

Using Lotteries to Encourage Saving: Experimental Evidence from Kenya

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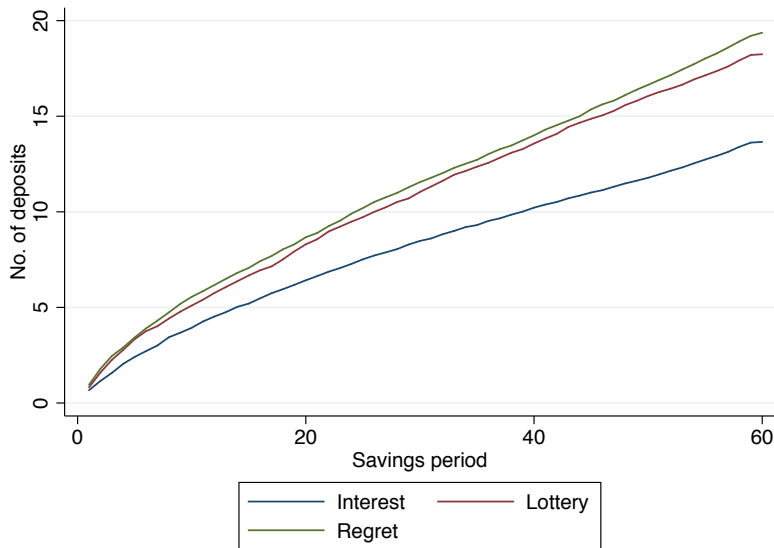
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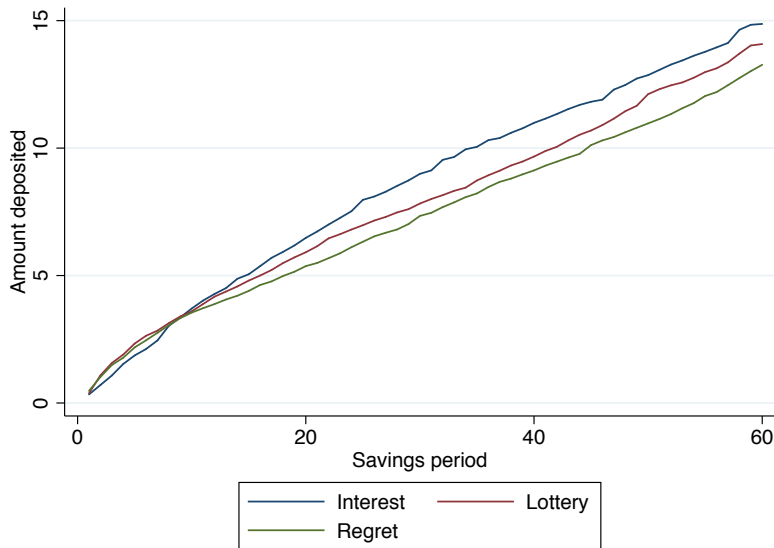
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Treatment Effects – Deposits Made



Treatment Effects – Gross Deposits



Treatment Effects – Mobile Savings

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	(1) Lottery	(2) Regret	(3) Difference <i>p</i> -value	(4) Lottery	(5) Regret	(6) Difference <i>p</i> -value	(7) Control Mean (SD)	(8) N
Total no. of deposits	4.59* (2.52) [0.13]	5.71** (2.45) [0.06]*	0.69	4.20* (2.51) [0.17]	5.55** (2.44) [0.06]*	0.63	13.66 (15.08)	311

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No. of days saved	3.93* (2.05) [0.13]	4.94** (2.08) [0.04]**	0.66	3.49* (2.02) [0.17]	4.76** (2.09) [0.06]*	0.58	11.78 (12.93)	311

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Avg. no. of deposits	0.08* (0.04) [0.13]	0.10** (0.04) [0.06]*	0.69	0.07* (0.04) [0.17]	0.09** (0.04) [0.06]*	0.63	0.23 (0.25)	311

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Log total deposit amt.	-0.01 (0.06) [0.81]	-0.01 (0.05) [0.84]	0.95	-0.01 (0.06) [0.82]	-0.00 (0.05) [0.94]	0.89	0.32 (0.43)	311
Joint <i>p</i> -value	0.04**	0.00***	0.69	0.08*	0.00***	0.63		

Treatment Effects – Gambling

How do lottery-like incentives change outside gambling behavior?

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Gamble more	0.06 (0.05) [0.65]	0.15*** (0.06) [0.04]**	0.16	0.08 (0.05) [0.54]	0.16*** (0.06) [0.02]**	0.18	0.12 (0.32)	284
Gamble less	-0.02 (0.05) [0.89]	0.04 (0.06) [0.77]	0.24	-0.02 (0.05) [0.89]	0.04 (0.05) [0.66]	0.24	0.16 (0.37)	284
More tempted to gamble	0.09 (0.07) [0.65]	0.05 (0.07) [0.77]	0.56	0.08 (0.07) [0.60]	0.04 (0.07) [0.66]	0.57	0.47 (0.50)	284
Less tempted to gamble	-0.01 (0.03) [0.89]	0.03 (0.04) [0.77]	0.27	-0.00 (0.03) [0.94]	0.04 (0.04) [0.64]	0.30	0.06 (0.25)	284
Joint <i>p</i> -value	0.64	0.05**	0.16	0.59	0.02**	0.18		

Discussion

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Thank You

- Research assistance
 - Arun Varghese, Jonathan Page
- Fieldwork
 - Busara Center For Behavioral Economics

Appendix – Attrition

Table: Treatment group by participation at endline

	Participation in endline		
	Attrited	Completed	Total
Interest	11	94	105
Lottery	8	95	103
Regret	8	95	103
Total	27	284	311

Notes: This table reports a cross-tabulation between treatment assignment and selection into the endline survey.

Appendix – Attrition

Table: Attrition by treatment group

	Unobserved at endline
Lottery	-0.03 (0.04)
Regret	-0.03 (0.04)
Constant	0.10*** (0.03)
Observations	311
Adjusted R^2	-0.004
Difference p-value	1.00
Joint p-value	0.75

Notes: This table reports a regression of selection on each of the treatment arms. Standard errors are in parentheses. * denotes significance at 10 pct., ** at 5

Appendix – Baseline Balance

Table: Summary statistics by treatment group

	Mean (SD, N)			Difference <i>p</i> -value		
	Control	Lottery	Regret	Lottery - Control	Regret - Control	Lottery - Regret
Female	0.52 (0.50) 105	0.59 (0.49) 103	0.62 (0.49) 103	0.32	0.16	0.67
Age	30.06 (10.52) 105	36.95 (61.21) 103	30.93 (9.96) 103	0.26	0.54	0.33
Completed std. 8	0.99 (0.10) 105	0.97 (0.17) 103	0.97 (0.17) 103	0.31	0.31	1.00
Married/co-habiting	0.42 (0.50) 104	0.52 (0.50) 101	0.51 (0.50) 102	0.15	0.21	0.83
No. of children	1.75 (1.70) 105	1.98 (1.71) 103	1.99 (1.84) 103	0.34	0.33	0.97
Constant relative risk aversion	1.16	1.25	1.13	0.64	0.85	0.52

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	Mean (SD, N)			Difference <i>p</i> -value		
	Control	Lottery	Regret	Lottery - Control	Regret - Control	Lottery - Regret
Monthly income	112.05 (137.13) 105	108.37 (117.43) 103	111.46 (104.85) 103	0.84	0.97	0.84
Receives regular income	0.06 (0.24) 52	0.11 (0.31) 56	0.17 (0.38) 48	0.36	0.08*	0.38
Employed	0.50 (0.50) 105	0.54 (0.50) 103	0.47 (0.50) 103	0.49	0.68	0.27
Self-employed	0.24 (0.43) 78	0.21 (0.41) 72	0.20 (0.40) 81	0.61	0.49	0.87
No. of dependants	3.18 (2.58)	3.49 (2.60)	3.27 (2.32)	0.40	0.79	0.53

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	Mean (SD, N)			Difference <i>p</i> -value		
	Control	Lottery	Regret	Lottery - Control	Regret - Control	Lottery Regret
Currently saves	0.56 (0.50) 105	0.61 (0.49) 103	0.47 (0.50) 103	0.47	0.17	0.04**
Total savings last mo.	58.82 (106.26) 105	41.01 (59.72) 103	51.79 (72.56) 103	0.14	0.58	0.25
Currently saves with ROSCA	0.58 (0.50) 105	0.57 (0.50) 103	0.66 (0.48) 103	0.91	0.24	0.20
ROSCA savings last mo.	13.83 (23.24) 105	15.46 (28.42) 103	15.92 (23.41) 103	0.65	0.52	0.90

Appendix – Lottery Results

Table: Lottery results

	Freq.	Pct.	Expected	Match
No match	7065	81.49	62.43	0
One match	1518	17.51	22.22	0.10
Two matches	86	0.99	1.23	1.00
Complete match	1	0.01	0.00	200.00
Total	8670	100.00		

Appendix – Estimation Strategy

$$y_{i,E} = \beta_0 + \beta_1 \text{LOTTERY}_i + \beta_2 \text{REGRET}_i + \delta y_{i,B} + \mathbf{X}_i' \omega + \varepsilon_i$$

$y_{i,E}$: Outcome at endline

LOTTERY_i : Lottery group

REGRET_i : Lottery with regret group

$y_{i,B}$: Outcome at baseline

\mathbf{X}_i : Controls

Appendix – Mobile savings by period

	No controls			With controls			Sample	
	(1) Lottery	(2) Regret	(3) Difference <i>p</i> -value	(4) Lottery	(5) Regret	(6) Difference <i>p</i> -value	(7) Control Mean (SD)	(8) N
No. of deposits	0.08*** (0.01)	0.09*** (0.01)	0.08*	0.07*** (0.01)	0.09*** (0.01)	0.04**	0.23 (0.51)	18636
Made a deposit	0.07*** (0.01)	0.08*** (0.01)	0.04**	0.06*** (0.01)	0.08*** (0.01)	0.01***	0.20 (0.40)	18660
Log amount deposited	0.01 (0.01)	0.02** (0.01)	0.31	0.01 (0.01)	0.02*** (0.01)	0.17	0.16 (0.43)	18636
Log amount withdrew	0.00 (0.00)	0.01*** (0.00)	0.01**	0.00 (0.00)	0.01*** (0.00)	0.02**	0.00 (0.11)	18636
Joint <i>p</i> -value	0.00***	0.00***	0.08*	0.00***	0.00***	0.04**		

Appendix – Other Savings

	No controls			With controls			Sample	
	(1) Lottery	(2) Regret	(3) Difference <i>p</i> -value	(4) Lottery	(5) Regret	(6) Difference <i>p</i> -value	(7) Control Mean (SD)	(8) N
Log total savings last mo.	-0.15 (0.32) [0.86]	-0.05 (0.29) [0.89]	0.72	-0.14 (0.32) [0.90]	0.01 (0.29) [0.98]	0.60	3.80 (2.11)	284
Log M-Pesa savings last mo.	-0.22 (0.29) [0.82]	-0.11 (0.29) [0.89]	0.70	-0.18 (0.29) [0.90]	-0.11 (0.29) [0.91]	0.80	1.55 (2.11)	284
Log ROSCA savings last mo.	0.00 (0.31) [1.00]	0.63** (0.30) [0.12]	0.04**	0.02 (0.30) [0.93]	0.62** (0.28) [0.11]	0.04**	2.10 (2.09)	283
Currently saves with ROSCA	-0.02 (0.07) [0.90]	0.14** (0.07) [0.14]	0.02**	-0.02 (0.07) [0.90]	0.13** (0.07) [0.16]	0.02**	0.54 (0.50)	284
Joint <i>p</i> -value	0.85	0.20	0.72	0.79	0.18	0.60		

Appendix – Heterogeneity

Table: Heterogeneous effects - Primary outcomes by female

	(1) Total no. of deposits	(2) Avg. no. of deposits	(3) No. of days saved	(4) Gamble more
Lottery	4.62 (3.71)	0.08 (0.06)	4.21 (3.14)	0.16* (0.08)
Lottery × Female	0.07 (5.06)	0.00 (0.08)	-0.41 (4.16)	-0.17 (0.11)
Regret	0.33 (3.57)	0.01 (0.06)	0.67 (3.07)	0.19** (0.09)
Regret × Female	8.84* (4.84)	0.15* (0.08)	6.96* (4.13)	-0.07 (0.12)
Female	-1.15 (2.98)	-0.02 (0.05)	-0.61 (2.55)	0.05 (0.07)
Constant	14.26*** (2.26)	0.24*** (0.04)	12.10*** (1.94)	0.09** (0.04)

Adjusted R^2

0.015

0.015

0.016

0.016