



**The Boris Mints Institute  
for Strategic Policy Solutions to Global Challenges**  
The Gershon H. Gordon Faculty of Social Sciences  
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# Redistribution via Decentralization: A Case Study in Rural Kenya

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# Study Design

- 40 Chamas randomly assigned into 3 cohorts
  - Cohort 1 – 14 Chamas in CIC group
  - Cohort 2 – 14 Chamas in non CIC group
  - Cohort 3 – 12 Chamas in Control group
- Experimental Cohorts 1 and 2 receive intervention
  - CIC group aid is decentralized via token
  - Non CIC group aid is centralized via voucher



# Research Questions and Hypotheses: Fighting Monopoly Control with Decentralization

- **Research Question**: Can participation in a decentralized community currency (CIC) network reduce losses to individuals and society born of monopoly control of capital?
- **Hypothesis**: Participation in the blockchain-based CIC network will increase individual and household consumer surplus, as well as individual and social welfare.

# Types of Data

- **Panel Surveys** – screening, baseline, midline, endline
  - 17 sections on spending and consumption indexed into 5 categories:
    - Consumer surplus
    - Social welfare
    - Strength of local economy
    - Social solidarity
    - Hunger
- **Financial Diaries- November 2021 – November 2022**
  - 825 individuals across 3 cohorts recording all daily transactions
  - Unique ID for source and sink of transactions within and outside community



# Descriptive Statistics: Surveys

Table 1: Descriptive Statistics and Balance

	N	Control		N	Mean	sd	CIC Diff.	N	Mean	JKJ d	Diff.
Age of household head	109	48.75	11.86	111	46.51	11.02	-2.239	99	50.69	12.19	1.935
Education Level of household head	109	2.75	1.2	111	2.91	1.16	0.158	99	2.67	1.27	-0.086
Number of household in school	108	2.76	1.77	111	2.63	1.37	-0.129	99	3.16	1.92	0.402
Size of household	109	5.03	1.93	111	4.95	1.95	-0.073	99	5.23	1.92	0.205
Landowner (Y/N)	109	0.95	0.21	111	0.99	0.09	0.037*	99	0.95	0.22	-0.005
Number of household under age of 14	109	1.26	1.29	111	1.05	1.19	-0.212	99	1.53	1.37	0.268
Consumer surplus index pre-treatment	109	0.00	0.69	111	-0.16	0.64	-0.161*	99	0.18	0.67	0.180**
Hunger index pre-treatment	109	-0.04	0.88	111	-0.17	0.9	-0.131	99	0.24	0.88	0.289*
Strength of local economy index pre-treatment	109	-0.05	0.79	111	-0.21	0.43	-0.152*	99	0.29	0.83	0.343**
Social welfare index pre-treatment	109	0.11	0.43	111	-0.17	0.4	-0.287**	98	0.07	0.64	-0.043
Social solidarity index pre-treatment	109	-0.09	0.79	110	0.07	0.67	0.158	98	0.01	0.94	0.096

Table shows averages for baseline. The Diff column is the coefficient of a simple regression of treatment status on the variable, with clustered standard errors at the group level. Stars indicate whether this difference is significant.

\* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01.

# Survey Methods and Results

## Difference of Means

*T-test different in means pre-post treatment, divided by groups.*

	Control			CIC			JKJ		
	pre	diff	p.v	pre	diff	p.v	pre	diff	p.v
Consumer surplus	.002	.002	.980	-.160	-.133	.140	.183	.155	.072*
Hunger	-.077	-.057	.583	-.174	<b>-.224</b>	<b>.041**</b>	.253	.295	<b>.019**</b>
Strength of local economy	-.003	-.072	.534	-.205	-.169	<b>.040**</b>	.312	.310	<b>.014**</b>
Social welfare	.104	.035	.641	-.173	-.171	<b>.010**</b>	.043	.107	.156
Social solidarity	-.120	-.036	.759	.070	.094	.361	-.006	-.125	.358

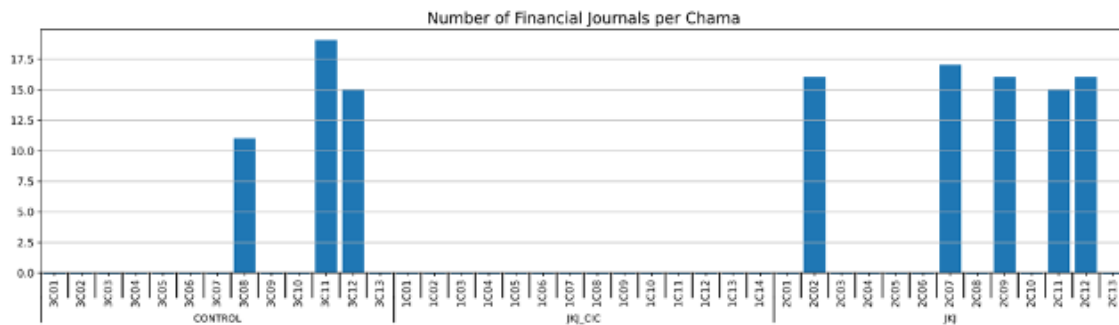
## Regression Analysis

VARIABLES	(1) Consumer Surplus	(2) Hunger	(3) Strength of Local Economy	(4) social Welfare	(5) Social Solidarity
1.d_treated_CIC	0.140 (0.124)	<b>0.064</b> <b>(0.148)</b>	0.066 (0.144)	<b>0.191</b> (0.099)	-0.128 (0.167)
1.d_treated_JKJ	-0.085 (0.128)	<b>-0.259*</b> (0.153)	<b>-0.324t</b> (0.150)	-0.035 (0.103)	0.060 (0.174)
head_age	-0.012* (0.005)	-0.010 (0.006)	-0.011t (0.006)	-0.007t (0.004)	-0.012t (0.007)
head_levelcode	0.026 (0.047)	-0.000 (0.056)	-0.088 (0.055)	-0.062t (0.038)	-0.116t (0.063)
hh_school	-0.122** (0.042)	0.093t (0.050)	0.094t (0.049)	-0.020 (0.034)	0.093 (0.057)
Hhsize	0.110** (0.035)	-0.066 (0.041)	0.028 (0.040)	0.071* (0.028)	0.038 (0.047)
CO_land	-0.656* (0.284)	0.352 (0.339)	-0.828* (0.342)	-0.251 (0.227)	-0.320 (0.396)
hh_under14	0.005 (0.051)	<b>-0.345***</b> (0.061)	<b>-0.279***</b> (0.059)	<b>-0.118**</b> (0.041)	-0.055 (0.068)
Constant	0.913* (0.411)	0.709 (0.490)	1.619** (0.489)	0.581t (0.329)	0.894 (0.563)
Observations	313	313	306	309	305
R-squared	0.083	0.178	0.138	0.082	0.043

Standard errors in parentheses

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, t p<0.1

# Measuring the Spillover Effect: The More the Merrier?



Number of Financial Journals per non-CIC Chama reporting use of the CIC as Single Currency transaction

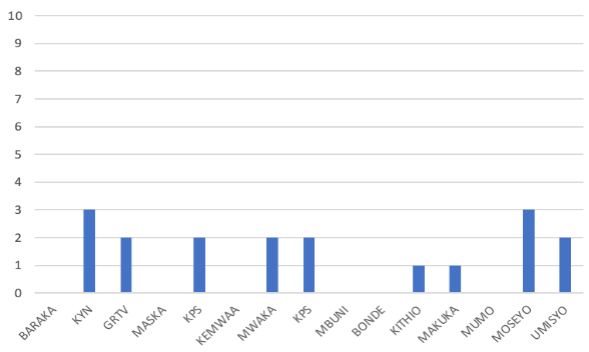
Table 5.3: Spillover Regression Analysis

VARIABLES	(1) Consumer Surplus	(2) Hunger	(3) Strength of Local Economy	(4) Social Welfare	(5) Social Solidarity	(6) Consumer Surplus
1.spillover	0.208 (0.149)	-0.337t (0.177)	-0.284 (0.176)	-0.007 (0.120)	-0.107 (0.203)	
head_age	-0.014** (0.005)	-0.012t (0.006)	-0.015* (0.006)	-0.009* (0.004)	-0.011 (0.007)	-0.014** (0.005)
head_elevelcode	0.028 (0.047)	-0.004 (0.056)	-0.093t (0.055)	-0.063t (0.038)	-0.118t (0.063)	0.028 (0.047)
hh_school	-0.122** (0.042)	0.081 (0.050)	0.082t (0.049)	-0.023 (0.034)	0.095t (0.057)	-0.122** (0.042)
Hhsize	0.115*** (0.034)	-0.058 (0.041)	0.038 (0.040)	0.075** (0.028)	0.034 (0.047)	0.115*** (0.034)
C0_land	-0.639* (0.284)	0.490 (0.339)	-0.695* (0.344)	-0.181 (0.228)	-0.357 (0.395)	-0.639* (0.284)
hh_under14	-0.015 (0.051)	0.347*** (0.061)	-0.288*** (0.059)	0.129** (0.041)	-0.042 (0.068)	-0.015 (0.051)
Spillover						0.208 (0.149)
Constant	0.810t (0.420)	0.926t (0.500)	1.815*** (0.502)	0.650t (0.338)	0.939 (0.577)	0.810t (0.420)
Observations	313	313	306	309	305	313
R-squared	0.080	0.174	0.124	0.064	0.040	0.080

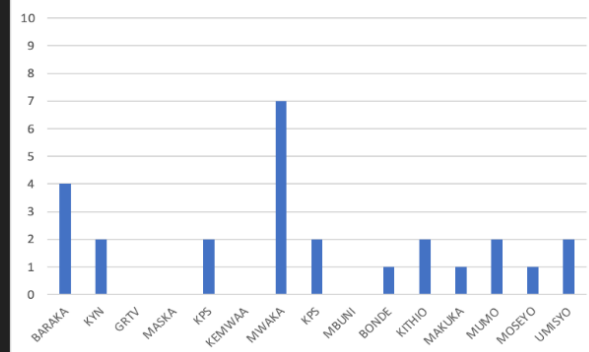
Standard errors in parentheses

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, t p<0.1

JKI Most Used Vouchers



Control Most Used Vouchers



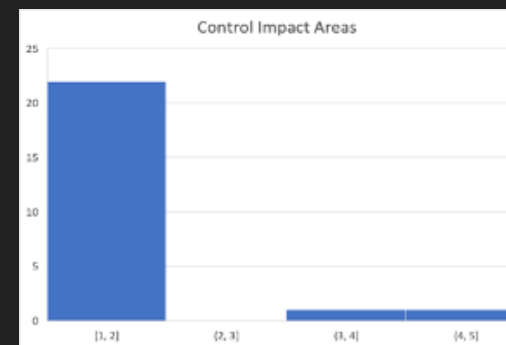
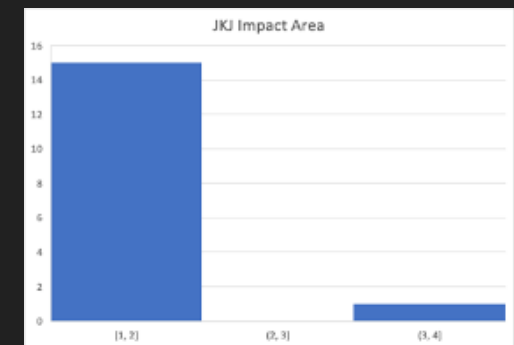
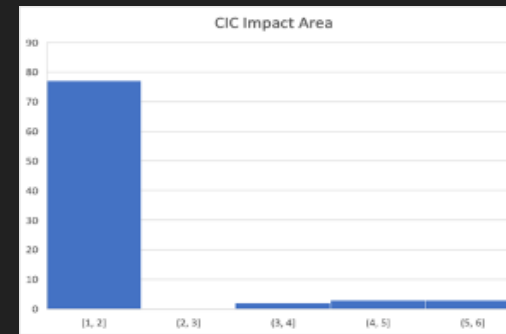
# Effects on the Margins: Conflicting Stories

**Table 5.5: Spillover Regression Analysis – Low Engagement**

VARIABLES	(1)	(2)	(3)	(4)	(5)
	Consumer Surplus	Hunger	Strength of Local Economy	Social Welfare	Social Solidarity
<u>spilloverL</u>	-0.310t (0.173)	<b>-0.564*</b> (0.229)	-0.758** (0.284)	-0.107 (0.188)	0.105 (0.316)
<u>head_age</u>	-0.019* (0.008)	0.004 (0.010)	-0.006 (0.012)	-0.005 (0.008)	0.005 (0.014)
<u>head_levelcode</u>	-0.066 (0.069)	0.020 (0.091)	-0.248* (0.109)	-0.101 (0.075)	-0.213t (0.125)
<u>hh_school</u>	-0.095 (0.067)	-0.088 (0.089)	-0.063 (0.107)	-0.163* (0.073)	0.104 (0.125)
<u>Hhsize</u>	0.175* (0.072)	-0.031 (0.096)	0.197t (0.115)	0.144t (0.079)	0.094 (0.131)
<u>CO_land</u>	-1.215** (0.358)	0.057 (0.474)	-1.093t (0.621)	-0.750t (0.390)	0.271 (0.704)
<u>hh_under14</u>	-0.074 (0.101)	0.016 (0.134)	-0.109 (0.161)	-0.027 (0.110)	-0.152 (0.186)
Constant	1.517** (0.542)	0.475 (0.718)	1.690t (0.911)	1.074t (0.590)	-0.371 (1.020)
Observations	83	83	80	83	78
R-squared	0.319	0.135	0.257	0.156	0.100

Standard errors in parentheses

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, t p<0.1



## Impact Areas

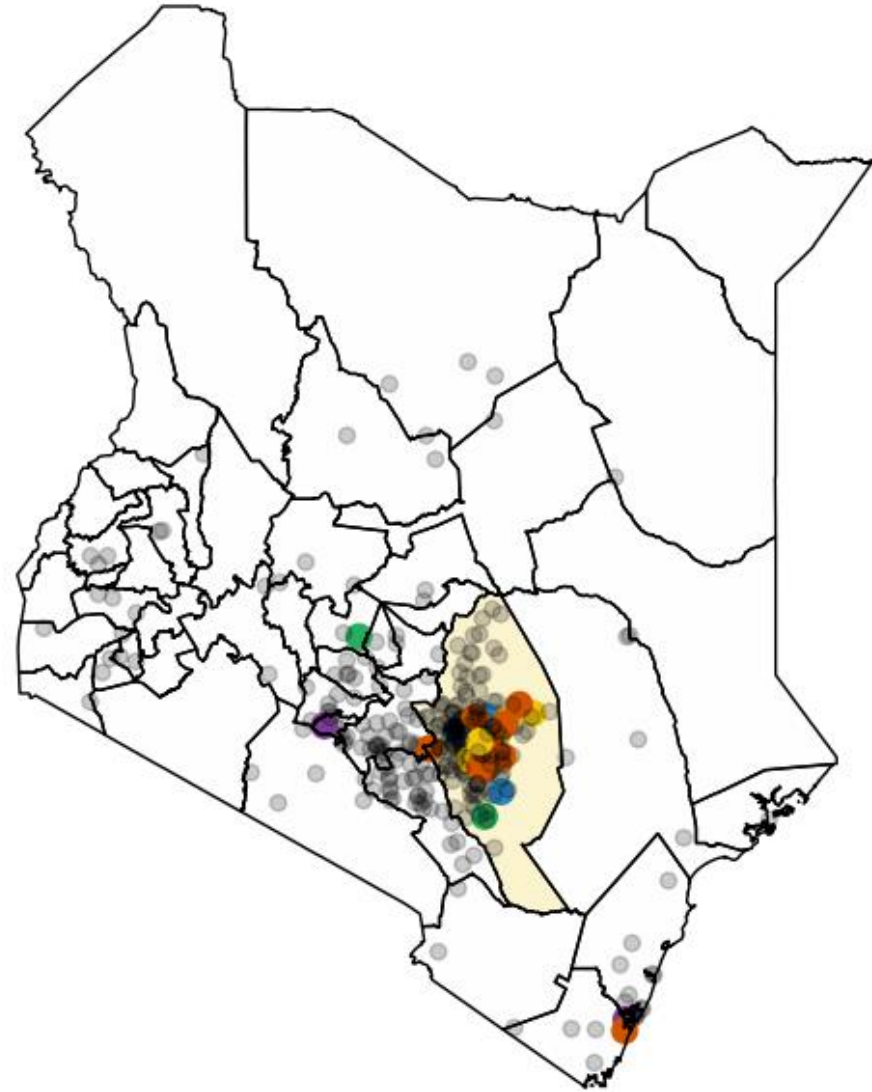
- 1 = Savings
- 2 = Food consumption
- 3 = Health
- 4 = Education
- 5 = Business
- 6 = Loans



# Exploring Economic Networks: Financial Journals Initial Results

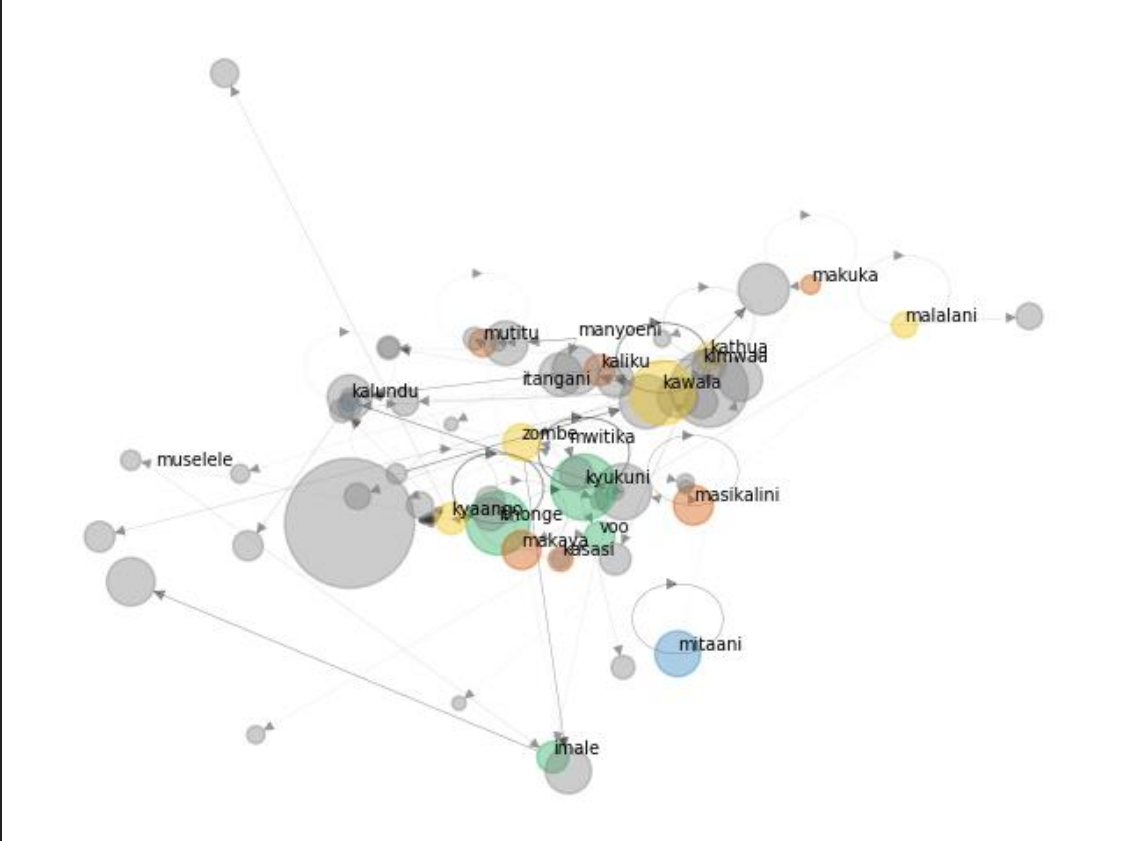
## Geographic Distribution of Villages Involved in the Economic Network of Participants

1. Blue : Control
2. Orange : CIC
3. Green : JKJ
4. Yellow : Mixed (multiple cohorts in village)
5. Purple : Nairobi & Mombasa (urban)
6. Grey : Others

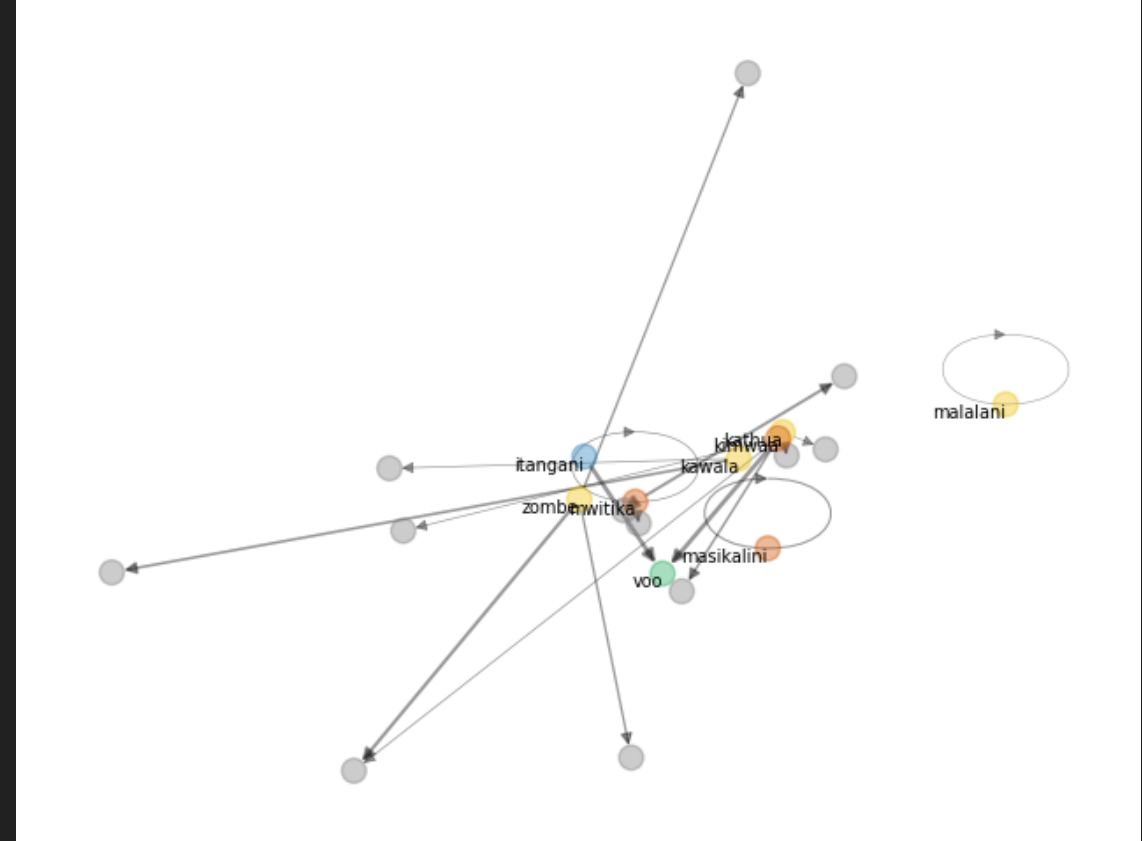


# Lessons and Questions: Beyond the RCT

Economic Network of Kenyan Villages - Flow of KSH  
(top 15%, 100 km from Endau)



Economic Network of Kenyan Villages - Flow of Sarafu  
(top 15%, 100 km from Endau)



Thank you for making this possible!

