Time Discounting, Liquidity Constraints and Credit Access in a Large Cash Transfer Program

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AIM OF PAPER

Does a poverty targeted cash transfer program affect inter-temporal choice? Do impacts depend on liquidity constraints?

[Part of broader research agenda examining impacts of the Kenya Cash Transfer for Orphans & Vulnerable Children (CT-OVC) on preferences]

Time Discounting versus Time Preference

Fundamental preference parameter versus any reason for choosing something now versus later (e.g. health, liquidity constraint, etc)

Under perfect credit markets inter-temporal MRS will converge to interest rate

-Inter-temporal choice appears to vary with level of present income and *changes* in income—evidence of liquidity constraints [Holden 2013; Tanaka 2010; Pender & Walker 1990, etc]

-Endogeneity, generalizability and public policy

Contributions

One of only three studies to incorporate preferences in large field study; first in context of cash transfer evaluation

CT-OVC is largest poverty program in Kenya—real program, external validity

Random assignment to treatment or control status

CT-OVC and Impact Evaluation Study Design

CT-OVC largest social protection program in Kenya 170,000 households, ultra-poor with OVC, unconditional transfer ~\$20 per month

Location Randomized Control Trial to evaluate impact 2007-2011 1542T, 755C households, baseline 2007, follow-ups 2009 and 2011;

7 districts, 4 Locations in each district, 2 randomized out to C status

Preferences Module

Added to 2011 follow-up survey, translated into Luo and Swahili and Somali; took 15-30 minutes to implement; flash cards used to help communicate questions; all hypothetical, no money ever paid

Respondents are very poor, elderly, illiterate (caretakers of OVC)

	Т	С	p-value
Age in years	57.3	59.1	0.03
Female	79.3	77.3	0.57
Partner in household	34.5	33.5	0.68
Can read	29.9	29.9	0.91
Chronically ill (baseline) ¹	14.9	17.8	0.14
Disabled (baseline) ¹	6.3	6.29	0.98
Consumption pp per day(\$)	0.63	0.65	0.73
Ν	1280	525	

Study Sites: 7 Districts, 14 Locations



Training



Anthropometrics



Access Road to Location



'Near typical' beneficiary



Inter-temporal choice

"Suppose that you suddenly win money in the Lotto. If you could choose between these payment options which do you choose?"

KES1500 today or KES1250 in one month?
KES1500 today or KES1500 in one month?
KES1500 today or KES3000 in one month?
KES1500 today or KES4500 in one month?
KES1500 today or KES7000 in one month?

(not asked in this order)

Inter-temporal choice responses



Inconsistent responses 7.8% (double switch)

Future value	Consistent (N)	%	Inconsistent (N)	%	Total
1250	233	70.0	100	30.0	333
1500	229	94.2	14	5.8	243
3000	844	97.8	19	2.2	863
4500	46	86.8	7	13.2	53
7000	24	100.0	0	0.0	24
9000	5	100.0	0	0.0	5
Impatient (never wait)	284	100.0	0	0.0	284
Total	1665	92.2	140	7.8	1805

Females slightly more likely to be inconsistent, poor fit of regression

Additional Check: Inconsistency in Lottery Choices

In this game you can choose to get KES 1500 or you can choose a lottery that will give you a 50% chance of winning an even greater amount or a 50% chance of getting less than KES1500. Which of these lotteries would you prefer over getting KES 1500 for certain?



Inconsistency in lottery choices 7.3% (some evidence of loss aversion)



Ordinal Measure of Time Preference (higher, more impatient)



<u>Credit Constrained</u>: Sought loan but did not get one; did not seek loan because thought would be denied or did not know how/where (75% credit constrained)



Determinants of Inter-Temporal Choice (OLS)

	9000	7000	4500	3000	1500	Never waits
	(1)	(2)	(3)	(4)	(5)	(9)
Т	0.0320	0.0459	0.0434	0.0471	-0.00257	-0.0320
	(1.17)	(1.65)	(1.52)	(1.60)	(-0.09)	(-1.17)
Access to credit	0.0603	0.0484	0.0357	0.0196	0.0272	-0.0603
	(1.88)	(1.44)	(1.02)	(0.52)	(0.71)	(-1.88)
Age 25-59 years	0.0522	0.0483	0.0960	0.0656	0.0608	-0.0522
	(0.89)	(0.82)	(1.51)	(1.03)	(0.96)	(-0.89)
Age 60+ years	0.0161	0.00997	0.0670	0.0461	0.0643	-0.0161
	(0.27)	(0.16)	(1.02)	(0.70)	(0.96)	(-0.27)
Female	0.0351	0.0294	0.0236	0.0339	-0.0581	-0.0351
	(0.80)	(0.68)	(0.53)	(0.77)	(-1.40)	(-0.80)
Has partner	-0.0174	-0.0208	-0.0307	-0.0273	-0.0923	0.0174
	(-0.53)	(-0.61)	(-0.85)	(-0.75)	(-2.43)	(0.53)
Can read	0.0834	0.0887	0.0874	0.0944	0.0493	-0.0834
	(2.49)	(2.64)	(2.56)	(2.67)	(1.27)	(-2.49)
Has chronic illness	-0.00789	-0.000595	0.0123	0.0300	0.00887	0.00789
	(-0.18)	(-0.01)	(0.28)	(0.67)	(0.19)	(0.18)
Disabled	-0.163	-0.155	-0.150	-0.145	-0.0932	0.163
	(-1.85)	(-1.77)	(-1.70)	(-1.62)	(-1.57)	(1.85)
Log consumption	-0.00786	-0.00219	0.00510	0.00735	0.0280	0.00786
	(-0.32)	(-0.09)	(0.20)	(0.28)	(0.91)	(0.32)
Observations	1,664	1,664	1,664	1,664	1,664	1,664

'20 Percent Rule of Thumb'



Erosion of transfer value by 2011, not enough to resolve liquidity constraints by itself



	Is willing to wait one month for KES: Impatience						
	9000	7000	4500	3000	1500	Dichotomous ²	
	(1)	(2)	(3)	(4)	(5)	(9)	
Below median consumption							
Т	0.0601	0.0772	0.075	0.0746	0.0534	-0.0601	
	(1.51)	(1.88)	(1.79)	(1.74)	(1.43)	(-1.51)	
Access credit	0.0851	0.0697	0.0688	0.0436	0.121	-0.0851	
	(1.93)	(1.45)	(1.42)	(0.84)	(2.57)	(-1.93)	
Observations	824	824	824	824	824	824	
R-squared	0.123	0.117	0.109	0.120	0.076	0.123	
Above median consumption							
Т	-0.00556	0.00709	0.00696	0.0128	-0.0582	0.00556	
	(-0.22)	(0.27)	(0.26)	(0.45)	(-1.81)	(0.22)	
Access credit	0.0586	0.0489	0.0249	0.0196	-0.0173	-0.0586	
	(1.97)	(1.62)	(0.80)	(0.60)	(-0.46)	(-1.97)	
Observations	841	841	841	841	841	841	
R-squared	0.131	0.129	0.125	0.131	0.115	0.131	

Determinants of Propensity to Wait by Baseline Consumption

interaction of treatment status and credit access on propensity to wait for future money							
Is willing to wait one month for KES: Impatience							
	9000	7000	4500	3000	1500	Dichotomous ²	
	(1)	(2)	(3)	(4)	(5)	(8)	
Т	0.0180	0.0324	0.0325	0.0352	-0.0112	-0.0180	
	(0.63)	(1.11)	(1.10)	(1.15)	(-0.36)	(-0.63)	
T*access credit	0.0594	0.0578	0.0463	0.0513	0.0368	-0.0594	
	(2.50)	(2.43)	(1.79)	(1.87)	(1.10)	(-2.50)	
Constant	0.548	0.506	0.292	0.231	-0.131	0.452	
	(2.54)	(2.26)	(1.25)	(0.96)	(-0.51)	(2.09)	
Observations	1,664	1,664	1,664	1,664	1,664	1,664	
R-squared	0.082	0.081	0.077	0.088	0.064	0.082	

Interaction of treatment status and credit access on propensity to wait for future money

(T*access credit: impact of CT-OVC on those with credit versus those without) (T: difference between treated w/o access to credit and entire control group)

Those with access to credit are less liquidity constrained: CT-OVC pushes them to be able to wait for future money

interaction of treatment status and credit access by baseline consumption							
	9000	7000	4500	3000	1500	Dichotomous ²	
	(1)	(2)	(3)	(4)	(5)	(8)	
			Below me	dian consum	nption		
Т	0.0438	0.0621	0.0634	0.0620	0.0288	-0.0438	
	(1.05)	(1.45)	(1.45)	(1.39)	(0.73)	(-1.05)	
T*access credit	0.0663	0.0625	0.0469	0.0541	0.101	-0.0663	
	(1.83)	(1.72)	(1.21)	(1.32)	(2.05)	(-1.83)	
Constant	0.969	0.901	0.67	0.846	0.0226	0.0314	
	(2.38)	(2.12)	(1.55)	(1.86)	(0.05)	(0.08)	
Observations	824	824	824	824	824	824	
R-squared	0.118	0.114	0.105	0.119	0.068	0.118	
		Above median consumption					
Т	-0.0204	-0.00776	-0.00618	-0.00113	-0.0558	0.0204	
	(-0.59)	(-0.22)	(-0.17)	(-0.03)	(-1.26)	(0.59)	
T*access credit	0.0641	0.0636	0.0556	0.0585	-0.0106	-0.0641	
	(1.87)	(1.85)	(1.52)	(1.50)	(-0.23)	(-1.87)	
Constant	0.359	0.276	-0.0692	-0.377	1.021	0.641	
	(0.87)	(0.65)	(-0.15)	(-0.78)	(1.67)	(1.55)	
Observations	841	841	841	841	841	841	
R-squared	0.129	0.129	0.126	0.133	0.114	0.129	

Interaction of treatment status and credit access by baseline consumption

Predicted probability of waiting for KES7000 by credit access



Conclusions

Hypothetical questions perform well in a large field survey

Respondents are very poor, mostly illiterate, yet appear to understand questions

Less than 8% inconsistent, measurement error likely no worse than consumption, agricultural production or income

CT-OVC supports individuals to wait for future money

Impacts larger among poorest and those who are less liquidity constrained; explained by low value of transfer, unable to solve liquidity constraint by itself

Time preference or simply time discounting?

Summary of other treatment effects

	Significant effect (p<.10)
Risk preference (any choice)	
Quality of Life Scale	
Better 1 year	
Better 3 years	
Better 5 years	
Subjective risk fall ill	
Subjective risk other ill	
Subjective risk other die	
Subjective risk food shortage	
Subjective risk financial shortage	



