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Technical Appendix to

REVISING COMMITMENTS: FIELD EVIDENCE ON THE ADJUSTMENT OF PRIOR CHOICES

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Appendix A. The Experiment Subject Pool

Participants in our study were farmers under contract with (the subsidiaries of) two large tobacco companies in the 2008–9 growing season. The companies organised the farmers into clubs that range in size from 3 to 43 members. To facilitate timely revisiting, we limited our sample to those farmers located near a main trading centre in the town of Mponela (population 13,670), and who lived in six traditional authorities (TAs) in the Dowa and Ntchisi districts. To allow relatively easy access to participants and to facilitate their access to the cash disbursements, we included all farmers in these TAs that were 2008–9 members of clubs in which the median club member lives 25 kilometres or less from the disbursement office, located in Mponela. According to a survey conducted between July and September of 2010 for the savings experiment, participants in this study travelled to the a bank branch in Mponela about once every three months, spending an average of 346.67 MK (US $2.31) per round trip. About 35% of these trips combined the visit to the bank with other errands but there could be other trips to Mponela that did not involve a visit to the bank branch.

Scheduling for the stage one visit was stratified across agricultural zones. Within a zone, the order in which clubs were visited was randomly assigned. Scheduling was on a club-by-club basis in order to facilitate field work since members of the same club often live within the same village or in neighbouring villages.

Appendix B. Variable Definitions

The key dependent variable we analyse is change in the sooner allocation upon revisiting (MK), which is the respondent's allocation to later period (t = 91) in the revisit survey minus his/her allocation to later period (t = 91) in the baseline survey. All other variables are from either the baseline survey, the revisit survey, or from administrative (project) data.

B.1. *Variables Collected in Baseline Survey*

Present-biased ratio is a fraction of the pairs of choices in which a respondent faced the same interest rate but the allocation to sooner in the near time frame is more than 100 MK larger than the allocation to sooner in the far time frame. In all regressions, this variable excludes the implemented interest rate from the calculation but summary statistics are also provided for all choices including the implemented interest rate.

Future-biased ratio is fraction of choices where the allocation to sooner in the near time frame is more than 100 MK lower than allocation to sooner in far time frame (again comparing choices in near and far frames for the same interest rate). In regressions, this variable excludes the implemented interest rate from the calculation.

Fraction sooner is the total number of tokens allocated to sooner in any of the choices, divided by the total number of tokens to be allocated (20 in each of the ten choices) (Figure B1). In regressions, this variable excludes the choice at the implemented interest rate in the calculation.

Fraction of decisions consistent with law of demand is the fraction (out of 8) of pairs of choices adjacent in interest rates where allocation to later rises in rate of return.

More elastic in the far time frame is an indicator for whether a respondent's choices are consistent with a greater responsiveness to the interest rate in the far, relative to the near time frame. For each respondent, we first calculate four values of the change in the share of consumption allocated to later associated with each of the four incremental increases in the interest rate. We then take the average of these four changes in the consumption share within the time frame and use this as a measure of the elasticity of intertemporal substitution within the time frame. We then create an indicator that takes on the value 1 when that elasticity is (at least 0.1) larger in the far time frame than in the near and 0 otherwise.

More elastic in the near time frame is an indicator defined as above, except that it takes the value 1 when the elasticity of intertemporal substitution is (at least 0.1) larger in the near time frame than the far time frame, and 0 otherwise.

Spouse minus own allocation to sooner (MK) is spousal allocation to the sooner period minus corresponding allocation for respondent, for all choices excluding the randomly-chosen implemented choice.

Implemented interest rate is the rate of return to waiting 30 days for funds for the respondent's randomly-selected choice (out of 10 choices made).

HH total in bank is total value of balances in formal banks reported at baseline (in thousands of MK).

HH total cash is total value of cash held at home reported at baseline (in thousands of MK).

HH items is total value of physical household items and assets owned, reported at baseline (in thousands of MK).

HH animals is total value of livestock owned, reported at baseline (in thousands of MK).

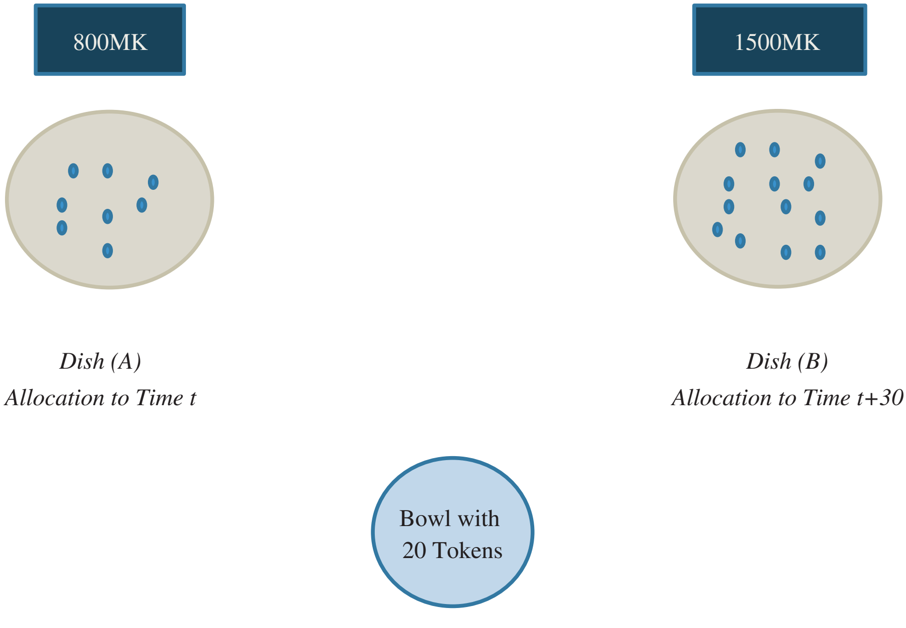

Fig. B1. *Schematic of the Preference Elicitation Method; Example with* $r = 0.25$

Total HH wealth is sum of HH total in bank, HH total cash, HH items, and HH animals (in thousands of MK).

B.2. *Variables Collected in Revisit Survey*

Indicator for death in family takes on the value 1 if a death is registered in the respondent's own household from the baseline survey to the revisit survey.

Shortfall in the expected household income is expected household income minus the actual household income, where the expectation is reported in the baseline and the actual is reported in the revisit survey. Expected income is measured at the baseline and refers to 1 April 2010 and the actual income is measured at revisit and refers to income since the beginning of February 2010. Thus, the reference periods for the two questions cover approximately the same time frame.

B.3. *Variables from Administrative (Project) Data*

Days to first disbursement at revisit (targeted) is the randomised number of days prior to the first far time frame disbursement date at which the revisit was targeted to arrive. Randomisation assigns days from 2 to 16 in unit intervals with equal probability.

Days to first disbursement at revisit (actual) is the actual number of days prior to the first far time frame disbursement that revisit survey is carried out.

Indicator for days to first disbursement (targeted) ≤ 6 equal to 1 if days to first disbursement at revisit (targeted) is ≤ 6, and 0 otherwise.

Appendix C. Supplementary Analyses

C.1. *Baseline Balance*

The two randomisations carried out in stage one – the implemented choice, and the revisit date – generated exogenous variation in the interest rate that applied to the revision decision and in the targeted revisit date itself (Figure C1). We provide here an analysis of balance of baseline respondent characteristics *vis-à-vis* these two exogenously determined variables.

Table C1 presents results of regressions of several baseline variables on an indicator for targeted days to first disbursement being ≤ 6 (panel (*a*)) and on the implemented interest rate (panel (*b*)). (The specification of the target lag as an indicator is chosen to be consistent with the specification in the main regressions of Table 5, and is discussed further below.) In the top panel, the coefficient on the randomised right-hand-side variable is not statistically significantly different from zero for 11 out of the 14 dependent variables and, in the bottom panel, it is not significant for 10 out of 14 dependent variables. Having four out of 14 coefficients turn up significant is close to what would have occurred by chance and all these variables (and others) will be included as controls in the regression analyses below. Results are similar when these regressions are run with alternative specifications for the randomised right-hand-side variables, such as linear days to first disbursement or dummies for each discrete implemented interest rate.

C.2. *Determinants of Allocations to Later in Stage One*

We present here analysis of the determinants of the stage one allocations (Figure C2). As highlighted in the discussion of Table 3 in the main text, these allocations exhibit substantial heterogeneity. Table C2 shows the results of a regression of the difference between the natural log of the allocation to sooner and later on the rate of return and observable characteristics of the participants. Columns 1 and 2 use the sample for the near frame '1 *versus* 31 days', columns 3 and 4 use the sample for the far frame '61 *versus* 91 days' while column 5 pools both samples. Conditional on the rate of return, those with more wealth at baseline allocate more to later, as do

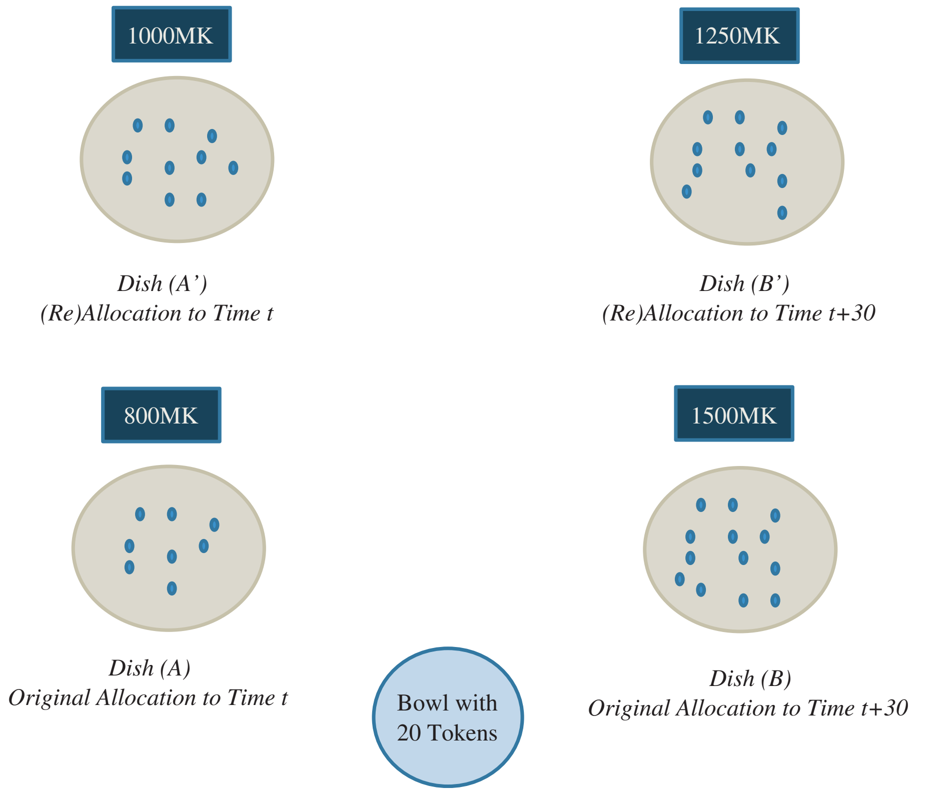

Fig. C1. *Schematic of the Revising Procedure; Example with* $r = 0.25$

those with more relatives who live in the village although the changes in consumption implied by a change in the number of relatives are small. There is also weak evidence that those who scored higher on the word recall test and the financial literacy questions allocate more of their endowment to later but that those who score higher on the Raven's test allocate less of their endowment to later. Measured in this way, we find no evidence that education has a significant relationship with patience in this domain. The last row of the regressions report the p-value associated to an F-test that all household characteristics (excluding the interest rate) are jointly different from zero. The p-value in column (5) (pooled sample) is 0.01. We note however that given the large number of regressors and the few coefficients with conventional statistical significance, these results are only suggestive.

The estimates in the Table have the advantage of being easily interpreted in terms of a simple economic model of intertemporal choice. If we adopt the model in subsection 2.1.1 of the main text and assume time-invariant, isoelastic utilities $[u(c) = c^{1-\rho}/(1-\rho)]$, then the coefficient on r is an estimate of $1/\rho$. The estimates in the Table have the advantage of being easily interpreted in terms of a simple economic model of intertemporal choice. The disadvantage of this specification is that it excludes corner allocations, where the log of consumption at one time or the other is undefined. Analysis of a levels specification gives qualitatively similar results (available upon request) with more evidence of a positive correlation between word recall and the willingness to postpone consumption.

Table C1

Tests of Baseline Balance with Respect to Randomised Independent Variables

	Ordinary least-squares regressions													
Dependent variable:	Fraction present biased, non-implemented interest rates	Fraction of all tokens allocated to 'sooner'	Indicator: more elastic in the far time frame	Fraction of decisions consistent with law of demand	Words recalled	Raven's tests correct	Financial literacy questions correct	Spouse minus own allocation to sooner (MK)	Number of relatives in the village	Male	Age	Years of education	Have adequate maize	Total HH wealth
Panel (*a*)														
Indicator: days to first disbursement (targeted) ≤6	−0.008	−0.035**	0.001	−0.009	0.026	0.062	−0.074	80.415*	−0.381	0.067	−0.030	−0.144	0.002	−58.843***
	(0.022)	(0.016)	(0.039)	(0.015)	(0.117)	(0.074)	(0.080)	(41.852)	(0.573)	(0.041)	(1.145)	(0.263)	(0.036)	(13.074)
R^2	0.0002	0.0078	0.0000	0.0007	0.0001	0.0010	0.0013	0.0057	0.0006	0.0039	0.0000	0.0004	0.0000	0.0169
N	661	661	661	661	661	661	661	661	661	661	661	661	661	661
Panel (*b*)														
Implemented interest rate {0.1, 0.25, 0.5, 0.75, 1}	−0.033	−0.120***	0.016	0.034*	0.448***	0.075	0.012	129.492**	−1.205	−0.083	−0.996	0.558	−0.058	12.668
	(0.033)	(0.021)	(0.057)	(0.020)	(0.164)	(0.109)	(0.116)	(61.027)	(0.887)	(0.061)	(1.620)	(0.381)	(0.052)	(22.587)
R^2	0.0016	0.0432	0.0001	0.0040	0.0113	0.0007	0.0000	0.0070	0.0027	0.0028	0.0006	0.0031	0.0019	0.0004
N	661	661	661	661	661	661	661	661	661	661	661	661	661	661

Notes. Significance levels: *10%, **5%, ***1%. Robust standard errors in parentheses. Unit of observation is individual included in revisit sample. In panel (*a*), each column presents results from regression of given dependent variable on indicator for days to first disbursement (targeted) ≤6 and a constant. Panel (*b*) is similar but independent variable is interest rate on randomly-chosen choice. Constant term included in each regression but not reported.

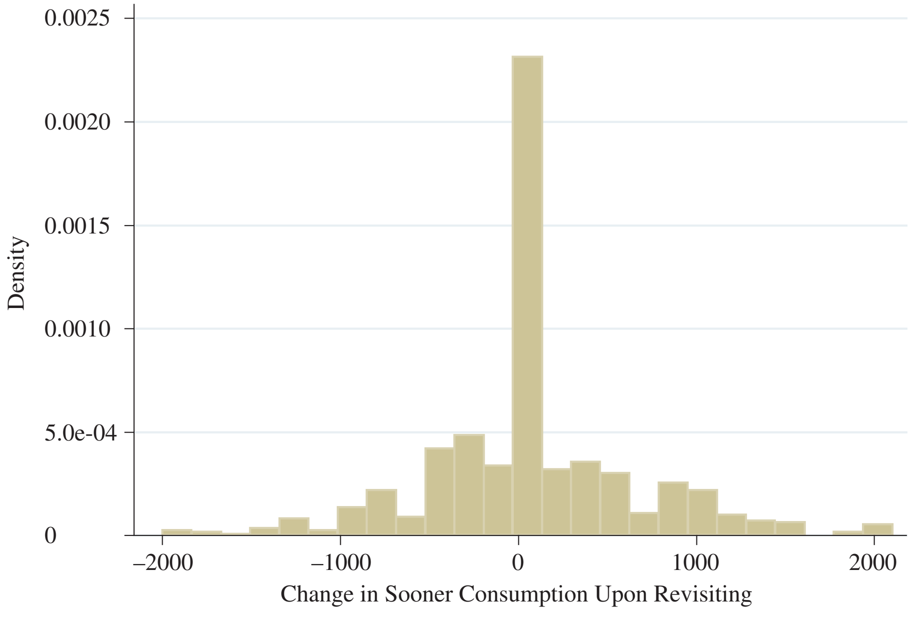

Fig. C2. *Distribution of Change in Sooner Allocation Upon Revisiting*
Notes. Initial allocations made in Jan–Feb 2010. Revisions made in Mar–Apr 2010 in a revisit targeted at a randomised 2–16 days prior to date of first disbursement in 'far' period. (Date of first disbursement in far period is day $t = 61$ from initial visit in Jan–Feb 2010.) $N = 664$.

C.3. *Alternate Specifications of Target Lag*

In all regressions of Table 5, the variable for targeted days to first disbursement upon revisiting is specified as an indicator variable for six days or less. Here we elaborate on the justification for this specification.[1]

First, we note that specifying the variable as a linear relationship leads to a similar result. If we replace the indicator target lag variable with a linear variable for targeted days to first disbursement in the specification of Table 5, column (6), the coefficient on the linear target lag variable is -9.21 and has a standard error of 5.33 (significant at the 10% level).[2]

It turns out, however, that the linear relationship just described masks the fact that the underlying relationship between the target lag and revisions is better described as a non-linear function. To see this, we again estimate the specification of Table 5, column (6), but now we specify the target lag as separate indicator variables for each of the 14 distinct values of the target lag from two to 15 days prior to first disbursement (the omitted indicator is 16 days). In Figure C3, we graphically present the estimated coefficients on the target lag indicators. The solid line graphs the series of point estimates, and the upper and lower dashed lines bound the upper and lower 95% confidence intervals.

[1] All specifications use the targeted lag between the revisit and disbursement because the actual lag is endogenous. Eighty five percent of those in the revisit sample are visited on exactly the targeted date. For the remainder, 84% are revisited within two days of the target date and the maximum gap between the targeted and actual revisit date is six days. The correlation between the delay in revisits and the assigned revisit date is not statistically different from zero.

[2] All other coefficients in the regression remain essentially identical.

Table C2

Determinants of Change in ln(c) From Sooner to Later

	Ordinary least-squares estimates				
	Dependent variable: change in ln(c) from sooner to later				
	Delay of 1 *versus* 31 days		Delay of 61 *versus* 91 days		
	(1)	(2)	(3)	(4)	(5)
Interest rate (r)	0.948***	0.949***	0.935***	0.937***	0.943***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.022)
Male		0.026		0.024	0.025
		(0.040)		(0.042)	(0.038)
Age 35 or under		0.061		0.061	0.061
		(0.056)		(0.058)	(0.052)
36–56 years old		0.056		0.041	0.049
		(0.044)		(0.047)	(0.042)
Some primary school		0.008		−0.012	−0.002
		(0.047)		(0.050)	(0.044)
Primary school		−0.038		−0.087	-0.062
		(0.072)		(0.072)	(0.066)
More than primary school		0.030		−0.010	0.010
		(0.097)		(0.089)	(0.084)
Have adequate maize		0.020		0.046	0.033
		(0.047)		(0.046)	(0.043)
log(Baseline wealth)		0.021		0.033**	0.027**
		(0.015)		(0.015)	(0.014)
Words recalled		0.022		0.022	0.022
		(0.014)		(0.015)	(0.014)
Raven's tests correct		−0.027		−0.039*	−0.033*
		(0.020)		(0.021)	(0.019)
Financial literacy questions correct		0.020		0.032	0.026
		(0.026)		(0.025)	(0.023)
Number of relatives in the village		0.005*		0.007**	0.006**
		(0.002)		(0.002)	(0.002)
Constant	0.384***	0.224**	0.414***	0.279**	0.251**
	(0.030)	(0.084)	(0.030)	(0.089)	(0.078)
N	8,937	8,937	8,931	8,931	17,868
Adjusted R^2	0.09	0.09	0.08	0.09	0.09
p-value that all HH characteristics = 0		0.15		0.00	0.01

Notes. Significance levels: *10%, **5%, ***1%. Data are from the baseline sample (for details, see Table 1). Unit of observation is a respondent/choice-pair (10 pairs per respondent). Dependent variable is ln(sooner allocation) minus ln(later allocation) for the given pair. Rates of return to waiting until 'later' (interest rates) take on values of 0.1, 0.25, 0.50, 0.75 and 1.0. Standard errors are clustered at the individual level.

Point estimates on the indicators for days two to six are all large in magnitude, each exceeding 100 MK, and show no obvious time pattern. In contrast, nearly all the coefficients on the indicators for higher target lags are substantially smaller in magnitude and several are below or just at zero. (The exception is the coefficient on the indicator for 11 days, 141 MK. This is probably a chance occurrence, and the coefficient is not statistically different from zero at standard confidence levels.) Due to lack of power, most of the individual coefficients are not statistically significantly different from zero at conventional levels (although the coefficients on the indicators for days four and six are statistically significantly different from zero at the 10% level).

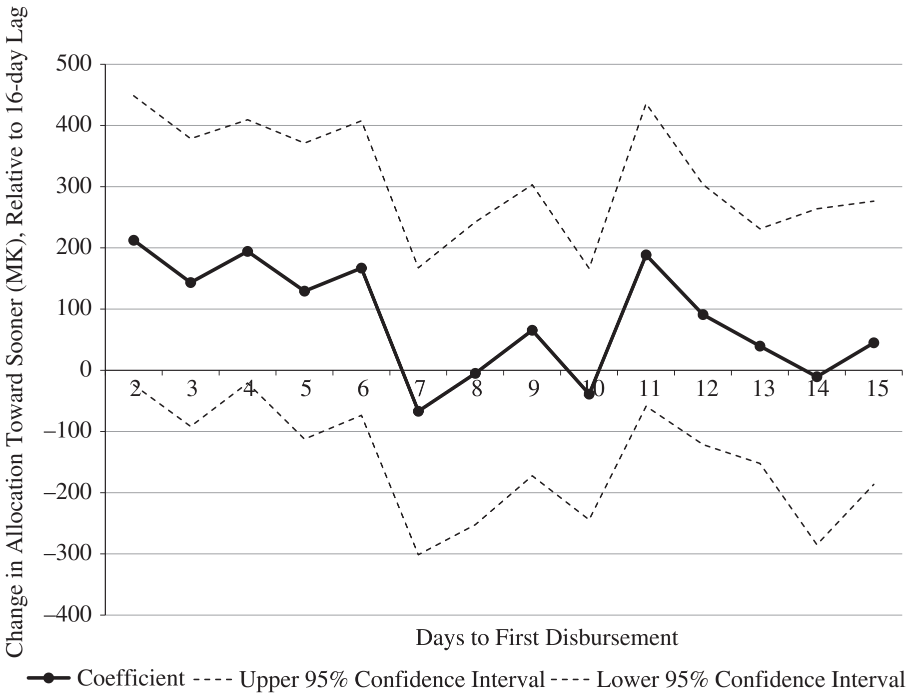

Fig. C3. *Impact of Targeted Days Before Disbursement on Revisions Toward Sooner*
Notes. Figure plots coefficient (and 95% confidence interval) on indicator variables for each separate value of days to first disbursement (omitted category is 16 days to first disbursement). Dependent variable is change in allocation to sooner upon revisiting (in MK). Other right-hand-side variables are as in Table 6, column (6).

All told, the relationship appears to be best summarised by a step function with a positive effect for days two to six prior to disbursement, and the zero effect thereafter (Table C3).

C.4. *Future Bias versus Present Bias*

The analysis in the main text focuses on the predictions of quasi-hyperbolic discounting models with $\beta \leq 1$. This is natural given the laboratory evidence and well-developed theory surrounding them and other models of present-bias. Future bias is, however, also possible. Models of future bias would imply that respondents would shift allocations towards later as the intertemporal tradeoffs draw near. Table C4 considers this possibility, first replacing the fraction present biased variable with a future biased variable defined analogously in column (1) and in column (2) by including the variable 'Fraction Future biased' to the specification in column (6), Table 5. Both regressions also include an indicator for 'more elastic in the near time frame' and an interaction term between this indicator and fraction future biased. The rest of the variables are identical to those of Table 5, column (6).

Contrary to a theory that attributes future-biased static preference reversals to non-constant time discounting, the coefficient on the main effect of fraction future-biased choices is actually positive in both columns. The coefficient is not precisely estimated, however, and we cannot reject a null hypothesis of no effect, or even a moderate-sized negative effect, at conventional levels of significance. Summing the coefficients on this main effect with its interaction with 'more

Table C3

Determinants of Revisions Towards Sooner (using all first-stage choices in measure of present bias)

	Ordinary least-squares regressions					
Dependent variable: change in sooner allocation upon revisiting (MK)	(1)	(2)	(3)	(4)	(5)	(6)
Preferences under commitment						
Fraction present biased, all interest rates		286.665**	286.704**	288.292**	286.870**	300.144**
		(99.115)	(98.648)	(98.901)	(101.714)	(99.220)
Fraction of all tokens allocated to 'sooner'		−611.504***	−621.904***	−603.870**	−616.336**	−624.312**
		(143.293)	(181.288)	(182.737)	(208.430)	(228.595)
Indicator: days to first disbursement (targeted) ≤6		106.130**	108.715**	111.114**	111.495**	123.182**
		(49.853)	(50.232)	(50.487)	(50.581)	(50.739)
Indicator: more elastic in the far time frame		122.927	127.578*	134.100*	133.827*	134.468*
		(76.574)	(77.377)	(76.689)	(77.155)	(78.120)
Fraction present biased × indicator: more elastic in the far time frame		−198.481	−208.243	−210.636	−210.563	−228.184
		(174.326)	(175.632)	(176.154)	(177.720)	(178.815)
Financial sophistication						
Fraction of decisions consistent with law of demand			−38.112	−16.931	−17.023	−32.864
			(176.963)	(177.262)	(177.536)	(178.066)
Words recalled			−3.169	−2.656	−2.508	−1.080
			(19.049)	(18.951)	(19.061)	(19.103)
Raven's tests correct			−30.248	−30.899	−31.233	−23.157
			(28.241)	(28.431)	(28.353)	(28.778)
Financial literacy questions correct			18.058	16.610	16.426	26.498
			(28.395)	(28.213)	(28.411)	(28.547)
Shocks						
Death in the family (indic.)				56.708	57.508	46.997
				(200.094)	(200.230)	(199.304)
Shortfall in expected hh income (MK)				0.052	0.052	0.049
				(0.041)	(0.041)	(0.038)
Social pressure						
Spouse minus own allocation to sooner (MK)					0.000	0.000
					(.)	(.)
Number of relatives in the village					−0.007	0.016
					(0.064)	(0.081)

Table C3
(*Continued*)

	Ordinary least-squares regressions					
Dependent variable: change in sooner allocation upon revisiting (MK)	(1)	(2)	(3)	(4)	(5)	(6)
Rate of return to waiting						
Implemented interest rate {0.1, 0.25, 0.5, 0.75, 1}	−143.004*	−222.189**	−218.912**	−210.226**	−210.377**	−215.207**
	(78.279)	(80.267)	(80.157)	(80.151)	(80.712)	(81.341)
Baseline characteristics						
Male	125.169**	93.665*	94.254*	97.065*	94.696*	47.834
	(49.851)	(49.368)	(51.664)	(51.548)	(53.092)	(61.239)
Age 35 or under	198.798**	175.843**	171.018**	169.068**	168.438**	269.208**
	(71.742)	(70.408)	(70.608)	(71.099)	(71.659)	(109.609)
36–56 years old	117.670**	100.638*	103.106*	106.326**	105.352*	170.131**
	(54.887)	(54.126)	(53.527)	(53.690)	(55.520)	(64.376)
Some primary school	−66.952	−86.414	−81.035	−79.640	−80.233	−37.182
	(70.212)	(68.346)	(71.568)	(69.926)	(70.310)	(71.616)
Primary school	−159.166*	−167.474**	−164.183*	−172.907*	−172.882*	−129.103
	(85.954)	(83.972)	(90.815)	(89.970)	(90.006)	(92.005)
More than primary school	−215.094**	−235.358**	−223.634*	−227.334**	−227.345**	−155.417
	(105.964)	(103.978)	(116.170)	(114.814)	(114.695)	(117.392)
Have adequate maize	35.744	24.945	28.773	25.964	25.092	7.664
	(56.325)	(54.932)	(55.716)	(56.558)	(57.544)	(57.537)
Total HH wealth	−0.122	−0.136	−0.138	−0.143*	−0.143*	−0.139
	(0.089)	(0.085)	(0.084)	(0.083)	(0.084)	(0.087)
Controls for:						
Spousal characteristics	–	–	–	–	–	Yes
R^2 (adj.)	0.02	0.06	0.06	0.06	0.06	0.06
N	661	661	661	661	661	661
p-value for test that financial sophistication variables are jointly 0			0.82	0.82	0.82	0.83

Notes. Significance levels: *10%, **5%, ***1%. Robust standard errors in parentheses. Unit of observation is individual included in revisit sample. Spousal characteristics controls are: fraction present biased for all choices, indicators for age category, indicators for education category, word recall, ravens score, financial literacy score, and fraction of choices adhering to law of demand.

Table C4

Determinants of Revisions Towards Sooner; Investigating Future Bias

Ordinary least-squares regressions		
Dependent variable: change in sooner allocation upon revisiting (MK)	(1)	(2)
Preferences under commitment		
Fraction present biased, non-implemented interest rates		251.211**
		(105.329)
Fraction future biased, non-implemented interest rates	132.499	149.461
	(109.337)	(124.490)
Fraction of all tokens allocated to 'sooner'	−452.503**	−470.607**
	(230.072)	(228.705)
Indicator: days to first disbursement (targeted) ≤6	122.894**	124.550**
	(51.276)	(51.199)
Indicator: more elastic in the far time frame		112.184
		(89.371)
Indicator: more elastic in the near time frame	54.314	13.246
	(65.255)	(72.256)
Fraction present biased × indicator: more elastic in the far time frame		−174.621
		(195.147)
Fraction future biased × indicator: more elastic in the near time frame	−164.751	−20.922
	(189.029)	(198.052)
Financial sophistication		
Fraction of decisions consistent with law of demand	−25.795	66.76
	(177.881)	(184.081)
Words recalled	1.647	0.565
	(19.368)	(19.420)
Raven's tests correct	−22.046	−22.117
	(29.346)	(29.173)
Financial literacy questions correct	23.829	24.985
	(28.401)	(28.719)
Shocks		
Death in the family (indic.)	74.866	75.522
	(204.919)	(200.432)
Shortfall in expected hh income (MK)	0.047	0.048
	(0.038)	(0.038)
Social pressure		
Spouse minus own allocation to sooner (MK)	0.040	0.05
	(0.081)	(0.081)
Number of relatives in the village	2.069	1.674
	(3.376)	(3.432)
Rate of return to waiting		
Implemented interest rate {0.1, 0.25, 0.5, 0.75, 1}	−203.520**	−223.711**
	(82.844)	(82.920)
Baseline characteristics		
Male	62.044	57.699
	(61.747)	(61.456)
Age 35 or under	279.716**	281.705**
	(110.625)	(111.018)
36–56 years old	171.308**	174.254**
	(65.380)	(65.577)
Some primary school	−21.206	−28.876
	(72.143)	(72.461)
Primary school	−113.713	−118.829
	(92.404)	(92.067)
More than primary school	−133.158	−148.320
	(119.644)	(120.077)

Table C4
(*Continued*)

Ordinary least-squares regressions		
Dependent variable: change in sooner allocation upon revisiting (MK)	(1)	(2)
Have adequate maize	0.398	1.750
	(57.832)	(57.891)
Total HH wealth	−0.126	−0.134
	(0.092)	(0.090)
Controls for:		
Spousal characteristics	Yes	Yes
R^2 (adj.)	0.04	0.05
N	661	661
p-value of F-test: financial sophistication variables jointly 0	0.87	0.83

Notes. Significance levels: *10%, **5%, ***1%. Robust standard errors in parentheses. Unit of observation is individual included in revisit sample. Spousal characteristics controls are: fraction present biased for all choices, indicators for age category, indicators for education category, word recall, Raven's score, financial literacy score and fraction of choices adhering to law of demand.

elastic in the near horizon' we again find that those who exhibit static preference reversals that can be easily reconciled with time-specific marginal utilities of consumption exhibit no time inconsistency on average. Unlike the results from Table 5 investigating present-bias, however, our inference is limited by the imprecision of the point estimates. One interpretation of these findings is that the future-biased static preference reversals capture predictable changes in the marginal utility of income, more than some form of non-constant discounting. More generally, the future-biased preference reversals appear to be driven by mechanisms that do not induce time-inconsistency.

C.5. *Attrition*

We attempted to revisit 722 individuals with complete baseline data. We were successful in revisiting 661 (91.6%). This high revisit success rate helps ameliorate concerns over selection bias but it is still important to ascertain the extent to which the key right-hand-side variables are related with attrition and to think through any resulting directions of bias.

Table C5 presents regressions of an indicator for inclusion in the sample on key right-hand-side variables. The sample is the 722 individuals we attempted to revisit, so the mean of the dependent variable is the revisit success rate, 0.916. Individuals targeted for revisit six days or less prior to first disbursement are 10.8 percentage points less likely to be included in the revisit sample. This reflects the simple fact that our survey team had less time to find individuals whose target revisit date was close to the disbursement date.[3,4]

[3] The closest randomised target date was two days prior to first disbursement and the cutoff date for actual revisits was set at one day prior to first disbursement. Revisits on or after that date would be nonsensical, since the 'sooner' disbursement could already have been made (if the respondent redeemed the voucher immediately on the disbursement date).

[4] In addition, individuals with higher word recall are less likely to be included in the sample. Two additional words recalled (about one and a half standard deviations) leads to a 3 percentage point lower likelihood of revisit success. Revisit success was higher for individuals who are younger and who had lower baseline wealth.

Table C5

Determinants of Inclusion in Revisit Sample

	Ordinary least-squares regressions
	Dependent variable: indicator for inclusion in revisit sample
Preferences under commitment	
Fraction present biased, non-implemented interest rates	0.002
	(0.036)
Fraction of all tokens allocated to ‘sooner’	−0.032
	(0.097)
Indicator: days to first disbursement (targeted) ≤6	−0.108***
	(0.025)
Indicator: more elastic in the far time frame	0.000
	(0.021)
Financial sophistication	
Fraction of decisions consistent with law of demand	0.001
	(0.076)
Words recalled	−0.015*
	(0.008)
Raven’s tests correct	0.019
	(0.013)
Financial literacy questions correct	0.005
	(0.014)
Social pressure	
Spouse minus own allocation to sooner (MK)	−0.000
	(0.000)
Number of relatives in the village	0.001
	(0.002)
Rate of return to waiting	
Implemented interest rate {0.1, 0.25, 0.5, 0.75, 1}	0.057
	(0.036)
Baseline characteristics	
Male	0.036
	(0.030)
Age 35 or under	0.080*
	(0.044)
36–56 years old	−0.037
	(0.031)
Some primary school	−0.034
	(0.029)
Primary school	−0.055
	(0.045)
More than primary school	−0.056
	(0.045)
Have adequate maize	0.007
	(0.027)
Total HH wealth	−0.000***
	(0.000)
Controls for:	
Spousal characteristics	Yes
R^2 (adj.)	0.05
N	722

Notes. Significance levels: *10%, **5%, ***1%. Robust standard errors in parentheses. Unit of observation is individuals targeted for inclusion in revisit sample. Dependent variable has mean of 0.916. Right-hand-side variables are identical to column (6), Table 5, except for omission of shock variables (‘death in family’ and ‘shortfall in expected household income’), because shock variables are not available for attriters. See Table 5 for other notes.

An important question is whether the key results (in Table 5) on the impact of days to first disbursement on revisions could be driven entirely by selection, since the variable is statistically significantly related to revisit success. Given the sizes of the effects in Table 5, this turns out to be implausible.

Consider the coefficient in column (6), Table 5 on the indicator for targeted days to first disbursement ≤6, 124.629. This variable leads to 10.8 percentage points lower inclusion in the sample. For differential selection on this variable to explain the coefficient in column (6), Table 5, fully, revision towards sooner of individuals selecting out of the sample due to having days to first disbursement ≤6 would have to have been lower by 1,118.20 MK.[5] A change in revisions of this magnitude would be extremely large, amounting to roughly the difference between the 10th percentile (−600 MK) to the 83rd percentile (500 MK) of the revision distribution, or about two standard deviations. It is highly unlikely that all the individuals selecting out of the sample would have had revisions this different from other individuals who were successfully revisited.

While it is very unlikely that the estimate of the impact of days to disbursement from column (6), Table 5 is due entirely to selection, selection may still lead to bias in this estimate. In Table C6, we present results of an exercise intended to bound the size of this possible bias, running regressions analogous to that of column (6), Table 5, but where observations that were previously not included due to attrition are now included and where we make several different assumptions as to the value of the dependent variable for the newly-included observations.[6] At the top of each column is our assumption regarding revision on the part of attrited observations. Across columns (1) to (7), we assume initial allocations to sooner are revised in the amounts (respectively) of 600, 400, 200, 0, −200, −400, and −600.[7] Looking across columns, the stability of coefficient estimates on particular independent variables provides a sense of the sensitivity of coefficients to a range of assumptions on how attrited individuals would have revised their allocations. When assuming positive revisions towards sooner for the attrited observations, the coefficient on the indicator for days to first disbursement ≤6 becomes larger in magnitude, reflecting the fact that this variable is positively correlated with attrition. For the same reason, assuming negative revisions towards sooner for attrited observations lead the coefficient on this variable to become smaller in magnitude. The results indicate that the coefficient on the indicator for days to first disbursement ≤6 in Table 5 is robust to a wide range of assumptions on attriter revisions, except when attriter revision is assumed to be as much as −600: in this case the coefficient declines enough in magnitude to become statistically insignificant. We view an assumption that attriters revise as much as −600 MK *vis-à-vis* their initial allocations as farfetched; this change amounts to more than one standard deviation of the revision distribution.

[5] Let there be two types of individuals: type 1, who we always successfully revisit, and type 2, who are only successfully revisited if days to first disbursement is >6. So when days to first disbursement is >6, the sample is composed of both types 1 and 2, while otherwise it is only composed of type 1. Let μ_1 and μ_2 be mean revision for type 1 and 2 individuals, respectively. We observe μ_1, and the problem is to estimate the value of μ_2 such that there is actually no 'effect' of days to first disbursement ≤6, and all the observed effect in Table 6 is due to selection. The formula for μ_2 is $\mu_2 = [(\alpha + \gamma)(\mu_1 - \beta) - \alpha\mu_1]/\gamma$, where β is the coefficient on days to first disbursement ≤6 in the Table (124.629), α is the revisit success rate for type 1 individuals (0.861), γ is the reduction in the revisit success rate due to revisiting 6 or fewer days to first disbursement (0.108) and μ_1 is the mean revision for type 1 individuals (mean revision for those with days to first disbursement ≤6, 150.0). The formula gives $\mu_2 = -968.20$. So $\mu_1 - \mu_2 = 150.0 - (-968.20) = 1,118.20$.

[6] The only other difference *vis-à-vis* the regression in column (6), Table 5, is that we exclude the shock variables 'death in family' and 'shortfall in expected household income' from the right-hand-side of the regression, since these were also measured upon revisit.

[7] We of course do not allow revisions to go beyond corners, imposing the restriction that revised allocations to sooner must stay within the [0, 2,000] range. For example, in column (1), where we are assuming that revised allocations are 600 MK higher than attrited individuals' initial allocations, if an individual initially allocated 1,700 MK to sooner, we only allow the revised allocation to sooner to go to 2,000 MK (not 2,300 MK).

Table C6

Bounds on Bias Due to Selection Into Revisit Sample

	Ordinary least-squares regressions						
Dependent variable: change in sooner allocation upon revisiting (MK), with missing values replaced	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Assumed value of dep. var. is initial sooner allocation (from baseline) plus:	600	400	200	0	−200	−400	−600
Preferences under commitment							
Fraction present biased, non-implemented interest rates	188.075**	188.428**	189.409**	190.389**	191.590**	190.766**	190.480**
	(89.646)	(87.857)	(87.025)	(87.127)	(87.780)	(89.037)	(90.643)
Fraction of all tokens allocated to ‘sooner’	−431.017**	−431.037**	−435.711**	−440.386**	−472.268**	−504.767**	−532.108**
	(212.525)	(209.926)	(208.729)	(209.229)	(210.069)	(212.175)	(215.454)
Indicator: days to first disbursement (targeted) ≤6	190.458***	166.996***	143.898***	120.799***	102.239**	85.558*	69.613
	(47.697)	(46.728)	(46.253)	(46.295)	(46.714)	(47.520)	(48.665)
Indicator: more elastic in the far time frame	118.921	121.014	122.667	124.320*	124.198*	122.206*	119.686
	(76.443)	(75.305)	(74.496)	(74.124)	(73.996)	(74.167)	(74.648)
Fraction present biased × indicator: more elastic in the far time frame	−201.488	−200.695	−199.093	−197.490	−199.087	−194.141	−188.180
	(171.861)	(169.208)	(167.507)	(166.843)	(166.775)	(167.321)	(168.380)
Financial sophistication							
Fraction of decisions consistent with law of demand	−9.292	−18.216	−24.916	−31.617	−29.723	−23.491	−18.644
	(167.521)	(165.128)	(163.775)	(163.742)	(164.856)	(167.153)	(170.413)
Words recalled	2.599	0.597	−2.044	−4.684	−7.389	−9.646	−11.951
	(18.575)	(18.211)	(17.955)	(17.852)	(17.881)	(18.031)	(18.291)
Raven’s tests correct	−26.198	−23.466	−20.751	−18.036	−13.969	−11.436	−9.015
	(27.354)	(26.906)	(26.629)	(26.588)	(26.758)	(27.067)	(27.549)
Financial literacy questions correct	18.682	20.090	22.382	24.674	25.011	24.225	22.637
	(26.756)	(26.274)	(26.002)	(26.004)	(26.242)	(26.669)	(27.278)
Social pressure							
Spouse minus own allocation to sooner (MK)	0.048	0.048	0.047	0.046	0.042	0.037	0.037
	(0.075)	(0.074)	(0.073)	(0.073)	(0.074)	(0.075)	(0.077)
Number of relatives in the village	0.904	0.999	1.128	1.258	1.542	1.810	2.027
	(3.002)	(2.958)	(2.954)	(2.989)	(3.052)	(3.134)	(3.234)

Table C6
(*Continued*)

	Ordinary least-squares regressions						
Dependent variable: change in sooner allocation upon revisiting (MK), with missing values replaced	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Assumed value of dep. var. is initial sooner allocation (from baseline) plus:	600	400	200	0	−200	−400	−600
Rate of return to waiting							
Implemented interest rate {0.1, 0.25, 0.5, 0.75, 1}	−237.479***	−228.823***	−221.385***	−213.948***	−205.420***	−197.399***	−189.790**
	(76.074)	(75.169)	(74.722)	(74.892)	(75.447)	(76.350)	(77.603)
Baseline characteristics							
Male	36.907	43.139	49.183	55.226	60.228	65.668	71.304
	(57.667)	(56.386)	(55.688)	(55.611)	(55.853)	(56.536)	(57.626)
Age 35 or under	222.553**	233.238**	246.405**	259.572**	274.053***	284.066***	293.232***
	(104.766)	(103.316)	(102.463)	(102.314)	(102.764)	(103.725)	(105.261)
36–56 years old	174.042***	166.743***	159.667***	152.592**	149.573**	148.445**	147.938**
	(62.218)	(60.697)	(59.714)	(59.314)	(59.488)	(60.172)	(61.360)
Some primary school	−11.283	−18.190	−24.808	−31.427	−36.844	−40.713	−43.337
	(69.318)	(68.555)	(68.185)	(68.249)	(68.553)	(69.288)	(70.453)
Primary school	−70.667	−83.080	−96.279	−109.478	−116.624	−120.851	−124.711
	(88.457)	(86.798)	(85.851)	(85.754)	(86.205)	(87.199)	(88.825)
More than primary school	−106.320	−118.121	−129.817	−141.513	−148.054	−149.923	−149.138
	(114.271)	(113.347)	(113.012)	(113.342)	(114.132)	(115.228)	(116.509)
Have adequate maize	0.967	0.939	0.897	0.856	0.536	0.386	0.358
	(53.242)	(52.125)	(51.481)	(51.379)	(51.696)	(52.452)	(53.559)
Total HH wealth	0.036	0.012	−0.013	−0.037	−0.064*	−0.091***	−0.099***
	(0.044)	(0.040)	(0.037)	(0.035)	(0.034)	(0.034)	(0.038)
Controls for:							
Spousal characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2 (adj.)	0.0488	0.0455	0.0431	0.0407	0.0414	0.0428	0.0429
N	722	722	722	722	722	722	722

Notes. Significance levels: *10%, **5%, ***1%. Robust standard errors in parentheses. Dependent variable constrained to remain within 0 or 2,000 range. Right-hand-side variables are identical to column (6), Table 5, except for omission of shock variables ('death in family' and 'shortfall in expected household income'), because shock variables are not available for attriters. See Table 5 for other notes.

C.6. *Males versus Females*

In Table C7, we explore whether estimated effects differ across males and females in the sample, estimating regressions analogous to column (6), Table 5, but where the sample is restricted to females (column (1)) and males (column (2)). We also present p-values of the F-test that coefficients on each presented right-hand-side variable differ across the female and male regressions.

Owing to smaller sample sizes, the standard errors on the key point estimates are relatively large. As a result, while we can sometimes reject a null hypothesis of no relationship (e.g. on the days to first disbursement indicator variable for male), mostly the coefficients cannot be distinguished statistically from zero.

In addition, for nearly all variables, coefficients are not statistically significantly different across the male and female samples, with a few exceptions. The coefficient on the Raven's test score is negative and statistically significantly different from zero among males and is significantly different from the corresponding (positive) coefficient among females. In the female sample, coefficients on the schooling indicators are negative (indicating that higher schooling leads to less revision towards sooner), statistically significantly different from zero and statistically significantly different from the corresponding coefficients in the male regression (or nearly so). The male coefficients on schooling, on the other hand, are positive but none are statistically significantly different from zero. Finally, the coefficient on the death in the family indicator is large and positive for females, smaller in magnitude and negative for males, and marginally statistically significantly different across the male and female regressions at the 10% level.

C.7. *Consistent Versus Inconsistent Individuals*

In Table C8, we explore whether the sample contains individuals that did not understand the experiment. We replicate Table 5 excluding those individuals that are inconsistent in three or more pairs in Table 2. If these individuals did not understand the experiment, there would be measurement error and the estimates in Table 5 would suffer from the attenuation bias.

We find that most of the results hold but the coefficients of interest are not larger in the absolute value, suggesting that there is no attenuation bias and that the results are not driven by people who simply did not understand the experiment.

C.8. *Structural Estimates of β*

In this subsection, we describe the structural estimation of the discount factors that are included as regressors in column (6) of Table 5. We follow the theoretical framework of Section 2 and posit a flexible '$\delta - \beta$' model that allows the curvature parameter of the utility function to differ by time frame, as in the example of Section 2. Therefore $u_1(c) = u_2(c)$ and $u_3(c) = u_4(c)$. We assume that the utility function is either CRRA or CARA and we estimate the discount factors and curvature parameters from the experimental choice data using non-linear least squares, taking into account corner choices. Given the concerns raised in Section C.7, we perform the estimation using either the full sample or the sub-sample of those who appear consistent.

Because the structural estimation allows to estimate the discount factors and curvature parameters simultaneously, while taking into account corner choices, we run several specifications of Table 5 that do not include 'Fraction present-biased', 'Fraction of all tokens to sooner' nor the indicator of 'More elastic in the far time frame'.

A natural hypothesis suggests that the more present-biased the individual is, as indicated by a lower estimated β, the larger the revision towards sooner will be upon revisit. Put differently, the coefficient on the discount factor β should be negative and significant. The results reported in

Table C7

Differential Effects by Gender

Ordinary least-squares regressions			
Dependent variable: change in sooner allocation upon revisiting (MK)	(1) Females	(2) Males	p-value, F-test of equality of male and female coeffs.
Preferences under commitment			
Fraction present biased, non-implemented interest rates	87.743	199.450*	0.592
	(170.970)	(118.672)	
Fraction of all tokens allocated to 'sooner'	−571.908*	−320.799	0.557
	(311.144)	(293.251)	
Indicator: days to first disbursement (targeted) ≤6	100.810	158.428**	0.574
	(74.563)	(70.368)	
Indicator: more elastic in the far time frame	15.146	211.019*	0.208
	(110.801)	(109.072)	
Fraction present biased × indicator: more elastic in the far time frame	154.424	−433.262*	0.108
	(272.822)	(242.459)	
Financial sophistication			
Fraction of decisions consistent with law of demand	−142.424	125.398	0.459
	(259.858)	(250.989)	
Words recalled	−14.072	29.148	0.294
	(25.342)	(32.410)	
Raven's tests correct	20.486	−75.382*	0.098
	(40.829)	(40.900)	
Financial literacy questions correct	13.736	36.079	0.718
	(49.662)	(36.949)	
Shocks			
Death in the family (indic.)	438.137	−247.190	0.097
	(327.464)	(250.228)	
Shortfall in expected hh income (MK)	0.051	0.038	0.858
	(0.048)	(0.060)	
Social pressure			
Spouse minus own allocation to sooner (MK)	0.067	0.031	0.822
	(0.105)	(0.121)	
Number of relatives in the village	1.602	2.912	0.865
	(6.580)	(4.037)	
Rate of return to waiting			
Implemented interest rate {0.1, 0.25, 0.5, 0.75, 1}	−247.920**	−181.689	0.692
	(122.849)	(113.634)	
Baseline characteristics			
Age 35 or under	211.016	288.188*	0.733
	(152.870)	(166.146)	
36–56 years old	53.810	233.604**	0.201
	(116.154)	(78.953)	
Some primary school	−168.582*	143.000	0.041
	(98.918)	(115.128)	
Primary school	−296.744*	5.910	0.155
	(172.443)	(124.417)	
More than primary school	−508.001**	146.502	0.007
	(173.267)	(165.505)	
Have adequate maize	38.929	−15.836	0.646
	(85.864)	(82.556)	
Total HH wealth	−0.339*	−0.040	0.144
	(0.175)	(0.106)	

Table C7

(*Continued*)

Ordinary least-squares regressions			
Dependent variable: change in sooner allocation upon revisiting (MK)	(1) Females	(2) Males	p-value, F-test of equality of male and female coeffs.
Controls for			
Spousal characteristics	Yes	Yes	
R^2 (adj.)	0.06	0.04	
N	325	336	

Notes. Significance levels: *10%, **5%, ***1%. Robust standard errors in parentheses. Unit of observation is individual included in revisit sample. Column (1) restricts to females in revisit sample. Column (2) restricts to males in revisit sample. See Table 5 for other notes.

Table C9 suggest that the estimates all have the correct sign but are small in economic magnitude and tend to be imprecisely estimated. These estimates are interesting because they underscore the advantages and disadvantages of this structural approach. The advantage, already mentioned, is that neither the proxies for preference reversals, corner choices and non-stationary utility functions nor their interactions are included in the reduced form analysis. The approach has the disadvantage of relying on functional form assumptions, and if these fit the data poorly the estimated discount factor may not have predictive power.

Table C8

Sample of Consistent Individuals

	Ordinary least-squares regressions					
Dependent variable: change in sooner allocation upon revisiting (MK)	(1)	(2)	(3)	(4)	(5)	(6)
Preferences under commitment						
Fraction present biased, non-implemented interest rates		196.385**	195.808**	196.736**	198.033**	214.286**
		(95.222)	(95.110)	(95.457)	(97.578)	(95.871)
Fraction of all tokens allocated to 'sooner'		−523.457***	−512.533**	−495.282**	−472.658**	−468.704**
		(144.727)	(183.875)	(185.305)	(208.907)	(228.647)
Indicator: days to first disbursement (targeted) ≤6		107.737**	111.270**	113.743**	113.971**	124.629**
		(50.162)	(50.508)	(50.763)	(50.890)	(51.040)
Indicator: more elastic in the far horizon		127.723*	131.860*	138.471*	137.956*	136.351*
		(76.722)	(77.815)	(77.303)	(77.797)	(78.877)
Fraction present biased × indicator: more elastic in the far horizon		−200.517	−204.079	−206.583	−207.747	−216.585
		(175.339)	(177.404)	(178.197)	(180.001)	(180.320)
Financial sophistication						
Fraction of decisions consistent with law of demand			0.813	21.584	20.991	6.693
			(177.867)	(178.276)	(178.423)	(178.688)
Words recalled			−1.384	−0.818	−0.737	0.437
			(19.274)	(19.169)	(19.287)	(19.275)
Raven's tests correct			−29.722	−30.415	−30.295	−22.245
			(28.502)	(28.697)	(28.608)	(29.117)
Financial literacy questions correct			16.379	14.878	14.671	25.197
			(28.644)	(28.452)	(28.672)	(28.771)
Shocks						
Death in the family (indic.)				62.129	63.379	55.954
				(203.497)	(203.721)	(202.864)
Shortfall in expected hh income (MK)				0.053	0.052	0.049
				(0.041)	(0.041)	(0.038)
Social pressure						
Spouse minus own allocation to sooner (MK)					0.013	0.044
					(0.064)	(0.081)
Number of relatives in the village					0.830	1.589
					(3.489)	(3.382)

Table C8
(*Continued*)

	Ordinary least-squares regressions					
Dependent variable: change in sooner allocation upon revisiting (MK)	(1)	(2)	(3)	(4)	(5)	(6)
Rate of return to waiting						
Implemented interest rate {0.1, 0.25, 0.5, 0.75, 1}	−143.004*	−230.279**	−227.048**	−217.948**	−216.638**	−222.626**
	(78.279)	(81.576)	(81.585)	(81.543)	(82.219)	(82.654)
Baseline characteristics						
Male	125.169**	102.197**	103.061**	105.891**	101.623*	57.796
	(49.851)	(49.639)	(51.948)	(51.810)	(53.367)	(61.461)
Age 35 or under	198.798**	183.041**	179.567**	177.550**	177.044**	283.013**
	(71.742)	(70.736)	(70.943)	(71.396)	(71.965)	(109.969)
36–56 years old	117.670**	107.302**	110.236**	113.512**	112.177**	178.055**
	(54.887)	(54.200)	(53.493)	(53.665)	(55.422)	(64.326)
Some primary school	−66.952	−81.393	−76.593	−74.929	−75.660	−32.505
	(70.212)	(68.760)	(72.070)	(70.397)	(70.858)	(72.125)
Primary school	−159.166*	−164.017*	−160.505*	−169.354*	−170.945*	−126.996
	(85.954)	(84.113)	(90.934)	(90.073)	(90.245)	(92.344)
More than primary school	−215.094**	−230.233**	−218.818*	−222.391*	−222.868*	−148.056
	(105.964)	(105.190)	(118.268)	(116.837)	(116.832)	(119.628)
Have adequate maize	35.744	21.233	25.514	22.494	20.949	3.560
	(56.325)	(55.263)	(56.060)	(56.891)	(57.838)	(57.848)
Total HH wealth	−0.122	−0.125	−0.125	−0.130	−0.128	−0.124
	(0.089)	(0.086)	(0.085)	(0.084)	(0.085)	(0.088)
Controls for:						
Spousal characteristics	–	–	–	–	–	Yes
R^2 (adj.)	0.02	0.05	0.04	0.05	0.04	0.05
N	661	661	661	661	661	661
p-value for test that financial sophistication variables are jointly 0			0.84	0.84	0.84	0.86

Notes. Significance levels: *10%, **5%, ***1%. Robust standard errors in parentheses. Unit of observation is individual included in revisit sample. Spousal characteristics controls are: fraction present biased for all choices, indicators for age category, indicators for education category, word recall, ravens score, financial literacy score, and fraction of choices adhering to law of demand.

Table C9

Structural Estimation of Individual Discount Factors

Ordinary least-squares regressions							
Dependent variable: change in sooner allocation upon revisiting (MK)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel (*a*): All individuals							
β (CARA utility function)		−39.356	−39.945	−42.161	−42.509	−34.321	−42.323
		(41.461)	(42.381)	(42.699)	(42.873)	(43.175)	(52.425)
Observations	663	663	663	663	663	663	663
Adjusted R^2	0.02	0.04	0.04	0.04	0.04	0.04	0.04
β (CRRA utility function)		−0.497	−2.316	−4.346	−5.021	2.153	−9.123
		(41.272)	(41.761)	(41.937)	(42.183)	(42.256)	(54.184)
Observations	663	663	663	663	663	663	663
Adjusted R^2	0.02	0.04	0.04	0.04	0.03	0.04	0.04
Panel (*b*): Consistent individuals							
β (CARA utility function)		−47.137	−59.173	−60.143	−59.114	−54.405	−36.899
		(52.403)	(53.935)	(54.684)	(54.966)	(55.905)	(65.657)
Observations	663	513	513	513	513	513	513
Adjusted R^2	0.02	0.03	0.03	0.03	0.03	0.03	0.03
β (CRRA utility function)		−37.19	−53.99	−57.234	−57.313	−50.812	−48.01
		(52.206)	(53.269)	(53.270)	(53.523)	(54.188)	(67.965)
Observations	663	513	513	513	513	513	513
Adjusted R^2	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Implemented interest rate	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Days to first disbursement at revisit (targeted)	No	Yes	Yes	Yes	Yes	Yes	Yes
Fraction of all tokens allocated to sooner	No	Yes	Yes	Yes	Yes	Yes	Yes
Fraction of decisions consistent with law of demand	No	No	Yes	Yes	Yes	Yes	Yes
Aptitude questions	No	No	Yes	Yes	Yes	Yes	Yes
Shocks	No	No	No	Yes	Yes	Yes	Yes
Spouse minus own allocation to sooner (MK)	No	No	No	No	Yes	Yes	Yes
Number of relatives in village	No	No	No	No	Yes	Yes	Yes
Spouse characteristics	No	No	No	No	No	Yes	Yes
Indicator: more elastic in the far time frame	No	No	No	No	No	No	Yes
Interaction of beta and days to first disbursement at revisit (targeted)	No	No	No	No	No	No	Yes

Notes. Unit of observation is individual included in revisit sample. In panel (*a*) the sample includes all individuals, while in panel (*b*) the sample excludes individuals that are inconsistent in three or more pairs in Table 2. As in Table 5, the dependent variable is the change in sooner allocation upon revisiting (MK). The bottom of the Table reports the explanatory variables from Table 5 that are included in the regression, although the only coefficient reported is that of the individual discount factor β. This discount factor is estimated using NLLS by positing a flexible $\delta - \beta$ model with a four period utility function with two curvature parameters, one for each time frame. See subsection C.8 for more details.

Appendix D. Simulations of Stochastic Choice

In this Section, we assess the adherence of subjects' optimising behaviour to the canonical model of subsection 2.1.1 by comparing their choices to those of hypothetical subjects that choose randomly. Given that more than two-thirds of individuals choose allocations that deviate at least once from the law of demand and that more than 90% make at least one different allocation in the 'near' compared to the 'far' time frame, random choice is a useful benchmark.[8]

The interest in random choice model is twofold. First, it can be used to alleviate concerns about the low levels of literacy of the subject pool. In particular, we assess whether our results can be generated by individuals who do not understand the experimental protocols and that in the extreme, choose randomly. Second, as we explain in more detail below, we use the results from the random choice model to justify how we deal with implementation error in the analysis of Table 5.

We generate 1,000 random samples of 661 subjects who choose allocations randomly. That is, each possible allocation ([2,000, 0], [1,900, $100(1 + r)$], ..., [0, $2{,}000(1 + r)$]) is chosen with probability 1/21. To construct spousal controls, individuals are matched with their real-life spouses and their (random) choices are used to generate the relevant variables. For each sample of random choices, we run the specifications of column (6) of Table 5 and of Table C4 and for each coefficient in the regression, we report its mean and construct the 95% confidence interval non-parametrically using the 25th and 975th coefficient.

Table D1 reports the results. We compare coefficients obtained using real data (odd numbered columns) to simulated or random choice data (even numbered columns). Columns (1) and (2) compute the 'fraction present biased' variable using all pairs, including the one associated with the implemented interest rate. The variable 'Spouse minus own allocation to sooner' is also computed using all interest rate pairs. Columns (3) and (4), in contrast, exclude the pair of the implemented interest rate in both variables. All regressions include all other right-hand-side variables in the respective comparison regressions (column (6) of Table 5 and the single regression in Table C4). They are not reported since by definition they are uncorrelated with the random choices.

Comparing the results in columns (1) and (2) of Table D1, we see that when all pairs are included, the coefficient on 'fraction present biased' using simulated data is more than twice as large than the coefficient when using the real experimental data. Both coefficients are large and significant at conventional levels, suggesting that a null that the coefficient is zero is insufficiently discerning.

As mentioned in the text, the reason for the large coefficient using simulated data is a mechanical relationship between present bias - like behaviour under the implemented interest rate and revisions to the sooner period. Intuitively, in the second stage of the experiment, an individual who exhibits present bias will, by definition, have chosen in the far time frame an allocation to sooner that is lower than that of the near time frame. Thus, even under random choice, the probability that the revised allocation to sooner is larger than the (below average) original allocation is relatively high – hence the mechanical positive relationship between revision to sooner and present bias. An analogous argument explains the mechanical negative relationship between revisions to sooner and future bias.

If implementation error is independent across choices, however, there should be no relationship between random choices under interest rates other than the implemented one and revision behaviour under the implemented interest rate. This therefore suggests the

[8] Other models based on changes in expected income between the 'near' and 'far' time frame would only be consistent with individuals being either always or never dynamically consistent. If an individual expects a windfall between the near and far time frame, he or she would appear more patient in the far time frame under all interest rates. These models cannot explain why some individuals are dynamically consistent under some interest rates but not others.

construction of the variables 'fraction present biased' and 'Spouse minus own allocation to sooner' excluding the choices under the implemented interest rate.

Indeed, the coefficient on 'fraction present bias' in column (4) is small in magnitude and statistically insignificant (albeit with a rather large confidence interval). This small coefficient stands in contrast with that of column (3), replicating column (6) of Table 5.

Under random choice, individuals who appear more elastic in the far time frame do not necessarily revise allocations towards sooner. The point estimates in columns (2) and (4) of the indicator 'more elastic in the far time frame' are small and the confidence interval large, suggesting that they are not significantly different from zero. The interaction between the indicator and 'fraction present biased' is also small and insignificant and a test that the sum of coefficients is different from the zero, yield again confidence intervals that include zero. In this sense, the simulation cannot generate the result found with real data that the link between present bias and static preference reversals is only found among individuals with stable marginal utility of consumption across time frames.

Columns (5)–(8) study the relationship between future bias and revision behaviour. As expected, column (6) displays the mechanical negative relationship between 'fraction future biased', computed using all interest rates and the change in the allocation to sooner. However, this relationship disappears in column (8) when the choices under the implemented interest rate are excluded. As in Appendix Table C4, future biasedness and differences in marginal utilities across time frames cannot explain revision behaviour.

Table D1
Random Versus Real Choice

	Ordinary least-squares regressions							
Dependent variable: change in sooner allocation upon revisiting (MK)	Real (1)	Simulated (2)	Real (3)	Simulated (4)	Real (5)	Simulated (6)	Real (7)	Simulated (8)
Preferences under commitment								
Fraction present biased [0, 1]	302.639***	697.415						
	(98.564)	[389.6, 1,021.9]						
Fraction present biased, non-implemented interest rate			214.286**	34.238				
			(95.871)	[−268.9, 332.0]				
Fraction future biased [0, 1]					29.766	−679.544		
					(114.235)	[−1,001.6, −367.0]		
Fraction future biased, non-implemented interest rate							132.499	−18.802
							(109.337)	[−321.0, 294.0]
Fraction of all tokens allocated to 'sooner' [0, 1]	−523.857 **	−1,957.084			−501.659**	−1,954.710		
	(226.975)	[−2,756.0, −1,159.7]			(231.465)	[−2,743.4, −1,171.1]		
Fraction of all tokens allocated to 'sooner', non-implemented interest rate			−468.704 **	86.926			−452.503**	85.534
			(228.647)	[−671.0, 843.6]			(230.072)	[−662.7, 827.2]
Indicator: more elastic in the far time frame	116.174	35.188	136.351*	60.365				
	(77.070)	[−195.2, 269.0]	(78.877)	[−166.9, 283.7]				
Fraction present biased × more elastic in the far time frame	−180.327	15.67781						
	(177.194)	[−457.5, 479.6]						
Fraction present biased, non-implemented interest rate × more elastic in the far time frame			−216.585	−75.382				
			(180.320)	[−545.2, 378.2]				
Indicator: more elastic in the near time frame					69.279	−18.690	54.314	−46.002
					(66.777)	[−247.8, 221.1]	(65.255)	[−266.9, 180.5]
Fraction future biased × more elastic in the near time frame					−229.376	−54.583		
					(198.535)	[−533.1, 400.8]		

Table D1

(*Continued*)

	Ordinary least-squares regressions							
Dependent variable: change in sooner allocation upon revisiting (MK)	Real (1)	Simulated (2)	Real (3)	Simulated (4)	Real (5)	Simulated (6)	Real (7)	Simulated (8)
Fraction future biased, non-implemented interest rate × more elastic in the near time frame							−164.751	39.472
							(189.029)	[−418.5, 478.4]
Financial sophistication								
Fraction of decisions consistent with law of demand	−38.007	125.772	6.693	378.397	−134.885	120.780	−25.795	379.639
	(178.238)	[−303.3, 549.9]	(178.688)	[−69.9, 850.0]	(176.775)	[−310.5, 551.8]	(177.881)	[−65.7, 840.3]
Social pressure								
Spouse minus own allocation to sooner (MK)	0.068	0.005			0.061	0.005		
	(0.078)	[−0.26, 0.28]			(0.079)	[−0.27, 0.27]		
Spouse minus own allocation to sooner (MK), non-implemented interest rate			0.044	0.004			0.04	0.004
			(0.081)	[−0.26, 0.26]			(0.081)	[−0.26, 0.26]
Rate of return to waiting								
Implemented interest rate {0.1, 0.25, 0.5, 0.75, 1}	−213.079***	−1.163	−222.626***	−5.413	−197.844**	−1.349	−203.520**	−0.920
	(81.088)	[−167.3, 167.4]	(82.654)	[−180.1, 166.9]	(81.285)	[−177.0, 167.2]	(82.844)	[−178.5, 171.5]
Controls for spousal characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	661	661	661	661	661	661	661	661

Notes. Significance levels: *10%, **5%, ***1%. Robust standard errors in parentheses. Unit of observation is individual included in revisit sample. The standard error appears below the coefficient in regressions using the real experimental data (odd numbered columns). The 95% confidence interval appears below the coefficient of regressions using simulated data in brackets. All regressions include other baseline characteristics controls that are included in regressions of column (6) of Table 5 and of Table C4.