlan, Robert Osei, William Parienté, Jeremy Shapiro, Bram Thuysbaert, and Christopher Udry, "A multifaceted program causes lasting progress for the very poor: Evidence from six countries," *Science*, 2015, *348* (6236), 1260799.

_ **, Michael Faye, Alan Krueger, Paul Niehaus, and Tavneet Suri**, "Effects of a Universal Basic Income during the pandemic," Technical Report, UC San Diego 2020.

Battaglia, Marianna, Selim Gulesci, and Andreas Madestam, "Repayment Flexibility and Risk-Taking: Experimental Evidence from Credit Contracts," *CEPR Discussion Paper*, April 2021, (13329).

Brune, Lasse, Eric Chyn, and Jason Kerwin, "Pay Me Later: Savings Constraints and the Demand for Deferred Payments," *American Economic Review*, July 2021, *111* (7), 2179–2212.

_ **, Xavier Giné, Jessica Goldberg, and Dean Yang**, "Savings defaults and payment delays for cash transfers: Field experimental evidence from Malawi," *Journal of Development Economics*, 2017, *129*, 1–13.

Bryan, Gharad, Shyamal Chowdhury, and A.Mushfiq Mobarak, "Under-Investment in a Profitable Technology: The Case of Seasonal Migration in Bangladesh," *Econometrica*, September 2014, *82* (5), 1671–1758.

Burke, Marshall, Lauren Falcao Bergquist, and Edward Miguel, "Sell Low and Buy High: Arbitrage and Local Price Effects in Kenyan Markets*," *The Quarterly Journal of Economics*, 12 2018, *134* (2), 785–842.

Casaburi, Lorenzo and Jack Willis, "Time versus State in Insurance: Experimental Evidence from Contract Farming in Kenya," *American Economic Review*, December 2018, *108* (12), 3778–3813.

_ **and Rocco Macchiavello**, "Demand and Supply of Infrequent Payments as a Commitment Device: Evidence from Kenya," *American Economic Review*, February 2019, *109* (2), 523–55.

Coffman, Lucas, John Conlon, Clayton Featherstone, and Judd Kessler, "Liquidity affects Job Choice: Evidence from Teach for America," *Quarterly Journal of Economics*, November 2019, *134* (4), 2203–2236.

Collins, D., J. Morduch, S. Rutherford, and O. Ruthven, *Portfolios of the Poor: How the World's Poor Live on $2 a Day*, Princeton University Press, 2009.

Dupas, Pascaline and Jonathan Robinson, "Savings Constraints and Microenterprise Development: Evidence from a Field Experiment in Kenya," *American Economic Journal: Applied Economics*, January 2013, *5* (1), 163–92.

Duquennois, Claire, "Fictional Money, Real Costs: Impacts of Financial Salience on Disadvantaged Students," *American Economic Review*, March 2022, *112* (3), 798–826.

Egger, Dennis, Johannes Haushofer, Edward Miguel, Paul Niehaus, and Michael W Walker, "General Equilibrium Effects of Cash Transfers: Experimental Evidence from Kenya," *Econometrica*, forthcoming.

Fehr, Dietmar, Günther Fink, and B. Kelsey Jack, "Poor and Rational: Decision-Making under Scarcity," *Journal of Political Economy*, forthcoming.

Field, Erica, Rohini Pande, John Papp, and Natalia Rigol, "Does the Classic Microfinance Model Discourage Entrepreneurship among the Poor? Experimental Evidence from India," *American Economic Review*, October 2013, *103* (6), 2196–2226.

Fujii, Tomoki, Christine Ho, Rohan Ray, Abu Shonchoy et al., "Conditional Cash Transfer, Loss Framing, and SMS Nudges: Evidence from a Randomized Field Experiment in Bangladesh," Technical Report, Florida International University, Department of Economics 2021.

G., B.K. Jack Fink and F. Masiye, "Seasonal liquidity, rural labor markets and agricultural production," *American Economic Review*, November 2020, *110* (11), 3351–3392.

Gentilini, Ugo, Mohamed Almenfi, Ian Orton, and Pamela Dale, "Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures," Technical Report, World Bank 2022.

Glennerster, Rachel and Tavneet Suri, "Agriculture and Nutrition in Sierra Leone," Technical Report, Massachussetts Institute of Technology 2022.

Haushofer, Johannes and Jeremy Shapiro, "The Short-term Impact of Unconditional Cash Transfers to the Poor: Experimental Evidence from Kenya*," *The Quarterly Journal of Economics*, 07 2016, *131* (4), 1973–2042.

Kaur, Supreet, Sendhil Mullainathan, Suanna Oh, and Frank Schilbach, "Do Financial Concerns Make Workers Less Productive?," *Working paper*, 2021.

Kleibergen, Frank and Richard Paap, "Generalized reduced rank tests using the singular value decomposition," *Journal of econometrics*, 2006, *133* (1), 97–126.

Kremer, Michael, Gautam Rao, and Frank Schillbach, "Chapter 5 - Behavioral development economics," in B. Douglas Bernheim, Stefano DellaVigna, and David Laibson, eds., *Handbook of Behavioral Economics - Foundations and Applications 2*, Vol. 2 of *Handbook of Behavioral Economics: Applications and Foundations 1*, North-Holland, 2019, pp. 345–458.

Laibson, David, "Golden eggs and hyperbolic discounting," *Quarterly Journal of Economics*, May 1997, *112* (2), 443–478.

Mani, Anandi, Sendhil Mullainathan, Eldar Shafir, and Jiaying Zhao, "Poverty impedes cognitive function," *science*, 2013, *341* (6149), 976–980.

Morduch, Jonathan, "Rethinking Poverty, Household Finance, and Microfinance," *Handbook of Microfinance, Financial Inclusion, and Development, edited by Robert Cull and Valentina Hartarska*, 2021.

Mullainathan, Sendhil and Eldar Shafir, "Decision making and policy in contexts of poverty," *Behavioral foundations of public policy*, 2013, pp. 281–300.

Ndungu, Lilian, Anastasia Wahome, Robinson Mugo, Stephen Sande, Catherine Nakalembe, and Inbal Becker-Reshef, "Strengthening food security assessments in Kenya through implementation of a National Crop Monitor System," *Earth and Space Science Open Archive*, 2019, p. 1.

Olea, José Luis Montiel and Carolin Pflueger, "A robust test for weak instruments," *Journal of Business & Economic Statistics*, 2013, *31* (3), 358–369.

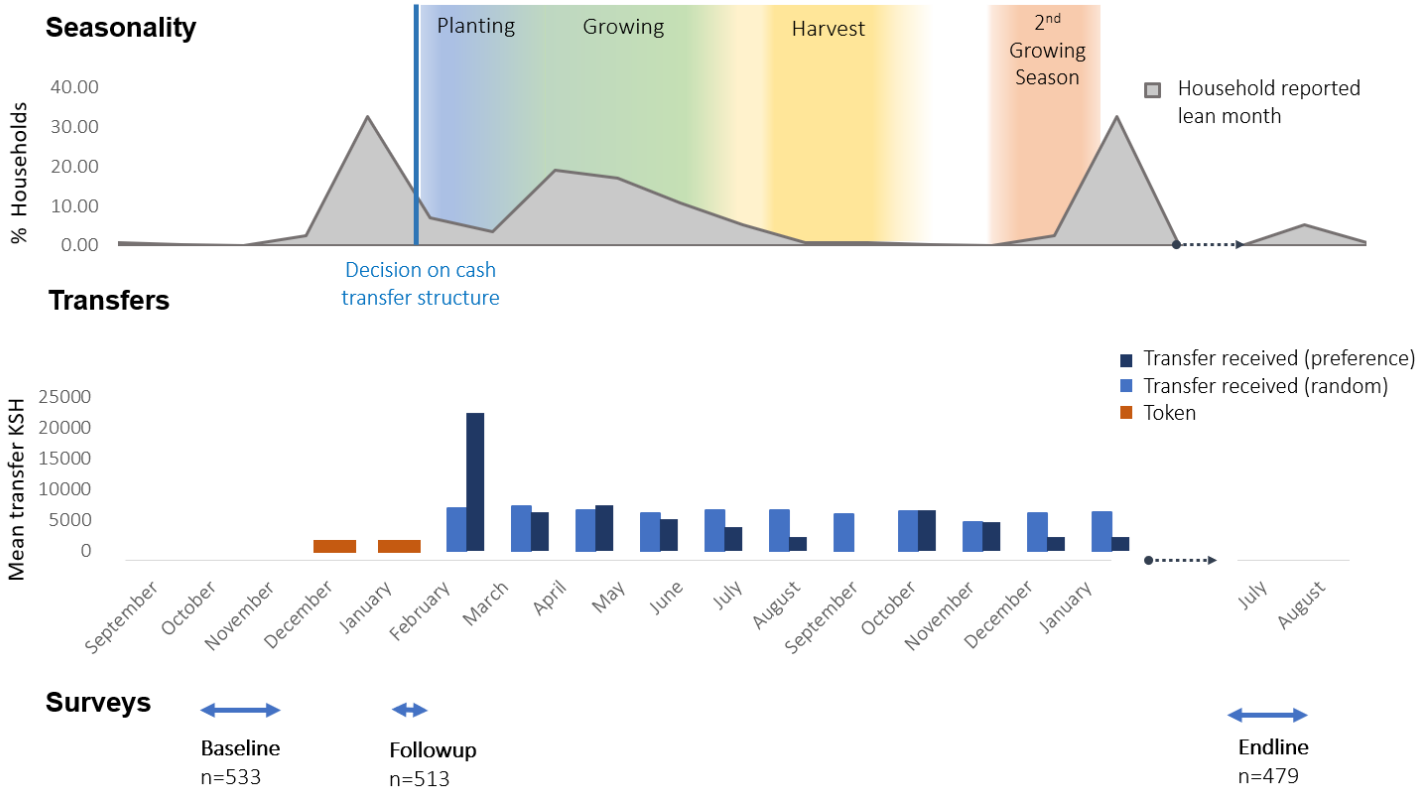
Orkin, Kate, Robert Garlick, Mahreen Mahmud, Richard Sedlmayr, Johannes Haushofer, and Stefan Dercon, "Aspiring to a Better Future: How a Simple Psychological Intervention Increases Investment," Technical Report, Duke University 2022.

Thakral, Neil and Linh T Tô, "Anticipation and Temptation," *Mimeo*, 2020.

_ **and** _ , "Anticipation and Consumption," *Mimeo*, 2022.

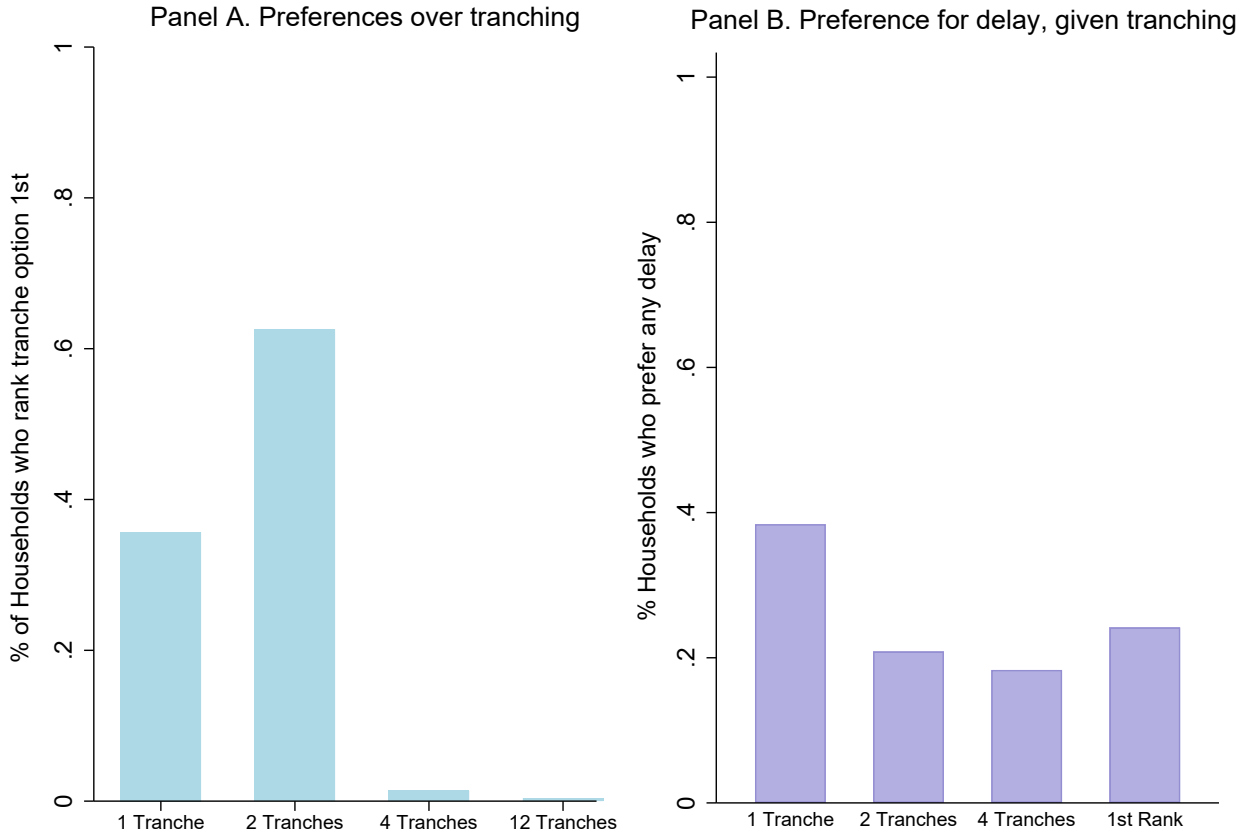
World Bank Group, "Closing the Gap : The State of Social Safety Nets 2017," Technical Report, The World Bank Group 2017.

Figure 1: Study Design and Timeline



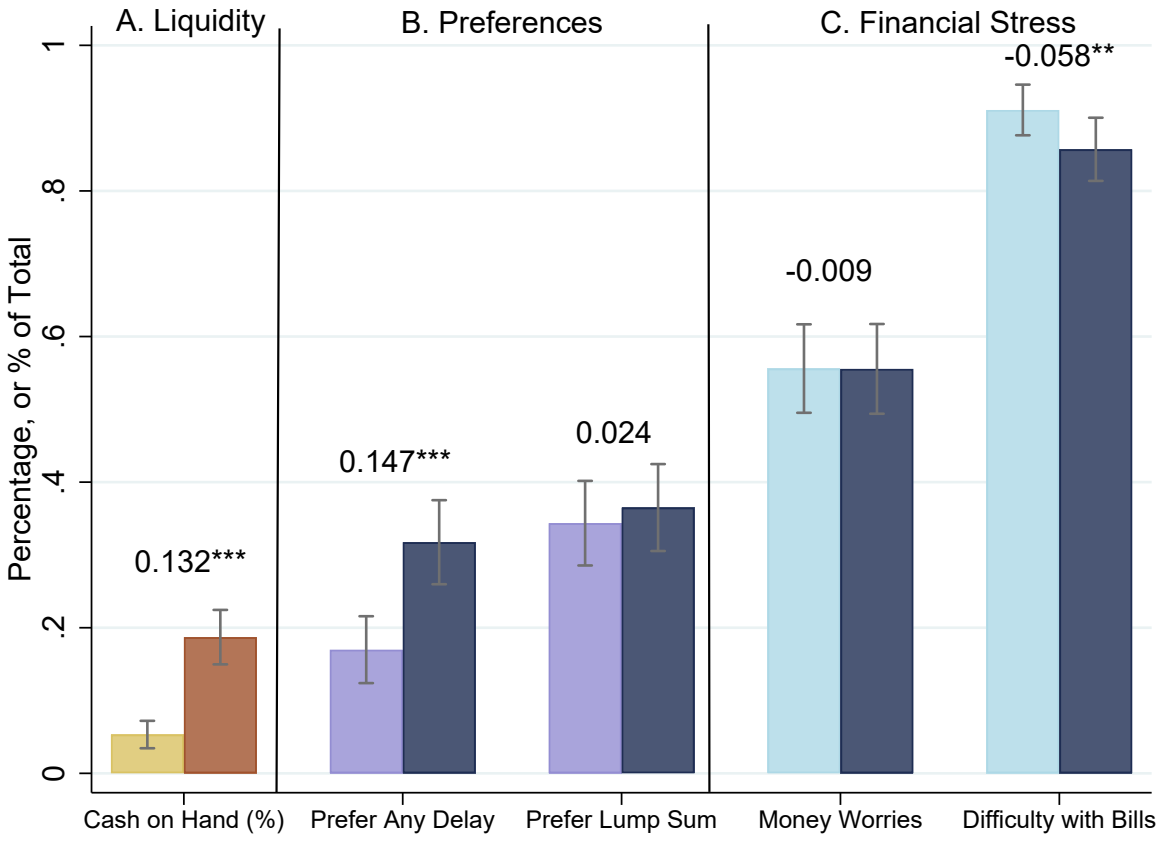
Notes: The figure displays the experiment design, the timeline of our study from September 2014 to August 2016 and how it overlaps with the seasonal agricultural cycle for maize, the main local crop. The top panel labelled 'Seasonality' displays the fraction of respondents who self-report financially lean versus slack months over different months of the year, overlaid over phases of the annual agricultural cycle (Ndungu et al., 2019). The middle panel titled 'Transfers' indicates the months of the token transfer disbursement, and the mean value in KES of transfers to participants disbursed according to their preferences or by random assignment. The bottom panel titled 'Measurement' indicates the timing of the baseline, preference, and endline surveys over the study period.

Figure 2: Preferences over Cash Transfer Structures



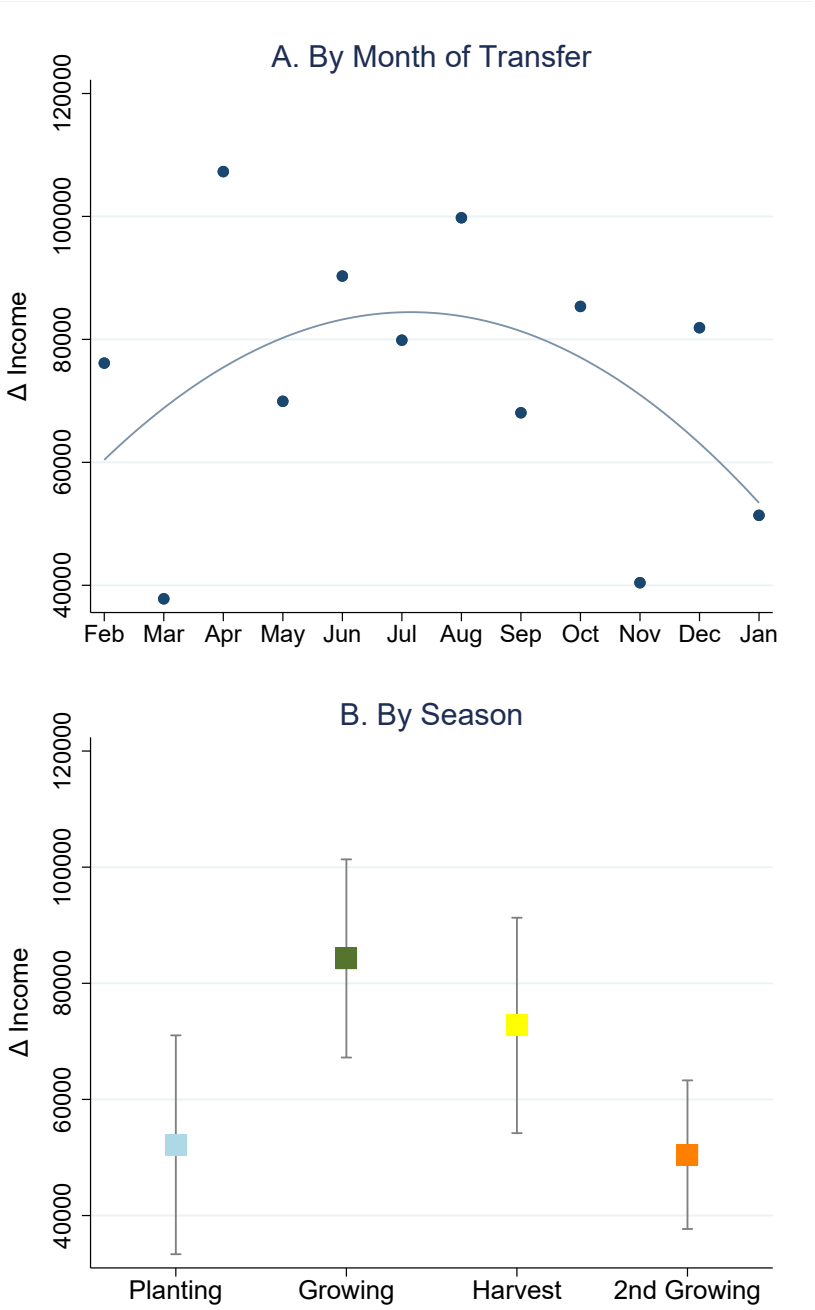
Notes: The figure displays participants' preferences over the number of tranches (1, 2, 4 or 12) and timing of their cash transfer. In the left panel, each bar displays the fraction of study participants who rank the number of tranches given on the x-axis label as their first preferred choice. In the 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 transfers 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 more v.s. less 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. 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). 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, estimated by regressing Δ income on the shares $q_{h,t}$ of the transfer received by household h in that month, and 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 $p = 0.865$.

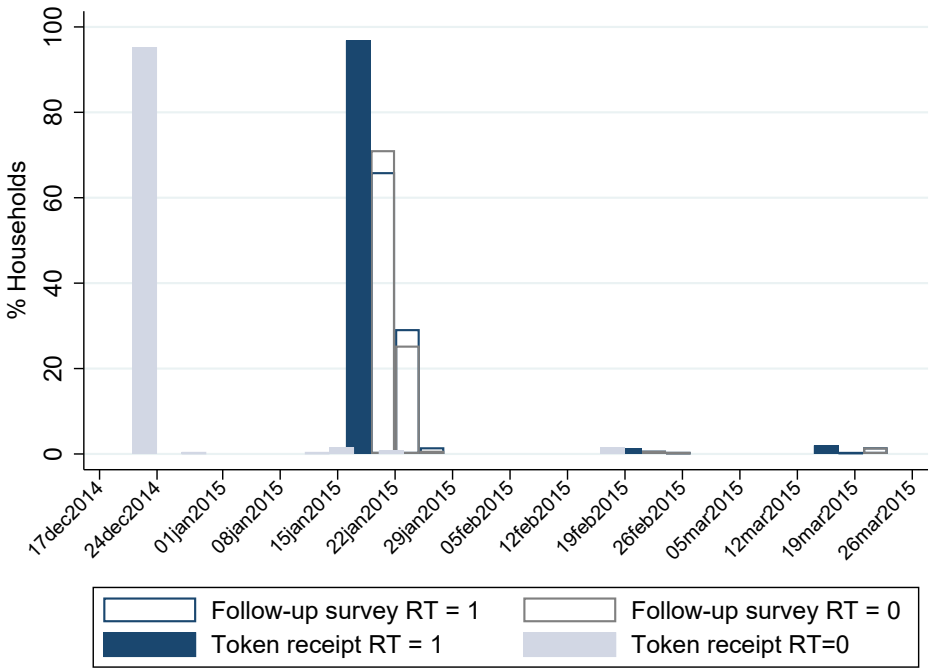
Table 1: Impact of Delay

	Deliberation		Goal Progress		Δ Income		Assets + Expenditures	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
q_t	0.021***	0.088***	-0.0043**	0.013***	-534.5	14114.4***	3081.0	9114.2
	(0.0042)	(0.020)	(0.0019)	(0.0037)	(1271.1)	(2765.8)	(3609.1)	(18145.4)
q_t^2		-0.0055***		-0.0014***		-1191.9***		-490.4
		(0.0014)		(0.00046)		(231.9)		(1433.7)
Any delay	-0.094**	-0.093**	0.053***	0.054***	10711.8**	10644.2**	15045.6	15137.7
	(0.044)	(0.043)	(0.0058)	(0.0062)	(4749.5)	(4462.3)	(14080.6)	(13773.2)
Prefer 1 tranche	0.0079	0.0035	0.0097	0.0086	888.8	622.2	20254.9	19873.7
	(0.036)	(0.037)	(0.021)	(0.023)	(3992.9)	(3848.1)	(26716.4)	(26772.6)
Recent token	0.041	0.040	-0.0096	-0.0100	4820.6	4391.1	6092.8	5943.4
	(0.032)	(0.032)	(0.0088)	(0.0095)	(20409.5)	(20676.0)	(27789.1)	(27732.0)
Tranches[= 2]	0.011	0.040*	0.037***	0.045***	12795.1***	19320.7**	956.7	3586.9
	(0.025)	(0.024)	(0.0066)	(0.0098)	(3685.3)	(7505.0)	(19731.8)	(21440.0)
N	422	422	424	424	393	393	424	424
Mean	-0.40	-0.40	0.81	0.81	77731.7	77731.7	398082.3	398082.3

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 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. 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 an 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. Statistical significance is denoted: $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.1$.

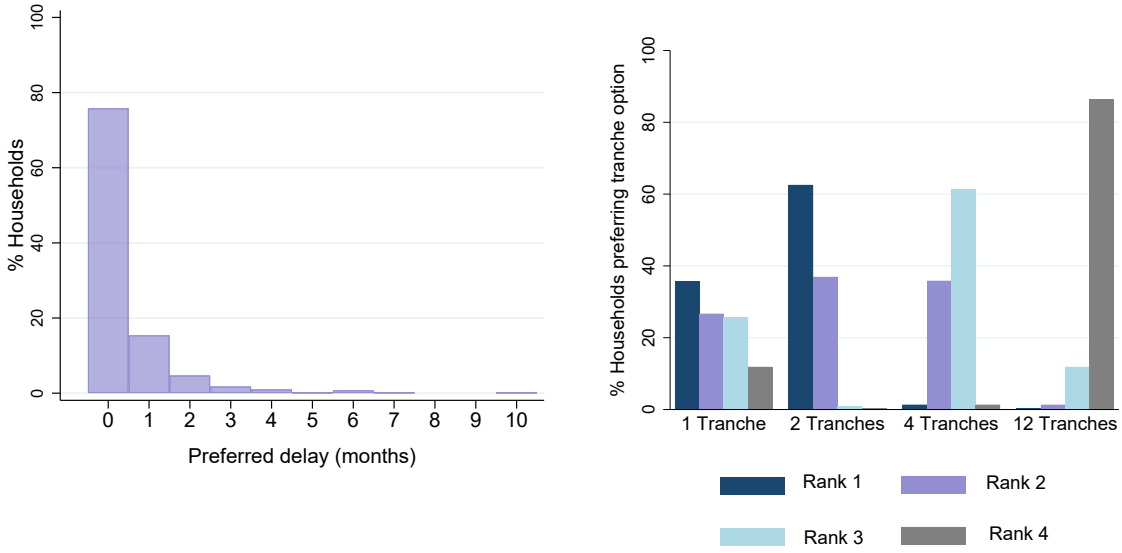
A Additional exhibits

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



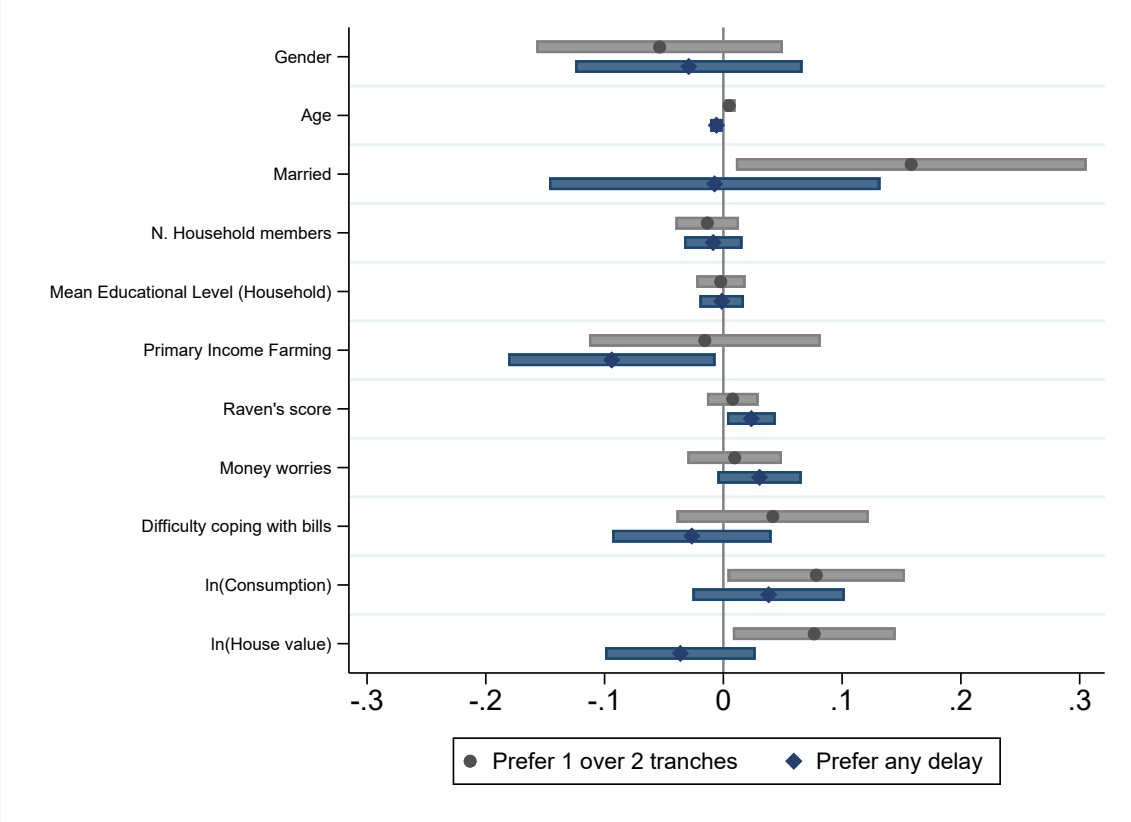
Notes: The figure presents the timing of preference survey interviews, divided by token transfer assignment status (hollow bars) and compliance with the token transfer treatment (filled bars). Dark-blue bars that are filled show token transfer receipt times for those in the sample randomly assigned to receive the transfer close to the follow-up survey dates, and hollow dark-blue bars show follow-up survey dates for those assigned to receive the transfer close to the follow-up survey date ("recent token" treatment). Gray bars that are filled show token transfer receipt dates for the control group, who received the transfer 4 weeks before the follow-up survey date, and gray hollow bars show follow-up survey dates for this group. The y-axis displays the percentage of households in the assignment group having an interview at the date displayed on the x-axis. The majority of interviews (94%) were conducted between 19-23 January 2015.

Figure A.2: Delay and tranche preferences: Distribution



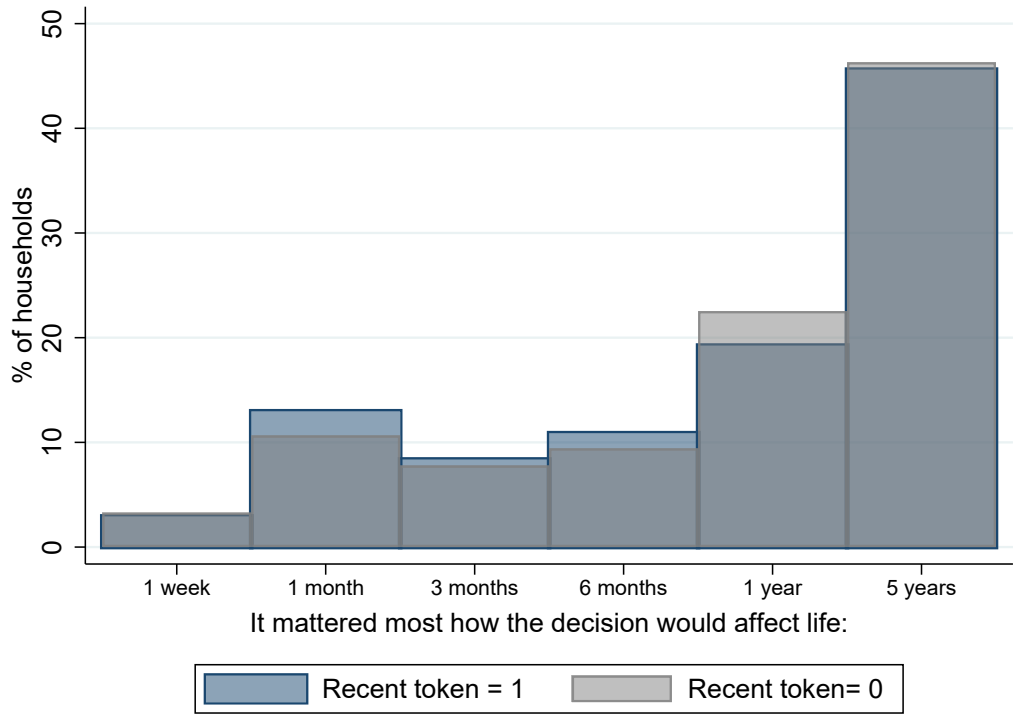
Notes: The figure presents distributions of participants' preference for delay (left panel) and ranking over tranche preferences (right panel). The left panel presents a histogram of the full distribution of delay preferences of participants, where the x-axis represents preferred delay (in months from 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: Predictability of preference for delay and tranching



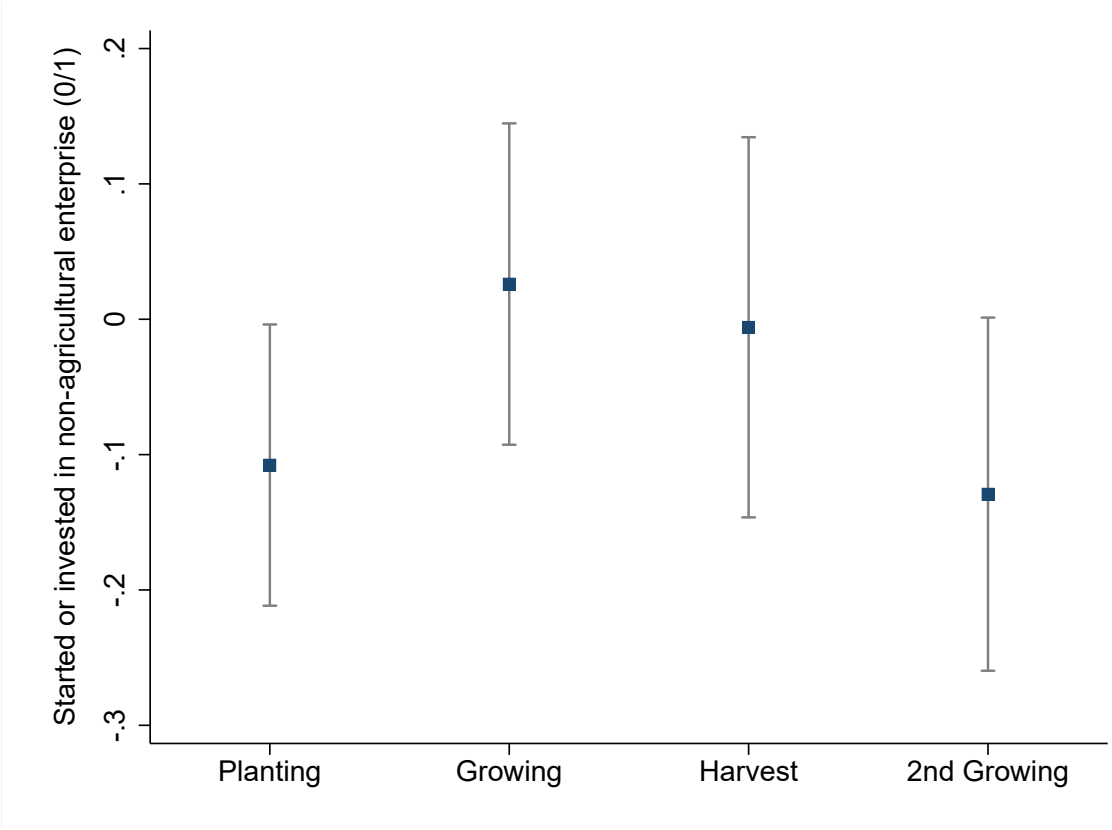
Notes: The figure plots coefficients and confidence intervals from a probit model where the dependent variable is either (i) preference for one over two tranches (1 for preferring one tranche, 0 for preferring 2 tranches); or (ii) preference for any delay (0/1), on the set of covariates displayed on the y-axis. The circles and diamonds in the plot represent the coefficient estimate, and the shaded areas are 95% confidence intervals. For variable definitions, please refer to Appendix B.

Figure A.4: Time horizon of participants in grant spending



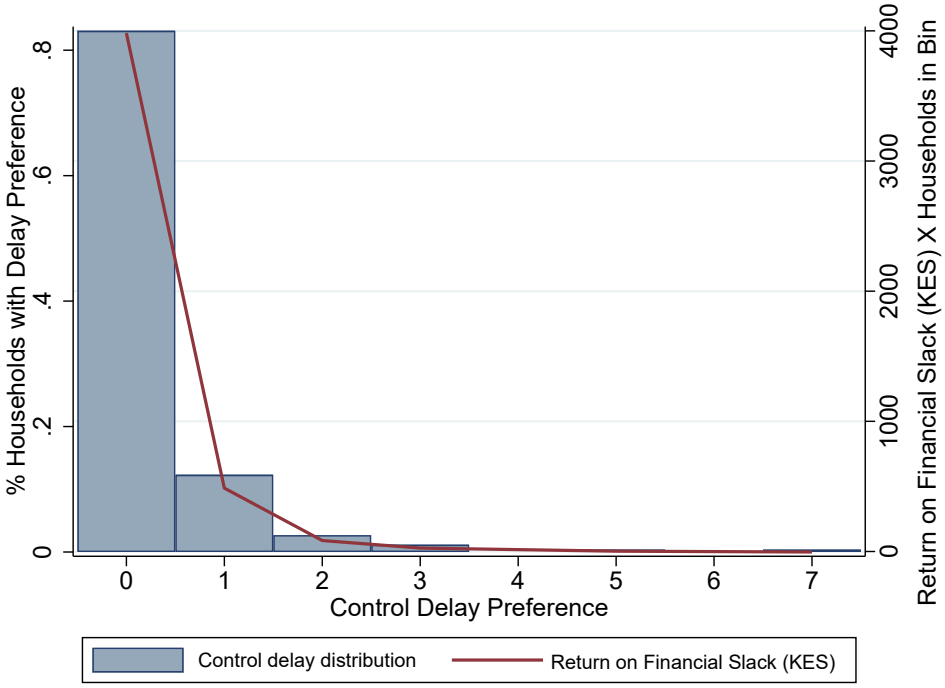
Notes: The figure plots the distribution of participants' answer to the question: "When deciding on how to use the main grant transfer, it mattered most how the decision would affect life .. (i) One week after receiving the transfer; (ii) One month after receiving the transfer; (iii) Three months after receiving the transfer; (iv) One year after receiving the transfer; (v) Five years after receiving the transfer". The left panel shows the distribution for the sub-sample assigned to receive the recent token transfer early, the right panel shows the same for the sub-sample assigned to receive a recent token. The p-value for a Kolmogorov-Smirnov test in difference in distribution between the two groups is 0.990.

Figure A.5: Impact of delay on non-agricultural enterprises



Notes: The figure plots seasonal patterns for starting or investing in a non-agricultural enterprises with the grant transfer. The definition of seasons is the same as in Figure 4. The p-values for differences between coefficients are: planting vs. vegetative $p - value = 0.014$,planting vs. harvest $p - value = 0.064$, planting vs. 2nd rainy $p - value$=0.57. Controls include the number of tranches assigned, and the number of enterprises owned by each recipient before receiving the grant transfer (started more than 18 months before endline survey). The omitted group in the regression are recipients who received the grant transfer in February as one lump sum. Standard errors are clustered at the preference for delay level (14 clusters). Whiskers denote 95% confidence intervals.

Figure A.6: Return on Investment from Slack Intervention



Note: The figure plots the distribution of return to delay induced by receipt of a recent token transfer overlaid to the distribution of control group preferences for delay. The treatment (control) group is formed of those individuals who received the token transfer recently (less recently). The bars represent the share of households in each delay preference bin, represented on the x-axis. For each delay preference bin, the line plot graphs the specific marginal return on financial slack for the households having the preference for delay displayed on the x-axis. The specific calculation is $\frac{1}{n}\sum_h \left[\left(14114 * (D_h + 0.37) - 1191 * (D_h + 0.37)^2\right) - \left(14114 * (D_h) - 1191 * (D_h)^2\right)\right]$ where D_h is the preferred delay reported by household h in the early-token group (control group), and n the size of that group.

Table A.1: 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: Panel A describes experimental assignment to number of tranches, and panel B describes assignment to timing (focusing for conciseness on whether or not the subject received transfers with any delay). In both cases the column group "Assigned to 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 recent v.s. less recent token transfer treatment. Columns 1 and 2 present the mean and standard errors (in brackets) for the control and treatment group (Recent Token transfer, or not) respectively. 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 Domestic Violence variable includes participants' experience of physical violence, Working memory score is the score received by the participant on a psychometric test administered at baseline, Cognitive failure score compiles participants' total number of cognitive failures experienced in a week by the participant. Refer to the Data Appendix B for details on the components of these indices. The F-test for 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. The p-value presented in Column 4 is from an F-test of joint orthogonality of treatment assignment for each covariate of interest. *Domestic Violence* includes participants' experience of physical violence, *Working memory* score is the score received by the participant on a psychometric test administered at baseline, *Cognitive failure score* compiles participants' total number of cognitive failures experienced in a week. *Recent Token* denotes assignment to receipt of recent token transfer. (Refer to the Data Appendix B for details). The F-test for joint orthogonality of all covariates to predict treatment assignment is presented at the bottom of the table.

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). Columns 1-12 present the mean and standard errors (in brackets) for each treatment arm. 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. Refer to the Data Appendix B for details on the variables included above.

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 presents a tabulation of compliance with the tranche assignment treatment. The rows represent assigned tranches based on original treatment assignment, and the columns represent actual tranche assignment. The values reported are the numbers of compliers and non-compliers, off-diagonal cells show non-compliers, diagonal cells show compliers with treatment assignment. Refer to in the main paper 2.2 for details on non-compliance.

Table A.6: Compliance with Delay 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 presents a tabulation of compliance with delay treatment assignment. The rows represent months of first transfer based on original treatment assignment, and the columns represent actual month of transfer. The values reported are the numbers of compliers and non-compliers, off-diagonal cells show non-compliers, diagonal cells show compliers with treatment assignment. Refer to 2.2 in the main paper for details on non-compliance.

Table A.7: Attrition

	Delay	Tranches
Preferred timing granted	0.0185	
	(0.0674)	
Delay[=0]×Preferred timing granted[=0]	-0.0198	
	(0.0671)	
Delay[=1]×Preferred timing granted[=0]	0.0307	
	(0.0668)	
Delay[=2]×Preferred timing granted[=0]	-0.00292	
	(0.0669)	
Delay[=3]×Preferred timing granted[=0]	0.0479	
	(0.0668)	
Delay[=4]×Preferred timing granted[=0]	0.0134	
	(0.0668)	
Delay[=5]×Preferred timing granted[=0]	-0.00471	
	(0.0666)	
Delay[=6]×Preferred timing granted[=0]	-0.00292	
	(0.0814)	
Delay[=7]×Preferred timing granted[=0]	-0.00292	
	(0.0814)	
Delay[=8]×Preferred timing granted[=0]	0.0497	
	(0.0814)	
Delay[=9]×Preferred timing granted[=0]	-0.0556	
	(0.0825)	
Delay[=10]×Preferred timing granted[=0]	-0.00292	
	(0.0814)	
Delay[=11]×Preferred timing granted[=0]	0	
	(0)	
Preferred Tranches granted		-0.00726
		(0.0382)
1 Tranche ×Preferred tranches granted=0		-0.00198
		(0.0229)
2 Tranches×Preferred tranches granted=0		0
		(0)
Mean	0.076	
Observations	512	512
F-statistic	0.412	0.00742
P-value	0.959	0.931

Notes: The table presents attrition by treatment arm. The outcome in the regression is attrition at endline, independent variables are the treatment branches, divided into exhaustive and mutually exclusive categories. "Preferred timing" refers to allocation to receive the cash transfer with preferred delay, "Preferred tranches" refers to allocation to receive the transfer according to preferred cash transfer structure. The F-test and p-value reported at the table bottom refers to a joint orthogonality test for all treatment arms. Standard errors are reported in parentheses.

Table A.8: Preferences for Cash Transfer Structures

	1st Ranked Tranche Structure				
Delay Preference	1	2	4	12	Total
0	150	187	7	9	353
1	40	37	1	0	78
2	20	5	0	0	25
3	3	3	0	0	6
4	5	1	0	0	6
5	2	1	0	0	3
6	2	0	0	0	2
7	1	0	0	0	1
8	1	0	0	0	1
Total	224	234	8	9	475

Notes: The table presents the full distribution of recipient preferences over cash transfer tranches and timing (delay, expressed in months from February) for participants who were present in the survey sample from baseline to endline. The individual cells present the overall number of participants in each category.

Table A.9: Timing Preferences: 1 Tranche and 2 Tranches

First timing choice (1 lump sum)			
1 Transfer Month	Late group	Early group	P-value
Feb-15	131	176	0.000
Mar-15	52	35	0.034
Apr-15	31	22	0.191
May-15	7	8	1.000
Jun-15	9	5	0.288
Jul-15	2	2	1.000
Aug-15	8	3	0.136
Sep-15	0	1	1.000
Oct-15	3	0	0.118
Nov-15	0	1	1.000
Dec-15	1	0	0.492
Jan-16	1	0	0.492
Total	245	253	498
Fisher's exact = 0.009			
First timing choice (2 transfers)			
1st transfer month	Late group	Early group	P-value
Feb-15	186	210	0.059
Mar-15	32	34	1.000
Apr-15	14	6	0.069
May-15	7	2	0.101
Jun-15	5	1	0.117
Jul-15	1	0	0.492
Total	245	253	498
Fisher's exact p-value = 0.040			

Notes: The table presents the full distribution of delay 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. Each row shows the number of participants prefering to receive the transfer at that time. Columns divide participants by treatment assignment into those having received a recent token, and those who have not received a recent token. The p-value presented is from a test of difference in means for the two groups.

Table A.10: Random Forest Classification Results

	Random	PMT Covariates	All Covariates
Delay	0.24	0.24	0.24
Tranching	0.36	0.36	0.35

Notes: The table presents results from prediction models applied to classify the dataset into (i) Preference for any delay (ii) Preference for one or two tranches. The first column represents the misclassification error rate when predicting using the majority class (0 for both variables of delay and preference for 1 over 2 tranches). The second column represents misclassification rates (out of sample predictions) for the random forest model including only PMT-covariates. The list of PMT-covariates available in the dataset is provided below the specification. The third column presents the misclassification rate for the model specified using all covariates available in the dataset.

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

	(1)	(2)	(3)	(4)
Delay (months)	Get 1 - Prefer 1	Get 1 - Prefer 2	Get 2 - Prefer 1	Get 2 - Prefer 2
Recent token	0.46***	0.39**	0.20***	0.12
	(0.14)	(0.18)	(0.067)	(0.080)
Outcome mean	0.88	2.13	0.33	1.46
N	513	513	513	513

Notes: The table presents effects of more recent receipt of the token transfer on participants' preferences for delay. Each column describes a different outcome and shows participants' preference for delay in case: they would get one transfer, and their first ranked tranche was 1 (1); they would get 1 tranche, and their first ranked tranche structure was 2 tranches (2); they would get 2 tranches, and their preferred structure was 1 tranche (3); they would get 2 tranches which was heir preference.

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
	(0.13)	(0.76)	(0.090)	(2.15)	(0.36)
Outcome mean	5.41	19.5	5.02	116	4.21
N	455	507	476	458	458
R^2	0.503	0.367	0.327	0.573	0.348
Village FE	Y	Y	Y	Y	Y
Baseline Var	Y	Y	Y	Y	Y

Notes: The table presents results on the impact of the financial slack intervention on cognitive outcomes recorded from participants at follow-up. "Raven's score" refers to participants' score on a series of Raven's progressive matrix tests. "CF Score" refers to the Cognitive Failures score, a measure of cognitive failures experienced by participants in their daily life. "WM Score" refers to participants' working memory score, "Stroop time" and "Stroop errors" are variables recording the time to complete a Stroop test and the errors, respectively. Please refer to Appendix B for detailed variable definitions. "Recent Token" is the treatment variable, assignment to receive the cash transfer 4 days (as opposed to 4 weeks) before the preference survey. Standard errors, clustered at the village level (13 clusters) are reported in parentheses. Statistical significance is denoted: $^{***}p < 0.01, ^{**}p < 0.05, ^{*}p < 0.1$.

Table A.13: Impact of delay

	Deliberation		Goal Progress		Δ Income		Assets + Expenditures	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
q_t	0.021***	0.087***	-0.0045***	0.014***	-626.2	14400.1***	2818.4	9645.6
	(0.0039)	(0.020)	(0.0017)	(0.0031)	(1122.3)	(2707.7)	(3493.9)	(17897.9)
q_t^2		-0.0054***		-0.0015***		-1222.1***		-554.7
		(0.0015)		(0.00039)		(212.2)		(1424.3)
Tranches[= 2]	0.013	0.042	0.034*	0.043*	12192.4*	18918.6*	-1281.1	1726.2
	(0.044)	(0.036)	(0.021)	(0.025)	(6719.7)	(10677.3)	(20520.7)	(21572.4)
Constant	-0.56***	-0.69***	0.82***	0.79***	75948.8***	44708.1***	378890.5***	364658.1***
	(0.022)	(0.052)	(0.0053)	(0.0092)	(6158.6)	(12058.8)	(12265.9)	(36563.1)
N	422	422	424	424	393	393	424	424
Mean	-0.40	-0.40	0.81	0.81	77731.7	77731.7	398082.3	398082.3

Notes: The table presents results on the impact of delay on the main outcomes reported in table 1, excluding preference for delay, preference for a lump-sum transfer over two transfers, and assignment to recent receipt of the token transfer. Results are estimated using the model from equation 1. 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)
$q_{tassigned}, q^2_{tassigned}$	q_{ta}	q_{ta}	q^2_{ta}	q_{ta}	q_{ta}	q^2_t	q_{ta}	q_{ta}	q^2_{ta}	q_{ta}	q_{ta}	q^2_{ta}
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^2_t		-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
Kleibergen-Paap F-stat	64001	1200		64003	1200		88094	1200		64003	1200	

Notes: The table presents first-stage results for the delay assignment instrument used in the main specification (Table 1) to account for slight noncompliance in delay treatment assignment (13 observations, see Table A.6 for details). Each group of columns reports first-stage coefficients for the sample used in each case in the main specification. The Kleinbergen-Paap F-statistics (2006) reported in the bottom row refer to the models estimated in Table 1 for the linear specification and non-linear specification, respectively. Montiel Olea-Pflueger F-statistics (2013) provide equivalent F-statistics for the single instrument case. 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		Value Things Purchased	
	(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
Mean	0.60	0.60	239509.5	239509.5	158572.7	158572.7	215781.9	215781.9

Notes: The table presents results on the impact of delay on additional outcomes: an index of social input in decision-making, and value attached to things purchased using the grant transfer. "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. "Value Things purchased" is the amount of money in KES that participants would require in order to sell the items they purchased using the grant transfer. Please refer to the data appendix B for a detailed description of these variables. Results are estimated using the model from equation 1. 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 corresponds to:
  - (Amount (KES) of token transfer received - amount of token transfer spent (KES)) / Amount (KES) of token transfer received.
- The *current income* variable corresponds to the answer to the following question, elicited in the endline survey:
  - What is your current level of annual income (in the last 12 months)? The answer is provided in KES.

  The variable Δ *income* corresponds to the same variable, minus the baseline level of current income. The baseline level of current income corresponds to the answer to the same question above, elicited during the baseline survey.
- The *cut meals kids* variables corresponds to participants' answer to the following 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 an Anderson 2008 index constructed from the following variables:
  - Looked for information on how to best use the money (1-5 from strongly disagree to strongly agree)
  - Asked other people for advice on how to use the money (1-5 from strongly disagree to strongly agree)
  - When deciding how to use this money, thought very carefully about it (1-5 from strongly disagree to strongly agree)
  - When deciding how to use this money, thought about a specific goal (1-5 from strongly disagree to strongly agree)
  - 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 (1-5 from strongly disagree to strongly agree), note that the inverse of this is included in the index as this implies less deliberation; and all 1-5 answers are normalized to a 0-1 scale;
- The *financial stress index* is equal to the average of the two following variables:
  - Money worries: how often respondent worried about money in the last 7 days (1 = none of the time; 5 = all of the time)
  - Coping with bills: how much difficulty household had coping with bills/expenses in the last 7 days (1 = a lot of difficulty; 3 = no difficulty)

    The answers to these two questions are normalized to a 0-1 scale (least to most stressed), then averaged.
- The *domestic violence* variable corresponds to the answer to the following 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:

  - 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? [1-5, No progress to a lot of progress]
  - 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? [1-5, No progress to a lot of progress]
  - 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? [1-5, No progress to a lot of progress]

    Answers to these questions are normalized to a 0-1 scale (least to most progress) then averaged to construct the index.

- The *cognitive failures score* is composed of the sum of the answers to the following questions:

  - Forget whether did something simple in the last 7 days (0 = never, 4= very often)
  - Say something unintentionally insulting in the last 7 days (0 = never, 4= very often)
  - Fail to hear someone speaking while distracted in the last 7 days (0 = never, 4= very often)
  - Lose temper and regret later in the last 7 days (0 = never, 4= very often)
  - Forget which way to turn on road in the last 7 days (0 = never, 4= very often))
  - Cannot find something in the house in the last 7 days (0 = never, 4= very often)
  - Have trouble making decision in the last 7 days (0 = never, 4= very often)
  - Forget where put something in the last 7 days (0 = never, 4= very often)
  - Daydream in the last 7 days (0 = never, 4= very often)
  - Forget people's names in the last 7 days (0 = never, 4= very often)
  - Get distracted into doing something else in the last 7 days (0 = never, 4= very often)
  - Can't remember something on the tip of tongue in the last 7 days (0 = never, 4= very often)

  Responses to these questions are summed to arrive at a total score, where a lower score corresponds to less 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.
  - The wording for elicitation of the answers was: *"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 shows 10 examples of solved puzzles, and asks for questions.
  - After this, the participant provides answers to 10 new puzzles sequentially, and the answers are 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 test results* are elicited in the following way:
  - *"Next, I would like to ask you to complete a short game.Your task is to identify the number of objects in each row. For example, for the set of objects "3 3 3 3" you should NOT say "three", but you should rather COUNT how many 3s there are. So you should say "four" because there are four 3s. Let's do a few examples." Go through example sequence with respondent. Ask the respondent to say the numbers in ENGLISH, if possible. The respondent should ONLY say the number of digits in each row. Allow the respondent to complete the example sequence by him/herself. Make sure the respondent understands the game. "I will be timing you, but I will also be keeping track of your mistakes. So please try to state the number of objects as quickly as possible without making mistakes. When I hand you the page and say start, you should begin right away. Do you have any questions? Are you ready?"*
  - *Stroop time*: The enumerator recorded the time to complete the task using a stop-watch. The time (seconds) for each of the Stroop tasks is recorded in a separate variable. The total time is obtained by summing the recorded time to complete all the 3 Stroop tasks.
  - *Stroop errors*: The enumerator records errors in the 3 rounds of the Stroop test. The minimum number of errors for each round is 0, and the maximum number of errors in each round is 25. The total number of errors in the 3 rounds is obtained by summing the errors for each of the rounds.
- The *Social input index* is constructed from the following variables:
  - I asked other people (other than myself) for advice on how to use this money (from 1, strongly disagree to 5 strongly agree, higher numbers indicating higher social input).
  - The final decision on how to spend the money was one I made alone (where more social input corresponds to a lower rating to this question)

- When deciding how to spend the money, I thought a lot about whether other people would agree with the decision that I made (from 1, strongly disagree to 5 strongly agree, higher numbers indicating higher social input).
- 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. We create a variable from these responses equal to the share of people mentioned *other than* "myself," counting "others" as 1 person, and include this variable in the index.
- Who do you think will benefit the most from how you decided to spend the money, in the long run? Answer options and variable construction were as above.
- Answers to the first three questions are first normalized to a scale 0-1 so that each of the questions can range from 0 to 1. The overall index is the average of the answers provided to these five questions.

- The *Value attached to things purchased* variable is the answer to the following question:
  - *"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 is recorded in KES.