

How to help informal workers to save: Evidence from a field experiment in Kenya

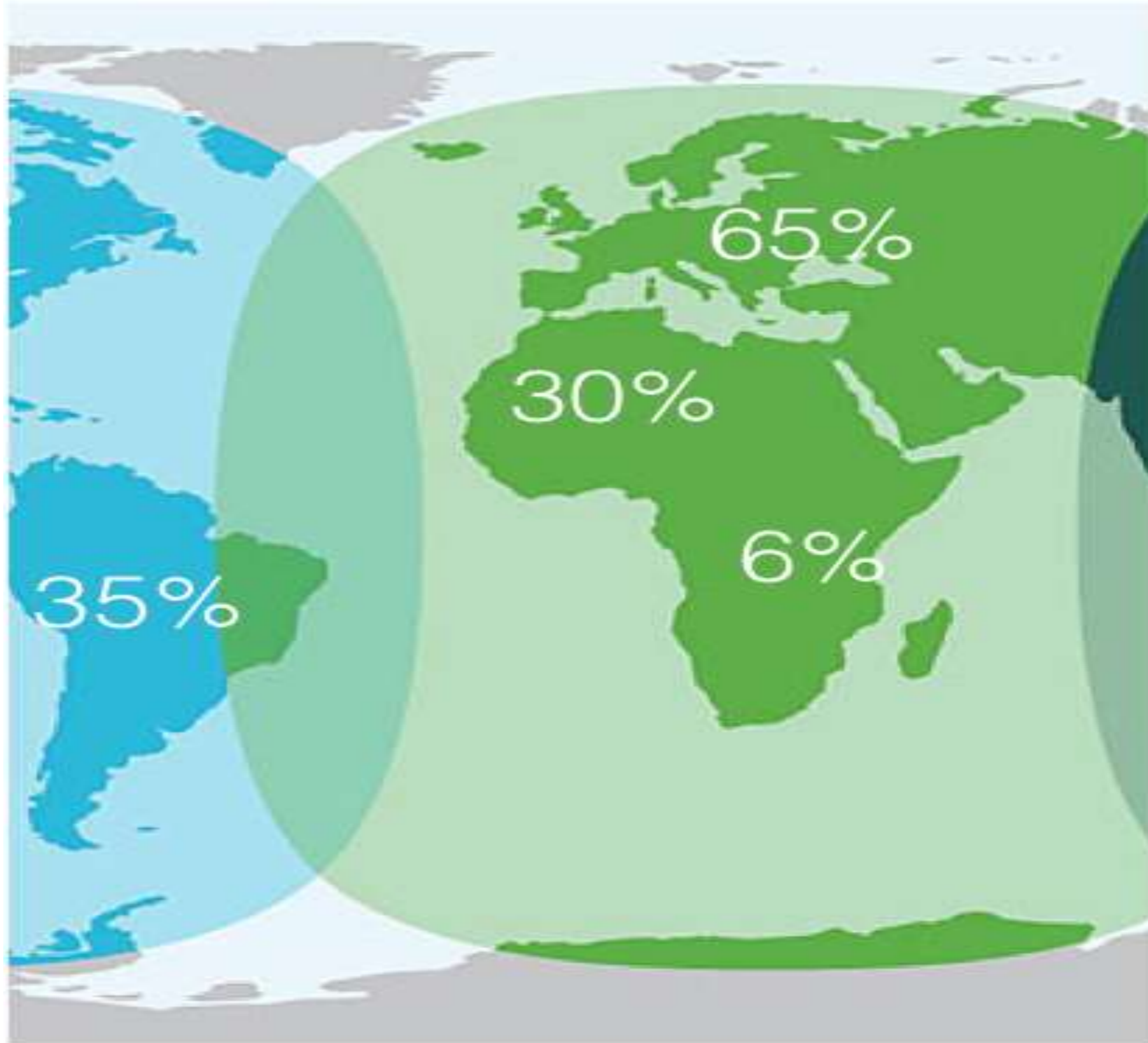
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Coverage of Social Insurance systems around the world is low



Rationale for public intervention

- Liquidity constraints
- Psychological barriers:
 - Inconsistent time preferences
 - Present-bias
 - Self-control & disciplines
- Limited cognitive abilities
- Imperfections in financial markets

Saving enough is hard: Some literature on dynamic inconsistency

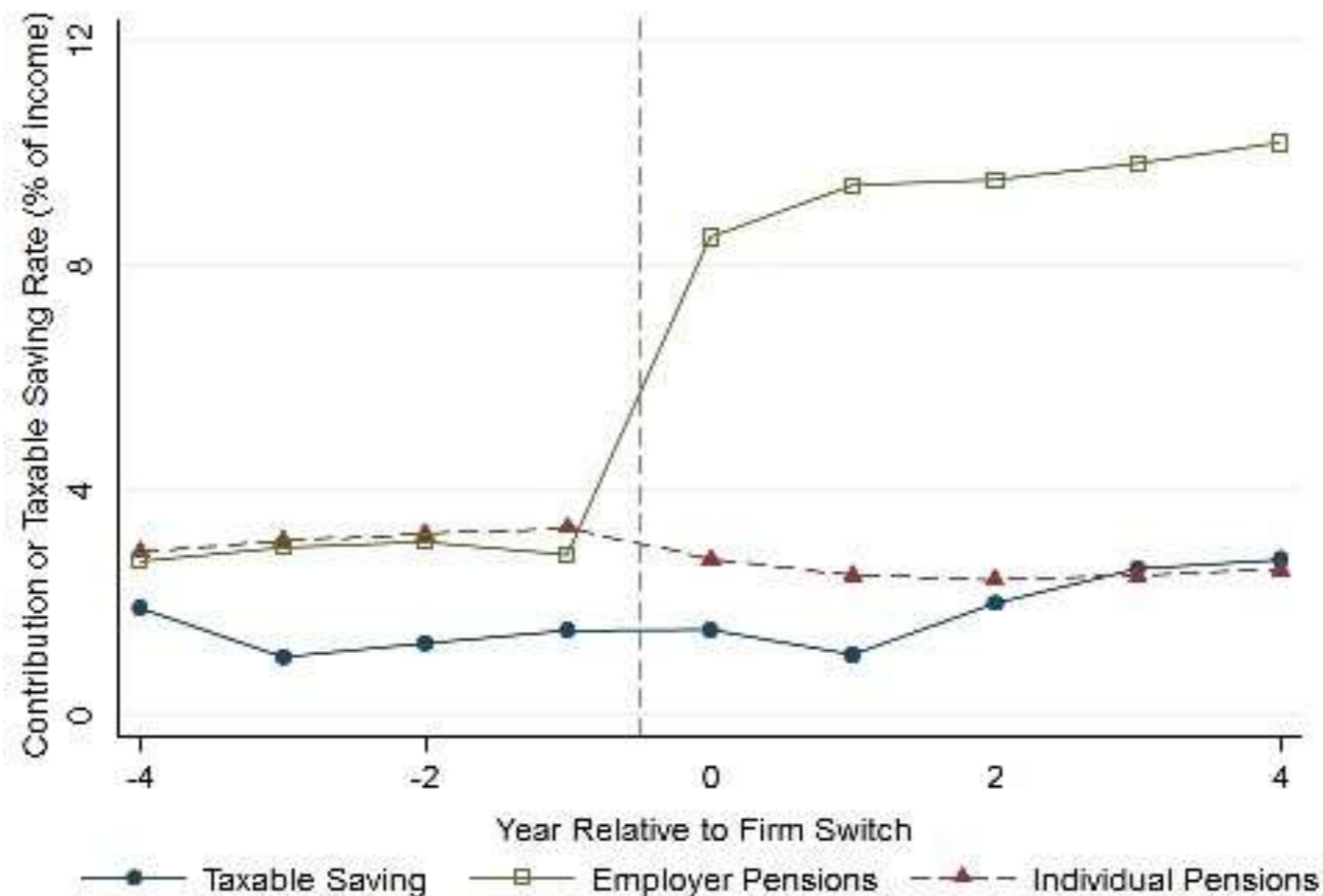
- Dynamic inconsistency (Strotz, 1955)
- Quasi-hyperbolic preferences (Laibson, 1997)
- Present Bias (Akerlof 1991, O'Donoghue and Rabin 1999)
- Self control, (Thaler and Sheffrin 1981, Fudenberg and Levine 2005)
- Limited cognitive abilities (Holzmann, 2013)

Literature on applying behavioral economics to savings products

- **Psychological barrier:** *Limited self-control and temptation*
 - Commitment devices (Ashraf Karlan Yin 2010; Brune et al. 2011; Dupas and Robinson 2012)
 - Soft commitments e.g. a promise to a family member can yield higher savings as well (Burke 2014)
 - Self help peer groups and public announcement of savings commitment increased savings more than 5% real interest rate, instead of 0.3% regular rate. (Kast, Meier and Pomeranz 2012)
- **Psychological barrier:** *Limited attention.* Sending regular text messages can increase savings by 6% and the framing of the message can make a difference (Karlan et al., 2011)

Literature on applying behavioral economics to savings products

- **Psychological barrier:** *People are passive (or lazy)*
- “Nudges”: Changing the default to opt-in for retirement savings plans (Madrian and Shea, 2001; Benartzi and Thaler, 2004; Choi et al. 2004, Chetty et al. 2014)



Mandatory Bismarkian systems are not, necessarily, the solution

- Most workers don't have employers
- It is difficult to enforce the mandate in the "informal" sector
- Having the same mandate (for savings) when plan members have heterogenous preferences does not make much sense
- **More effective interventions are likely to rely on voluntary savings arrangements**

**The experiment in Kenya:
what type of incentives &
nudges?**

Kenya

- Low rate of banking
 - Estimated to be around 20% (Kendall et al. 2010; Dupas et al., 2012)
- High rate of informal labor force
 - Estimated to be around %42 of GDP in 2000 (Adams 2008)
 - More recent government sources estimate to be around 70% of total employment
- 47% HHs below the poverty line

Mobile Money Revolution of Kenya: M-PESA



- Launched in 2007 by mobile operator Safaricom.
- In 2011, estimated to be adopted by nearly 70% of adult population (Jack and Suri, 2014)

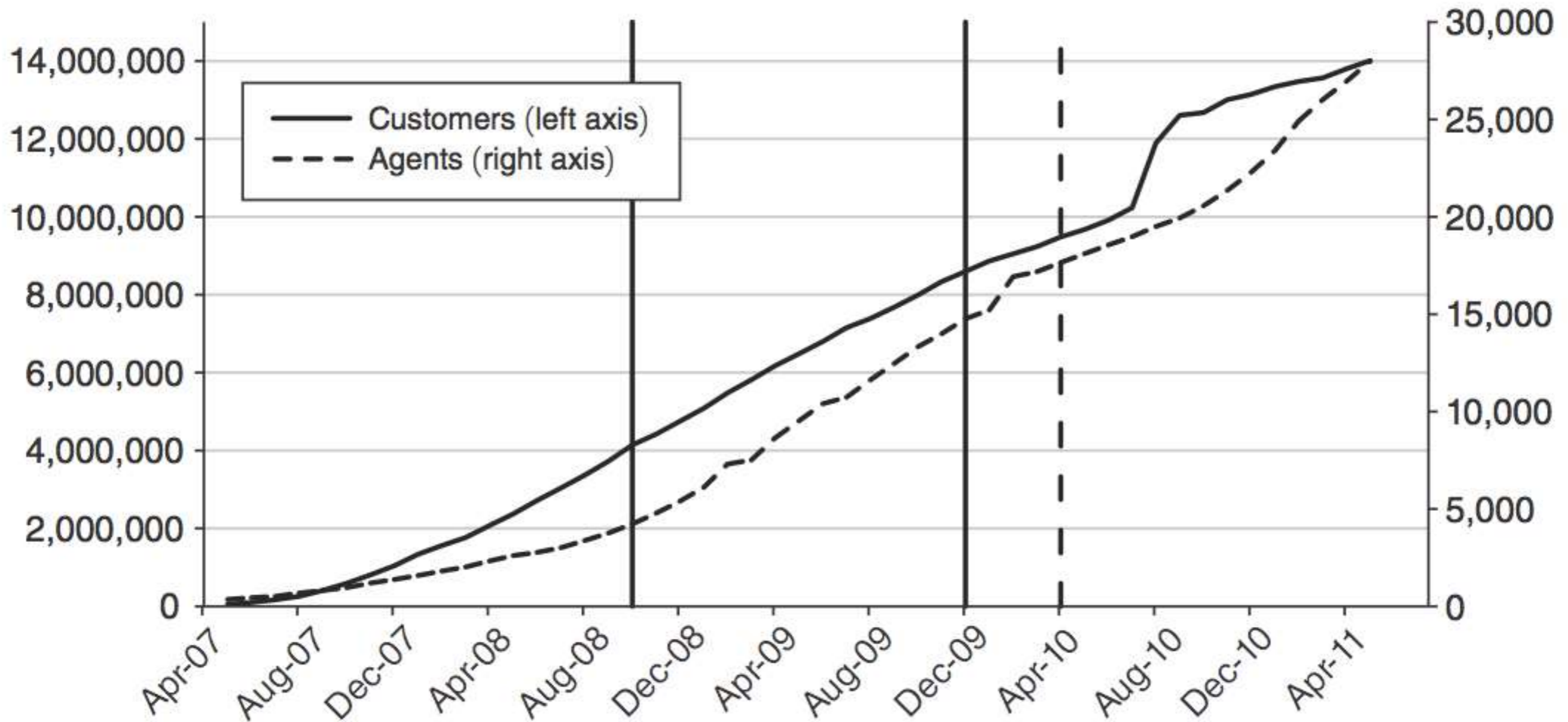
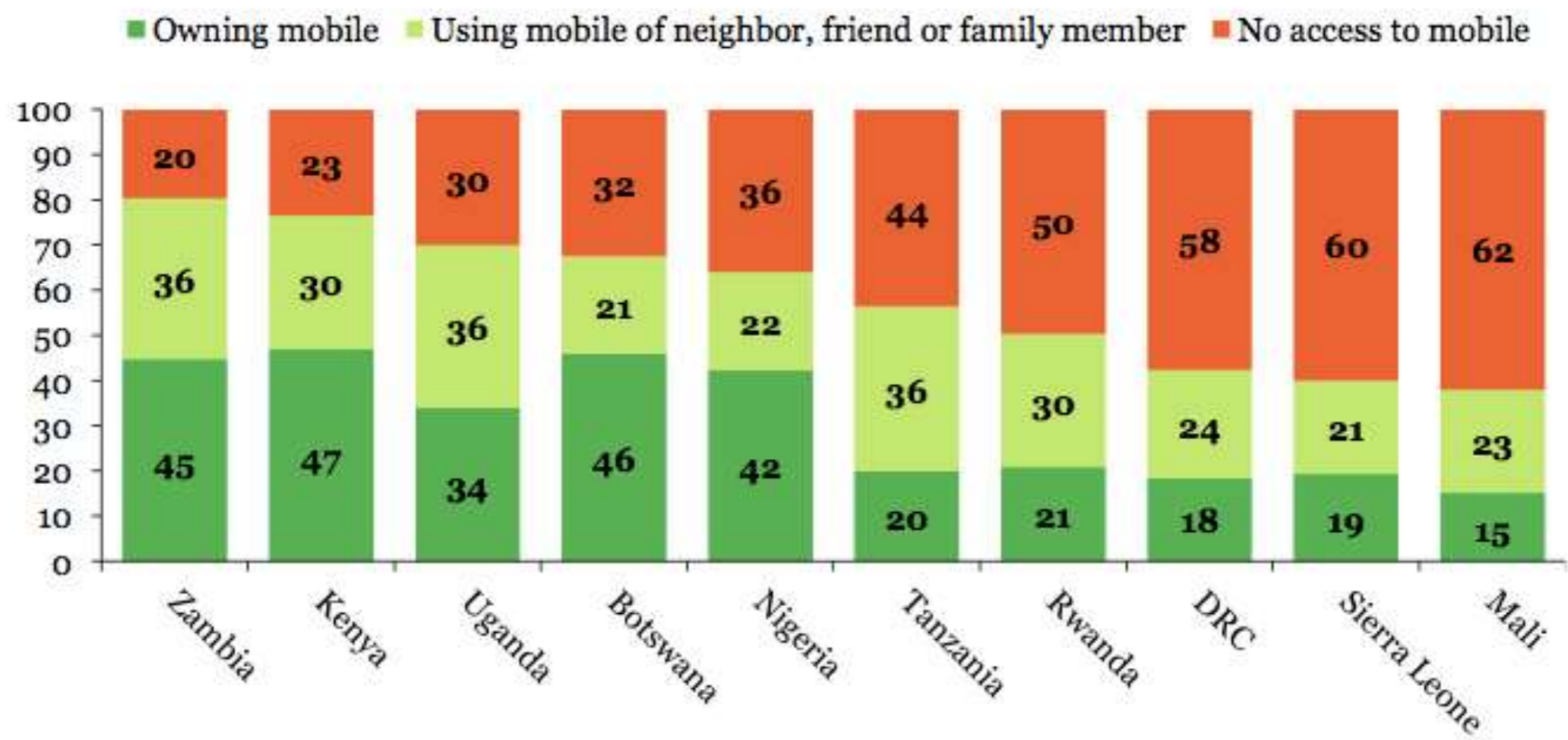


FIGURE 1. M-PESA CUSTOMER REGISTRATIONS AND AGENTS

Source: Jack and Suri, 2014

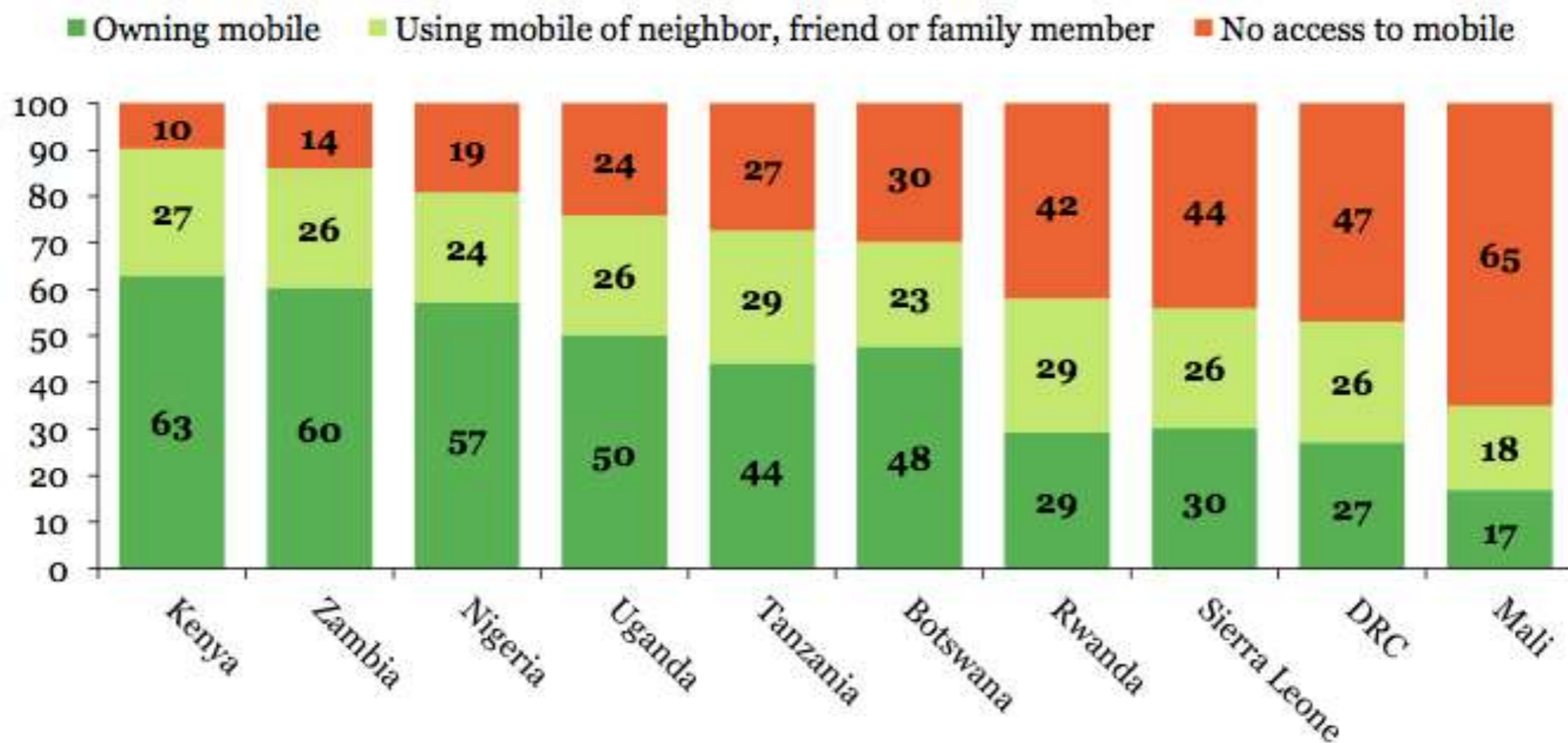
Figure 31: Access to a Mobile Phone Among the Poorest 20% of the Population in Each Country



Do you, yourself, have a cell/mobile phone, or not?
 &
 Have you used the mobile phone of a neighbor, friend, or family member in the past week?
 % by country
 No data available for South Africa

Source: Gallup and Gates Foundation, 2012

Figure 33: Access to a Mobile Phone Among Residents of Rural Areas or Farms



Do you, yourself, have a cell/mobile phone, or not?
 &
 Have you used the mobile phone of a neighbor, friend, or family member in the past week?
 % by country
 No data available for South Africa

Source: Gallup and Gates Foundation, 2012

Partner institution: MBAO Pension Plan (launched in 2011)

- Works with M-PESA
- Target group: informal sector workers with irregular income
- No withdrawal is allowed within 3 years
- No required deposits, no minimum deposit threshold
- No regular contact with the customer

Main Interventions

1. Text message reminder framed as coming from kids
2. Providing a tangible object: Coin
3. Matching contributions
 - Two levels: 10% and 20%
 - Two versions: Post-matching, Pre-matching





New Members

(Text message from the) Kid

Coin

Post-match 10%

Pre-match 10%

Post-match 20%

Pre-match 20%

Control

Existing Members

(Text message from the) Kid

Coin

Post-match 10%

Pre-match 10%

Post-match 20%

Pre-match 20%

Post-match 10% + Coin

Pre-match 10% + Coin

Post-match 10% + Kid

Pre-match 10% + Kid

Control

Day:1

Day:7

No intervention

Control

Kid

Coin

Please don't forget to save for your future this week with MBAO PENSION PLAN.

Between <begin> and <end> you saved Ksh<save> with MBAO for account <id>. Your account balance is Ksh<balance>.

Hi <relate>, Please deposit as much as you can this week to MBAO PENSION PLAN for our future! Thank you for saving.
<KID>

Between <begin> and <end> you saved Ksh<save> with MBAO for account <id>. Your account balance is Ksh<balance>.

Please don't forget to save for your future this week with MBAO PENSION PLAN.

Between <begin> and <end> you saved Ksh<save> with MBAO for account <id>. Your account balance is Ksh<balance>. You saved with MBAO PENSION PLAN this week. Please scratch AROUND/BELOW <week> on your gold coin.

Day:1

Day:7

Post-Match

Save at least Ksh100 with MBAO PENSION PLAN this week to receive Ksh10 extra. If you don't save, you won't receive any extra money.

Between <begin> and <end> you saved Ksh<save> with MBAO for account <id>. You received Ksh<save/10> extra from MBAO. Your account balance is Ksh<balance>.

Pre-Match

MBAO PENSION PLAN deposited Ksh10 in your account. Save at least Ksh100 this week to keep it. If you don't save, MBAO will take it back.

Between <begin> and <end> you saved Ksh<save> with MBAO for account <id>. You received Ksh<save/10> extra from MBAO. Your account balance is Ksh<balance>.

Existing Members

New Members

Aug, 2013

Random assignment of subjects to one of 12 treatments

Sept, 2013

Pilot

Oct, 2014

Recruitment: Calling by phone, offering the pre-assigned promotion / baseline survey

Recruitment in the field: Offering MBAO with a randomly assigned promotion / baseline survey

Feb, 2014

24+3 weeks of trial period

Apr, 2014

Trial ends, end line survey through phone calls

Aug, 2014

Baseline Survey

- Demographic information
- Income
 - Regular vs. irregular
- Savings
 - Products used
 - Flow of savings
 - Stock of savings
- Risk preferences (hypothetical)
- Time preferences (hypothetical)

MEASURING RISK PREFERENCES

Which one do you prefer?

Guaranteed	Flip a coin
500 Ksh	Heads: 500 Ksh Tails: 1000 Ksh
600 Ksh	Heads: 500 Ksh Tails: 1000 Ksh
700 Ksh	Heads: 500 Ksh Tails: 1000 Ksh
750 Ksh	Heads: 500 Ksh Tails: 1000 Ksh
800 Ksh	Heads: 500 Ksh Tails: 1000 Ksh
900 Ksh	Heads: 500 Ksh Tails: 1000 Ksh
1000 Ksh	Heads: 500 Ksh Tails: 1000 Ksh

MEASURING TIME PREFERENCES

Which one do you prefer?

Tomorrow	Four weeks later
800 Ksh	1200 Ksh
600 Ksh	1200 Ksh
400 Ksh	1200 Ksh
200 Ksh	1200 Ksh
100 Ksh	1200 Ksh

Sample Size

Existing Members

$N = 2546$

Control	216
Coin	212
Txt from kids	222
Prematch10	220
Postmatch10	229
Prematch20	227
Postmatch20	231
Prematch10Kids	227
Postmatch10Kids	230
Prematch10Coin	213
Postmatch10Coin	191
Survey	128

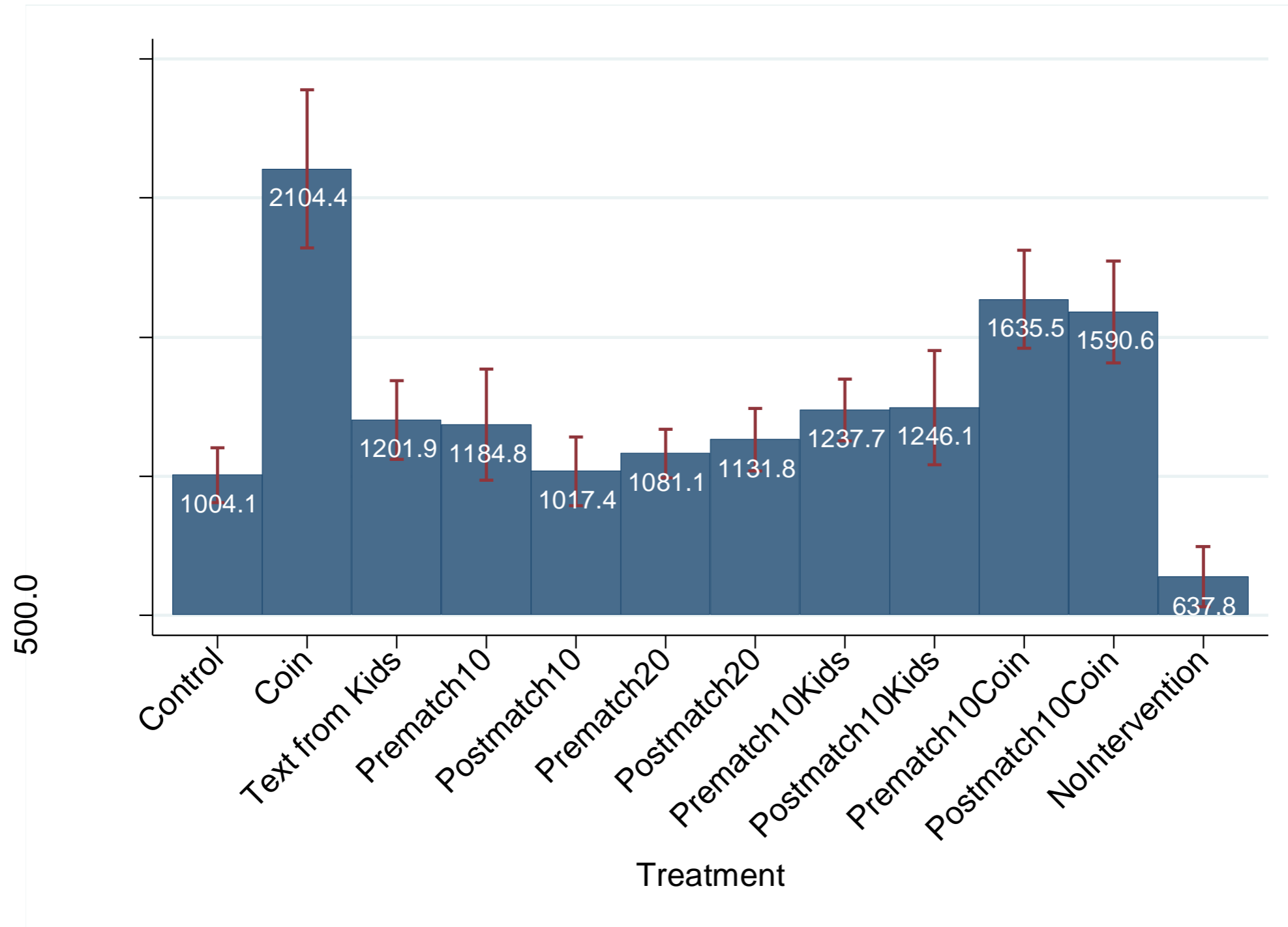
New Members

$N = 1563$

Control	220
Coin	212
Txt from kids	208
Prematch10	243
Postmatch10	230
Prematch20	228
Postmatch20	222

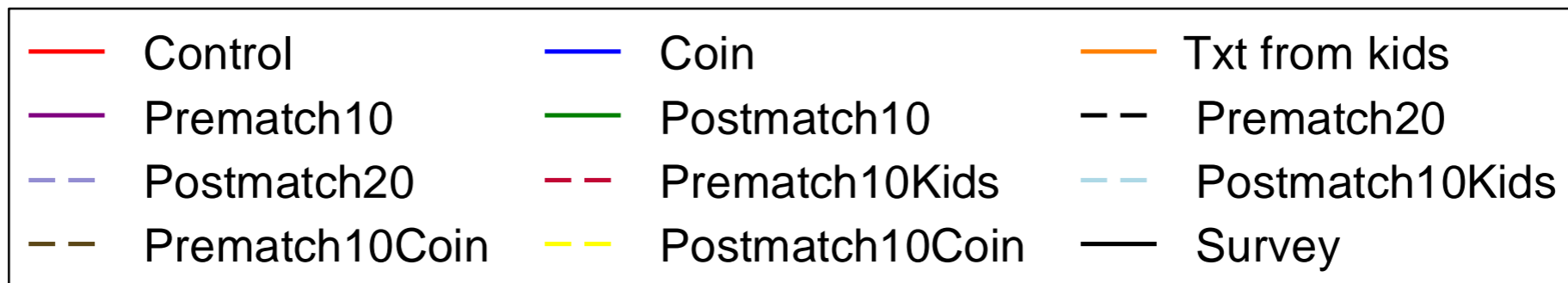
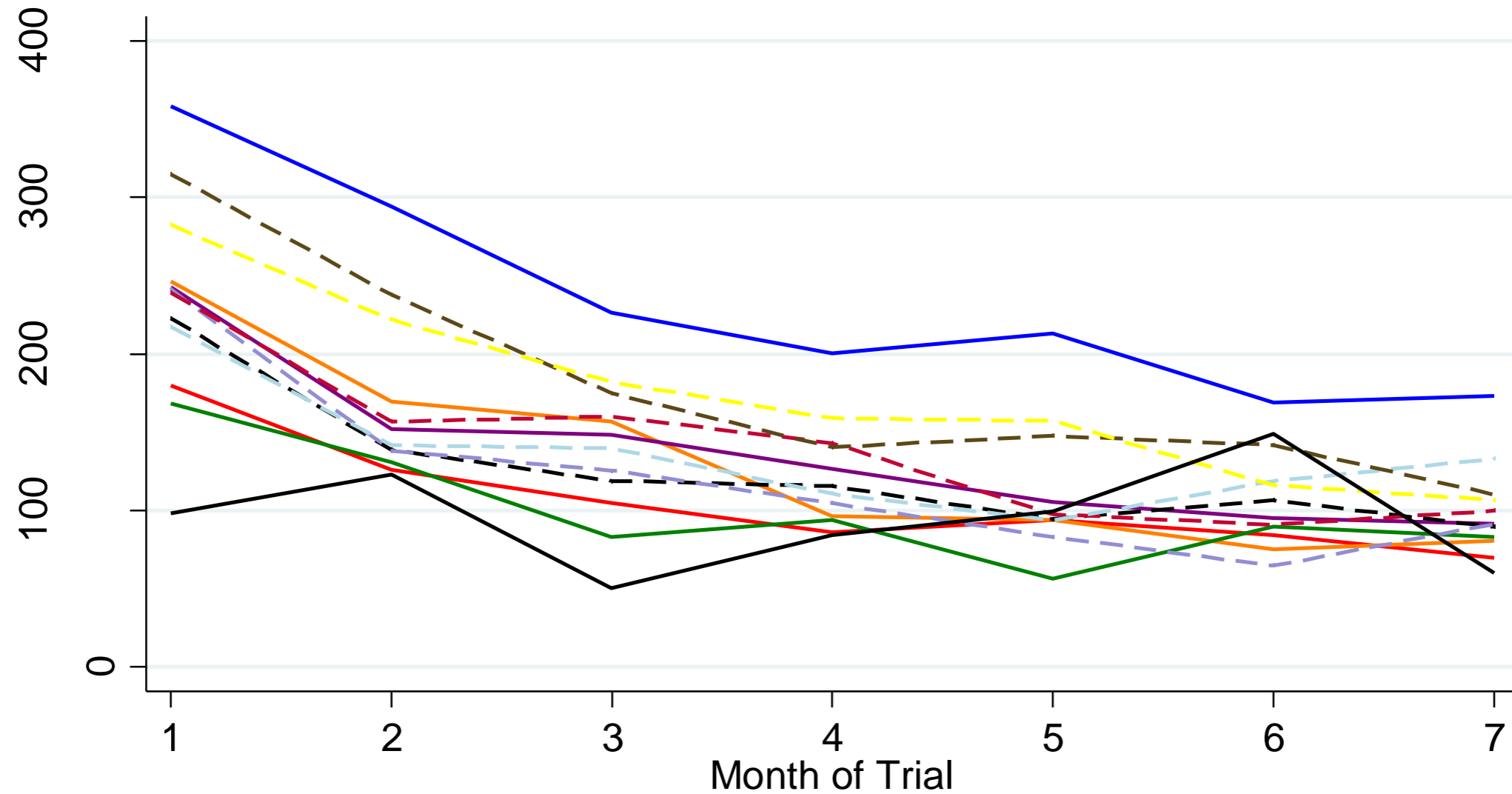
	Female		Variable income		Currently working	
	Existing	New	Existing	New	Existing	New
	(N = 2501)	(N =1563)	(N = 2303)	(N = 1190)	(N = 2469)	(N=1563)
Control	38	45	90	81	92	70
Coin	35	42	88	81	91	70
Txt from kids	34	50	89	81	96	72
Prematch10	32	43	88	87	94	74
Postmatch10	36	45	86	83	92	76
Prematch20	33	45	90	84	94	71
Postmatch20	32	41	89	83	93	74
Prematch10 Kids	33		90		92	
Postmatch10 Kids	37		88		93	
Prematch10 Coin	31		88		94	
Postmatch10 Coin	33		91		96	
Survey	36		90		91	
All	34	44	89	83	93	73

Average savings deposits per person: Mean for each Treatment for Existing members (conditional on savings)



*bars show the standard error of the mean

Average monthly savings deposits per person: Mean for each Treatment for Existing members



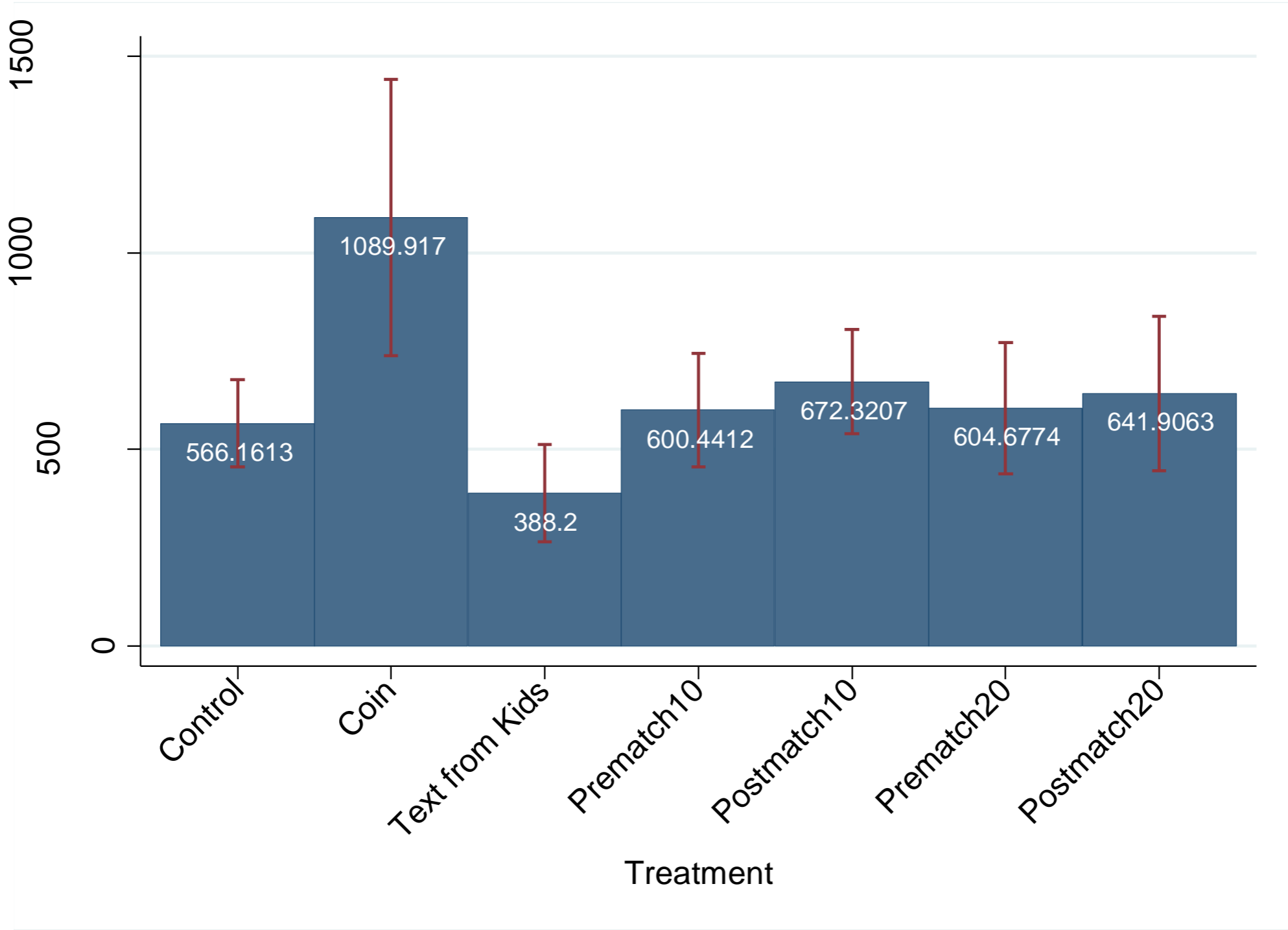
OLS Regression results for Existing members

Treatments	Savings during trial			Fraction of savers	Savings during trial		
	(1)	(2)	(3)		(4)	(5)	(6)
Coin	891.2*** (242.5)	591.6*** (145.7)	437.5*** (113.7)	0.037 (0.042)	1,100*** (301.3)	714.5*** (174.3)	518.4*** (133.0)
Kids	174.1 (139.2)	128.9 (124.6)	65.41 (101.4)	0.023 (0.043)	197.7 (173.5)	138.5 (153.8)	56.78 (122.9)
Prematch10	217.5 (184.0)	100.2 (118.5)	61.48 (97.79)	0.071* (0.041)	180.7 (223.9)	36.01 (142.5)	-7.593 (116.2)
Postmatch10	-38.90 (121.6)	-58.51 (115.7)	-94.36 (94.65)	-0.048 (0.044)	13.27 (158.9)	-15.06 (149.9)	-70.17 (118.8)
Prematch20	142.2 (110.6)	133.5 (107.8)	150.3 (98.09)	0.079* (0.041)	76.96 (131.9)	66.38 (128.5)	91.50 (115.5)
Postmatch20	104.3 (120.5)	92.08 (116.7)	67.76 (100.5)	0.009 (0.043)	127.7 (149.7)	111.4 (144.4)	79.48 (122.3)
Prematch10Kids	243.3** (123.6)	230.7* (119.8)	199.3* (104.0)	0.057 (0.042)	233.6 (148.5)	217.8 (143.6)	181.8 (123.1)
Postmatch10Kids	210.7 (180.5)	75.29 (116.5)	45.04 (98.83)	0.025 (0.043)	241.9 (228.9)	65.09 (143.2)	27.18 (119.6)
Prematch10Coin	523.7*** (164.7)	412.2*** (130.4)	321.6*** (104.8)	0.034 (0.042)	631.4*** (202.2)	487.4*** (156.7)	372.7*** (123.0)
Postmatch10Coin	481.5*** (169.0)	400.4*** (130.1)	345.6*** (111.4)	0.030 (0.043)	586.4*** (208.7)	481.1*** (156.3)	411.9*** (131.4)
NoIntervention	-432.1*** (99.49)	-432.1*** (99.49)	-396.5*** (93.33)	-0.252*** (0.055)	-366.3** (146.3)	-366.3** (146.3)	-318.2** (139.3)
Constant	743.3*** (79.40)	743.3*** (79.40)	707.6*** (71.54)	0.740*** (0.031)	1,004*** (98.89)	1,004*** (98.89)	956.0*** (88.16)
Observations	2,399	2,399	2,399	2,399	1,810	1,810	1,810
R-squared	0.024	0.030	0.034	0.026	0.025	0.031	0.034
Winsorized		1%	5%			1%	5%
Among savers					Yes	Yes	Yes

Robust standard errors in parentheses

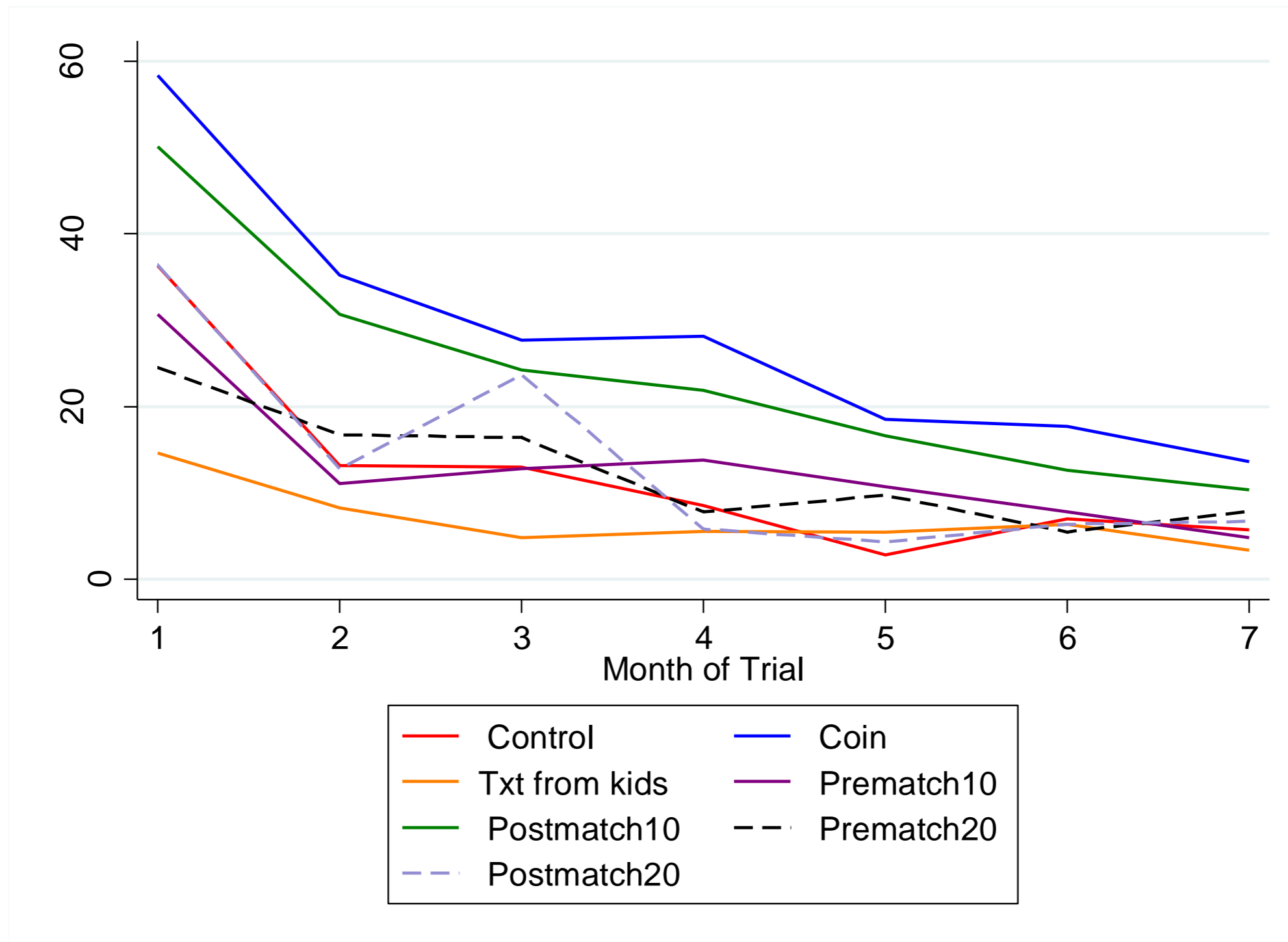
*** p<0.01, ** p<0.05, * p<0.1

Average savings deposits per person: Mean for each Treatment for New members (conditional on savings)



*bars show the standard error of the mean

Average monthly savings deposits per person: Mean for each Treatment for New members



OLS Regression results for New members

Treatments	Savings during trial			Fraction of	Savings during trial		
	(1)	(2)	(3)	savers	(5)	(6)	(7)
Coin	112.7 (73.66)	19.07 (32.81)	8.603 (14.14)	0.030 (0.037)	523.8 (369.0)	14.68 (151.0)	-5.433 (46.68)
Kids	-38.17 (28.28)	-36.22 (26.43)	-21.60* (11.89)	-0.028 (0.034)	-178.0 (166.4)	-166.9 (153.4)	-100.9* (52.13)
Prematch10	5.089 (34.21)	-1.512 (29.64)	-5.520 (13.06)	-0.000 (0.035)	34.28 (182.4)	-9.046 (151.4)	-35.69 (50.61)
Postmatch10	80.05* (44.17)	60.91* (34.68)	24.98* (14.63)	0.095** (0.039)	106.2 (173.8)	36.80 (134.1)	-21.63 (43.80)
Prematch20	1.962 (35.79)	-7.692 (28.09)	-5.444 (13.22)	-0.006 (0.035)	38.52 (200.2)	-28.42 (142.2)	-23.06 (51.39)
Postmatch20	9.528 (39.59)	-10.01 (28.38)	-4.728 (13.03)	-0.003 (0.035)	75.74 (225.0)	-55.33 (145.6)	-24.83 (48.61)
Constant	86.46*** (22.06)	83.31*** (20.29)	48.79*** (9.606)	0.153*** (0.025)	566.2*** (111.2)	545.5*** (98.58)	319.5*** (34.38)
Observations	1,464	1,464	1,464	1,464	242	242	242
R-squared	0.008	0.008	0.010	0.010	0.028	0.009	0.019
Winsorized		1%	5%			1%	5%
Among savers					Yes	Yes	Yes

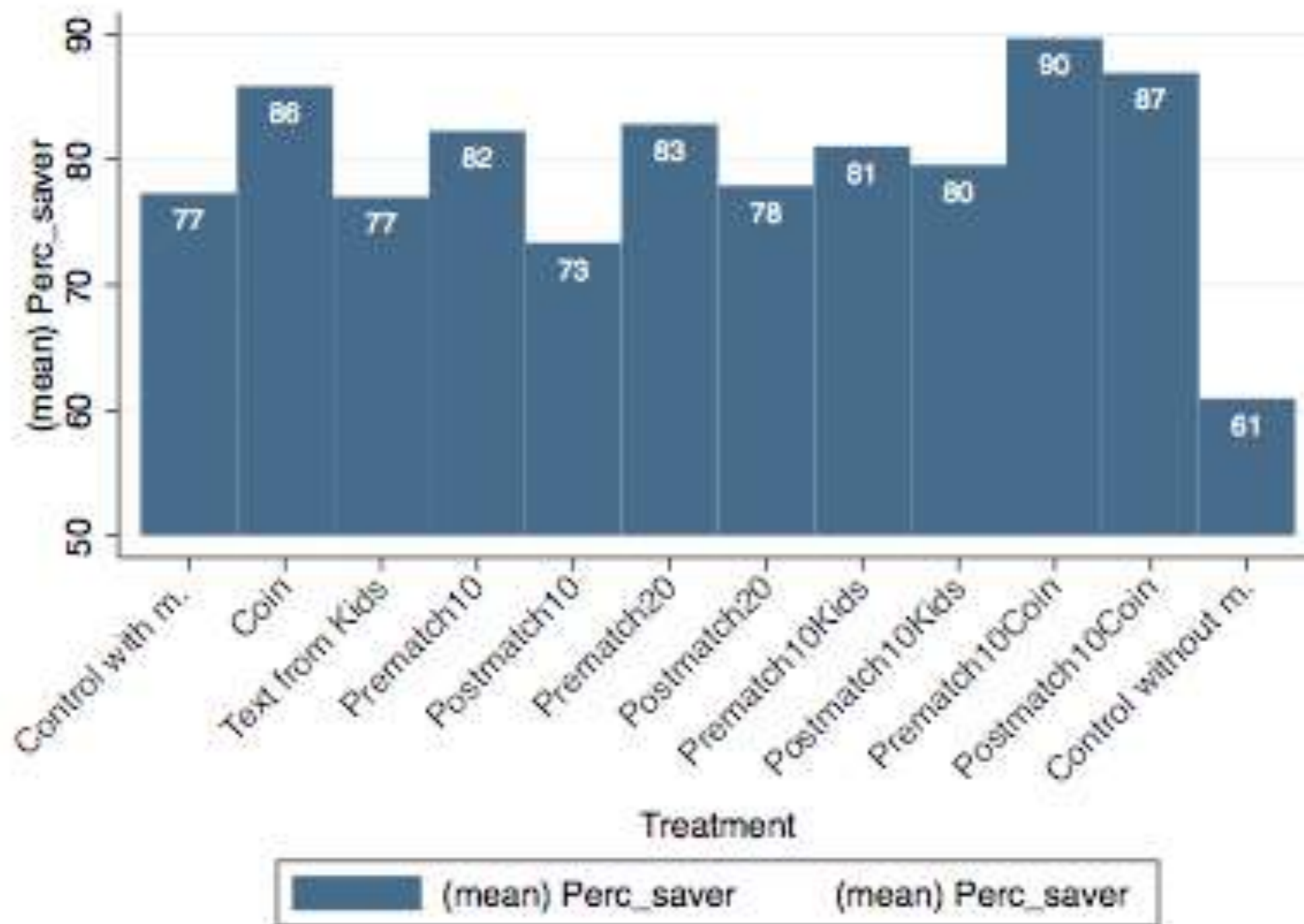
Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

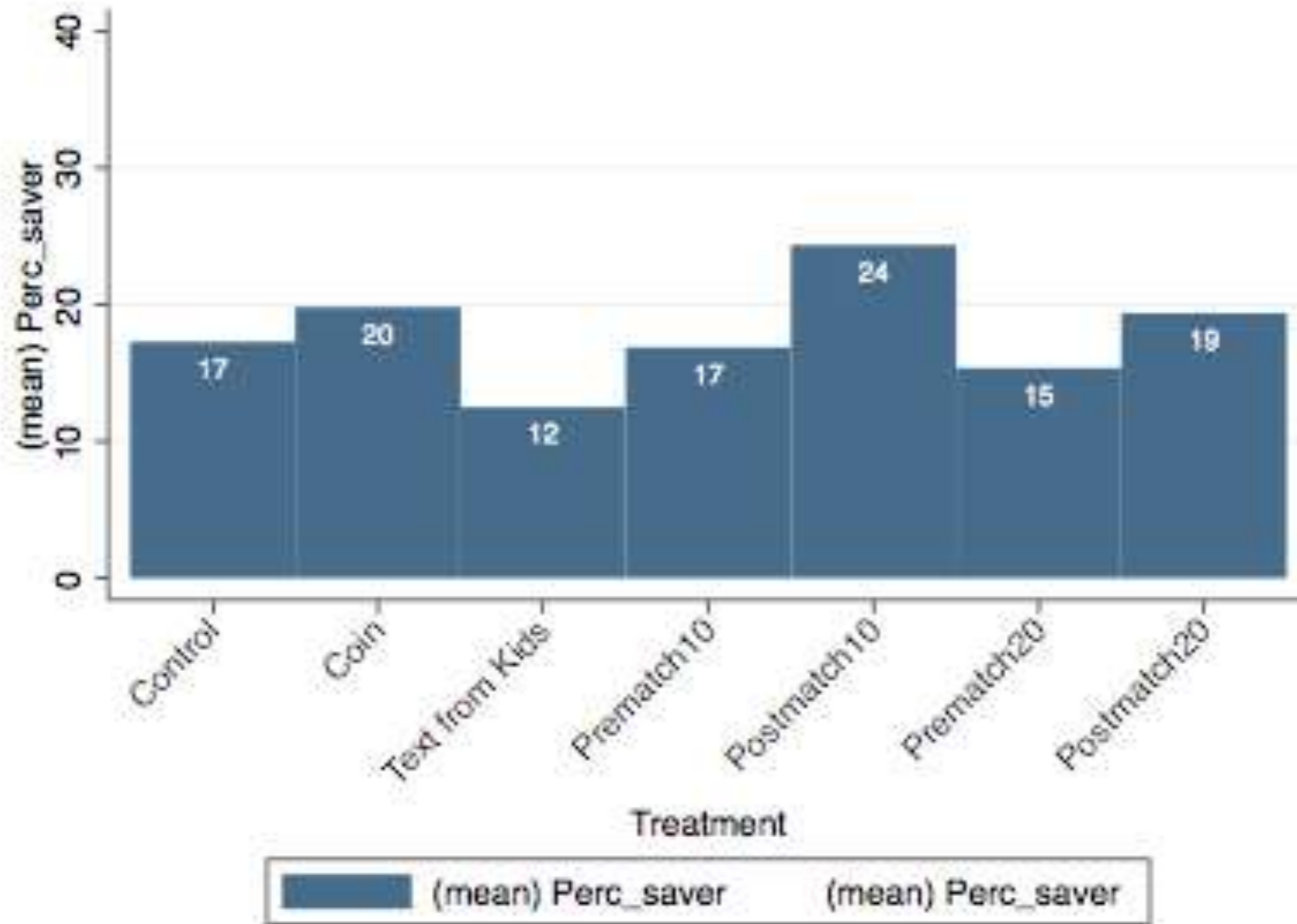
Conclusions

- "Nudges" can be an important complement or substitute to incentives
- Strong effects on savings (both in terms of participation and savings rates) among current members
- For new members, results are non-conclusive due to problems with the reporting of account balances
- In terms of policy, critical that governments consider voluntary mechanisms based on mobile technology to promote savings among informal sector workers...
- ... simple nudges have the potential to increase enrollment and promote savings

Percentage of savers: Existing members



Percentage of savers: New members



Summary Statistics for Existing Members

	All sample	No Intervention	Reminder	Coin	Kids	Pre-match		Post-match		Pre-match 10% & Kids & Coin		Post-match 10% & Kids & Coin		p-value
						10%	20%	10%	20%					
Female	0.342 (0.010) [2400]	0.363 (0.043)	0.392 (0.034)	0.364 (0.034)	0.343 (0.033)	0.308 (0.033)	0.338 (0.033)	0.356 (0.033)	0.322 (0.032)	0.329 (0.033)	0.305 (0.032)	0.364 (0.033)	0.325 (0.033)	0.829
Age	36.510 (0.194) [2351]	37.439 (0.897)	36.915 (0.651)	36.722 (0.656)	36.920 (0.663)	37.327 (0.693)	35.800 (0.664)	35.351 (0.663)	36.137 (0.634)	36.468 (0.651)	35.948 (0.635)	36.780 (0.635)	36.755 (0.713)	0.625
Years of education	10.703 (0.061) [2370]	10.672 (0.238)	10.545 (0.228)	11.020 (0.209)	10.581 (0.223)	10.625 (0.226)	10.816 (0.186)	10.788 (0.187)	10.641 (0.223)	10.704 (0.199)	10.769 (0.181)	10.820 (0.215)	10.426 (0.227)	0.890
Married	0.716 (0.009) [2376]	0.734 (0.040)	0.729 (0.031)	0.699 (0.032)	0.672 (0.033)	0.725 (0.032)	0.734 (0.031)	0.663 (0.033)	0.758 (0.030)	0.689 (0.032)	0.744 (0.030)	0.716 (0.032)	0.735 (0.032)	0.588
Have children	0.819 (0.008) [2375]	0.863 (0.031)	0.833 (0.026)	0.825 (0.027)	0.863 (0.024)	0.815 (0.028)	0.778 (0.029)	0.793 (0.028)	0.815 (0.027)	0.806 (0.028)	0.782 (0.028)	0.859 (0.024)	0.816 (0.028)	0.303
Householdsize	3.874 (0.041) [2371]	3.734 (0.178)	4.192 (0.144)	3.888 (0.141)	4.186 (0.141)	4.065 (0.144)	3.922 (0.144)	3.812 (0.142)	3.941 (0.139)	3.568 (0.130)	3.814 (0.133)	3.778 (0.133)	3.526 (0.143)	0.010
Renter	0.830 (0.008) [2373]	0.831 (0.034)	0.768 (0.030)	0.811 (0.027)	0.813 (0.027)	0.865 (0.024)	0.807 (0.028)	0.812 (0.027)	0.855 (0.025)	0.840 (0.026)	0.852 (0.025)	0.824 (0.027)	0.888 (0.023)	0.120
Irregular income	0.887 (0.007) [2219]	0.904 (0.028)	0.899 (0.022)	0.882 (0.024)	0.881 (0.023)	0.867 (0.025)	0.897 (0.022)	0.858 (0.025)	0.886 (0.023)	0.918 (0.020)	0.874 (0.024)	0.878 (0.024)	0.910 (0.021)	0.818

Summary Statistics for New Members

	All sample	Reminder	Coin	Kids	Pre-match		Post-match		p-value
					10%	20%	10%	20%	
Female	0.443 (0.013) [1464]	0.458 (0.035)	0.416 (0.035)	0.483 (0.035)	0.426 (0.033)	0.458 (0.034)	0.449 (0.034)	0.411 (0.034)	0.760
Age	31.372 (0.259) [1464]	32.296 (0.731)	30.279 (0.663)	30.592 (0.662)	31.704 (0.672)	31.014 (0.657)	32.879 (0.762)	30.734 (0.633)	0.089
Years of education	10.072 (0.079) [1463]	9.813 (0.229)	10.548 (0.215)	10.294 (0.197)	9.991 (0.193)	9.873 (0.204)	10.023 (0.198)	10.005 (0.218)	0.189
Married	0.502 (0.013) [1464]	0.517 (0.035)	0.437 (0.035)	0.547 (0.035)	0.538 (0.033)	0.524 (0.034)	0.505 (0.034)	0.444 (0.034)	0.137
Have children	0.696 (0.012) [1464]	0.724 (0.031)	0.629 (0.034)	0.701 (0.032)	0.704 (0.031)	0.689 (0.032)	0.720 (0.031)	0.701 (0.031)	0.509
Householdsize	4.280 (0.094) [1018]	4.449 (0.211)	4.137 (0.221)	4.057 (0.174)	4.433 (0.183)	4.786 (0.467)	4.344 (0.187)	3.727 (0.155)	0.021
Renter	0.870 (0.009) [1464]	0.862 (0.024)	0.878 (0.023)	0.856 (0.025)	0.892 (0.021)	0.854 (0.024)	0.911 (0.019)	0.832 (0.026)	0.195
Irregular income	0.833 (0.011) [1121]	0.832 (0.030)	0.811 (0.032)	0.825 (0.031)	0.856 (0.027)	0.843 (0.029)	0.826 (0.029)	0.835 (0.029)	0.961