

URBAN, INFORMAL COMMUNITIES: A CASE STUDY OF GIS IN POLITICAL SCIENCE

Prepared for VRDI July 2nd, 2019

Today's Discussion



Brief intro to the *Logic of Social Science Inquiry*

Political Science Research Example –
Comparative Political Economy of
Development

Methodology Discussion- employing
GIS to advance a study on *invisible*
persons living in marginalized, urban
spaces.

Why do we call it “Political Science”?

Politics involves the practice, or theory of, persuading others to adopt a particular point of view.

Alternatively, Political **Science** employs the scientific method for the purpose of uncovering and explaining the true state of the world.



Economic Development, and the Retreat
of Political Clientelism? *An Experimental
Study of Modern Banking in Manila,
Philippines*

What is Clientelism?

“... the proffering of material goods in return for electoral support, where the criterion of distribution that the patron uses is simply: did you (will you) support me?”

(Stokes 2009, Oxford Handbook of Political Science).

Attitudes Towards Finance, Politics and Business in the Philippines

Lokal Na Pera Politika

– Local Money Politics

Is political participation useful?

“No... Not yet.”

- Shop keeper. Makati, NCR



“You know, they [Barangay Councilors] don’t have sufficient salary from the government, that is why lend with organization, they know each other- word of mouth.” -

self-employed driver. Kalayaan Village, Pasay

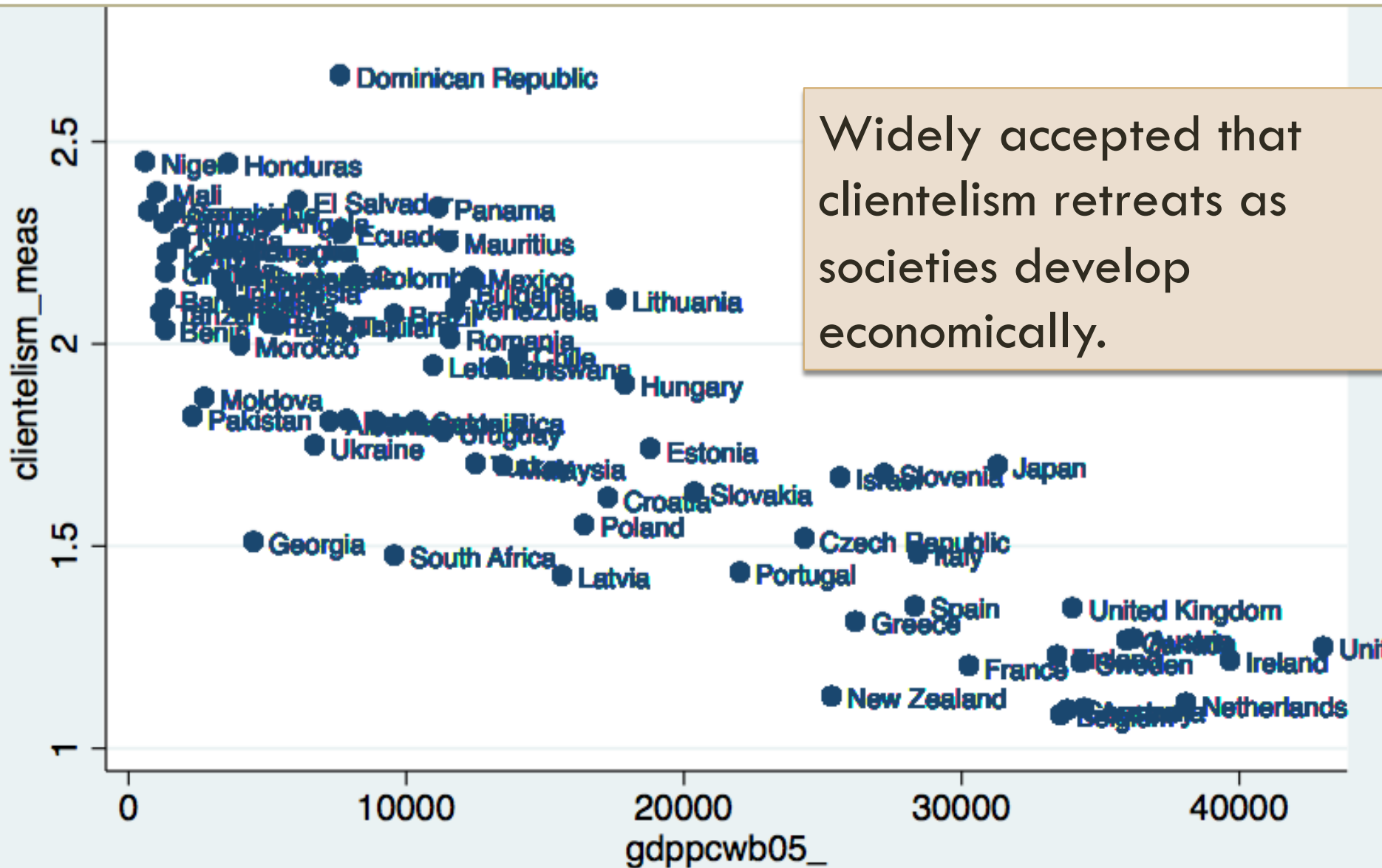


When asked if she attends Barangay Fiesta:

“No. It is simple. Because no money.”

- Street vendor, Bangbang Pasig

Motivation: Poverty \longleftrightarrow Clientelism



Sources of Clientelism

Broker Side

As incomes rise, the cost-benefit calculus swings in favor of programmatic strategies (Weitz-Shapiro 2013; Stokes, Dunning, Nazareno, and Brusco 2013; Kitschelt and Wilkinson, 2007)

Client Side

Low income voters are more ambiguity averse, and thus rationally prefer the immediate benefits from local brokers over promises for abstract, programmatic policies (Baldwin 2013; Thachil 2014).

Equilibrium

“Clientelism functions only when both voters and political brokers are tightly enmeshed in personal networks,..” (Cleary & Stokes 2006, p10).

Market Informality and Clientelism

Q: What happens to politics when markets modernize and formal financial services become more accessible?



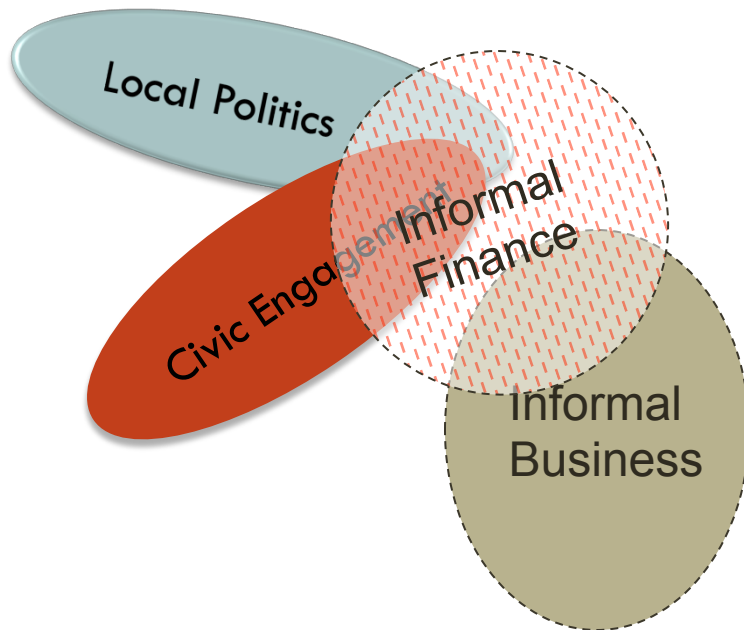


“Clientelism functions only when both voters and political brokers are tightly enmeshed in personal networks,..” (Cleary & Stokes 2006, p10).

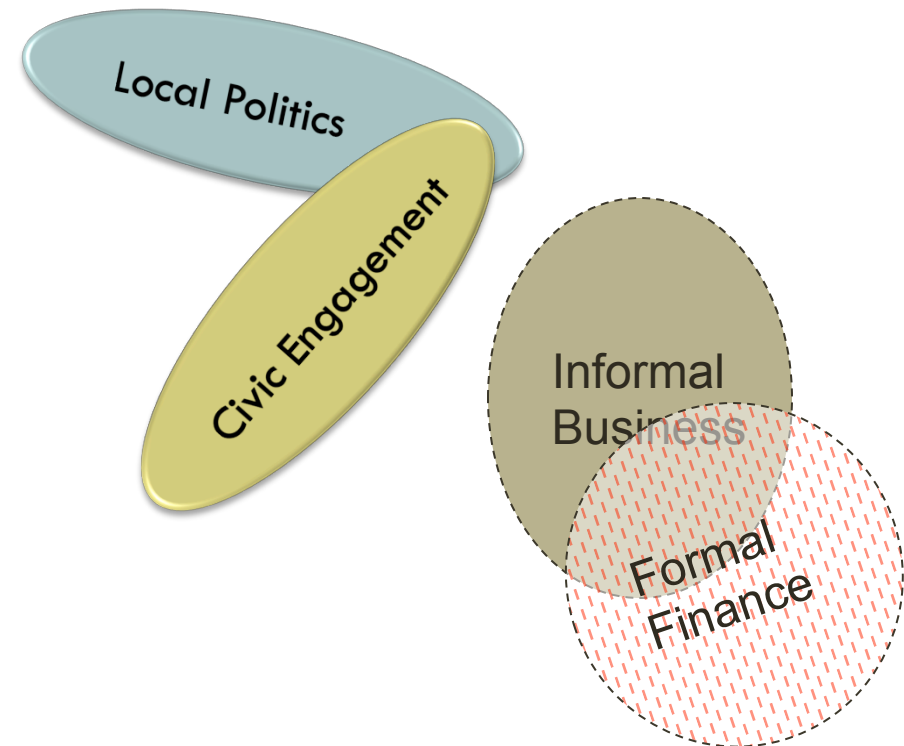
Could a shift to formal banking attenuate local clientelistic relationships, by reducing the need to secure finance from informal, and often political, sources?

Hypothesis: Formal Banking Reduces both Political Patronage and Political Engagement

Informal = Overlapping



Formal = Fragmented



Experiment



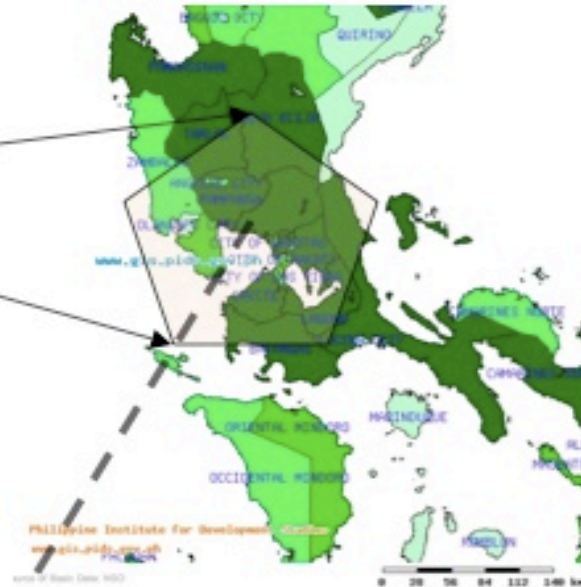
- Recruitment/Randomization
 - 2,158 people applied for formal loan and took part in a formal credit expansion experiment from 2005-08 (Karlan & Zinman 2009). Sample Frame = 1978 were completed follow up interviews.
- Masking - Double Blind
 - Program participants, bank officers and surveyors unaware of experiment. Treatment status encrypted during ethnographic field work.
- Intervention
 - 80 percent offered a formal bank loan. (T: 1,610, C: 365)
- Study Sample
 - Live within 100 km of Manila center; earn 1-3 dollars per diem
 - Mostly female head of households (82% female)

Data – Multi-Method Approach



- **Follow-up survey** of impact study (n=1978)
- **Bank records** - treatment assignment, informal home address, financial data and demographic characteristics.
- **Qualitative evidence** - over 200 in-depth interviews with original experiment participants, local money lenders, politicians, political activists and bystanders.
- **Geo-coded database** - (n= 1,576) home and business locations of experiment participants and the 9 banks branches. The spatial data cover 273 barangays, 29 municipalities and 4 provinces.

Fieldwork Example: finding subject #033

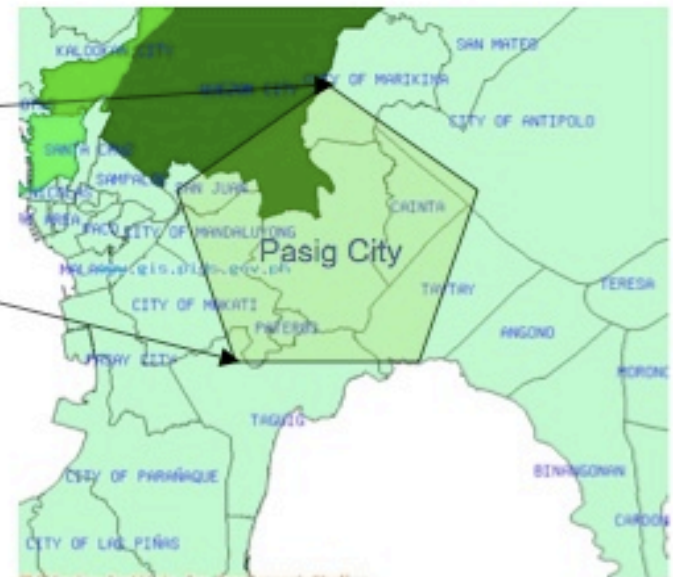
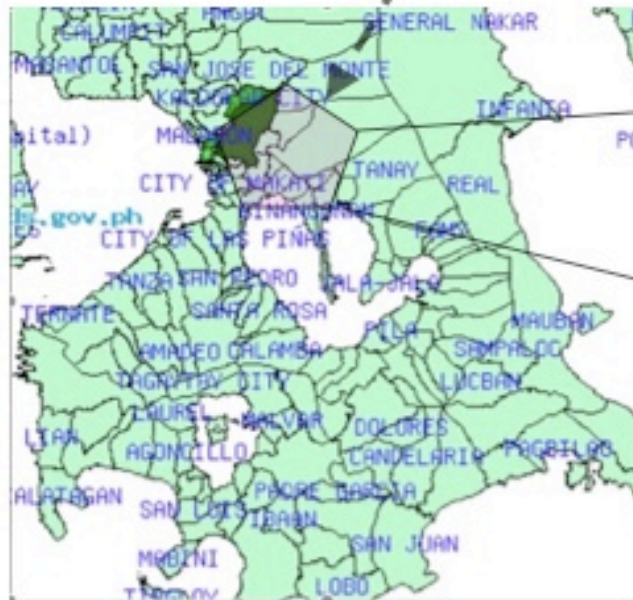


Individuals sampled for the qualitative follow up study are located in four provinces:

Cavite
Rizal
Laguna
Batangas

And one independent region:
Metro Manila Capital Region

The subject example lives within the Manila Capital Region, in Pasig City, one of 17 municipalities. There are currently 1511 official municipalities in the Philippines.



Fieldwork Example: Part 2



30 Barangays in Pasig

District 1 Barangays

- Bagong Ilog
- Bagong Katipunan
- Barribang
- Buting
- Caniogan
- Kaluwann
- Kapisigan
- Kapitolyo
- Malinao
- Oranbo
- Palatiw
- Pineda
- Sagad
- San Antonio
- San Joaquin
- San Jose
- San Nicolas (Poblacion)
- San Miguel
- Santa Cruz
- Santa Rosa
- Santo Tomas
- Sumilang
- Ugong

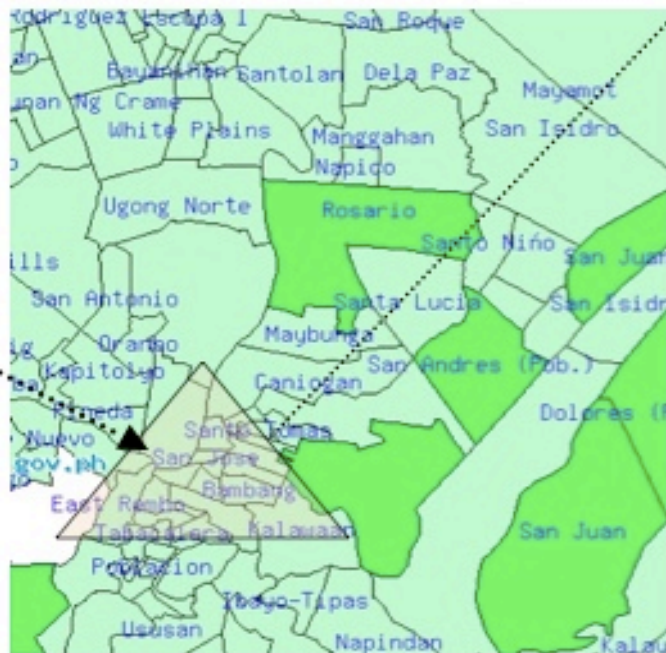
District 2 Barangays

- Dela Paz
- Manggahan
- Maybunga
- Piragbubatan
- Rosario
- Santa Lucia
- Santolan

Given inconsistencies in addresses, we believe the subject is located in one of three places, within a general area.



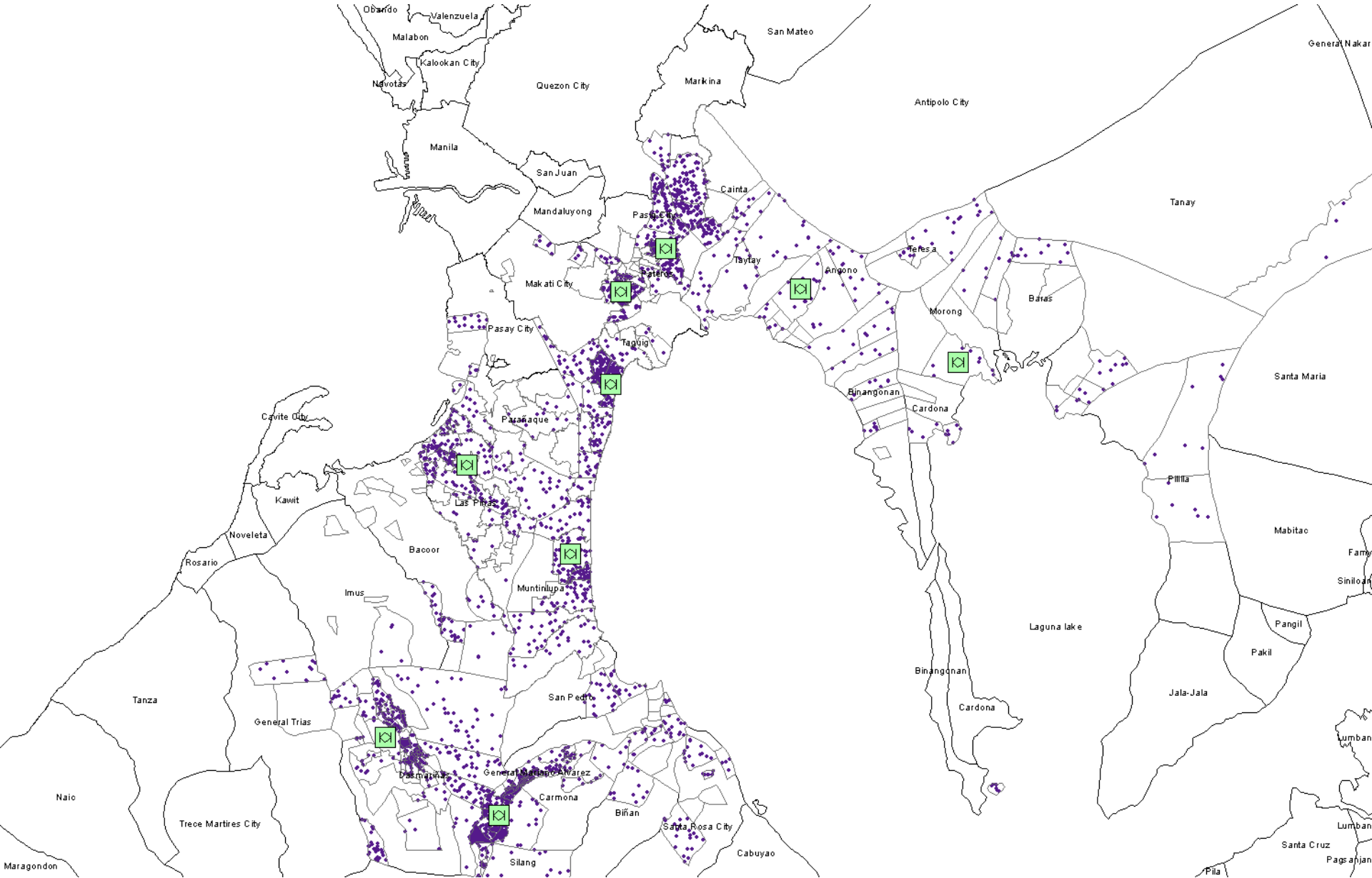
Through data decoding, GIS and road maps we believe the subject lives at an address in either the barangay of Bambang or San Jose.



With the help and many attempts by both San Jose and Bambang officials, as well as friendly passersby, we locate the person in an unmarked market area. She is unable to be interviewed since her cousin has taken over the stand that day.



Spatial Distribution of Study Participants



Lokal Na Pera Politika – Local Money Politics



“If you can’t pay, the Bombay you owe the Bombay. If you can’t pay the Barangay, your whole family, your cousins will be found [forced] to pay.” - Peanut Roaster in

Bacoor, Cavite

“Barangay politics. What can I say? [They are] Interested here in your business and you. But I do not have time for meeting[s].” - runs eatery and freelance sewing. Aguhu, Pateros

When asked where one would acquire capital for business:

“Some people sell vote for P500. Me no. [I am a] Good citizen.”

- Street vendor, Las Pinas



“People in politics will have business. But people in business don’t care for politics here. They avoid [politics] if business is good.”

- Shop keeper in Pasay City

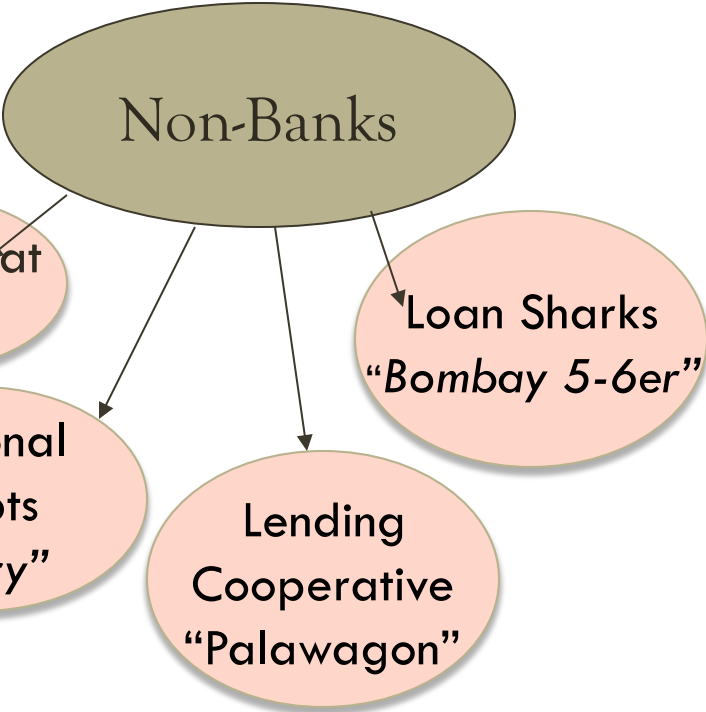
Type of Informal Finance Matters

Typology of Informal Financial Arrangements Found within Barangays

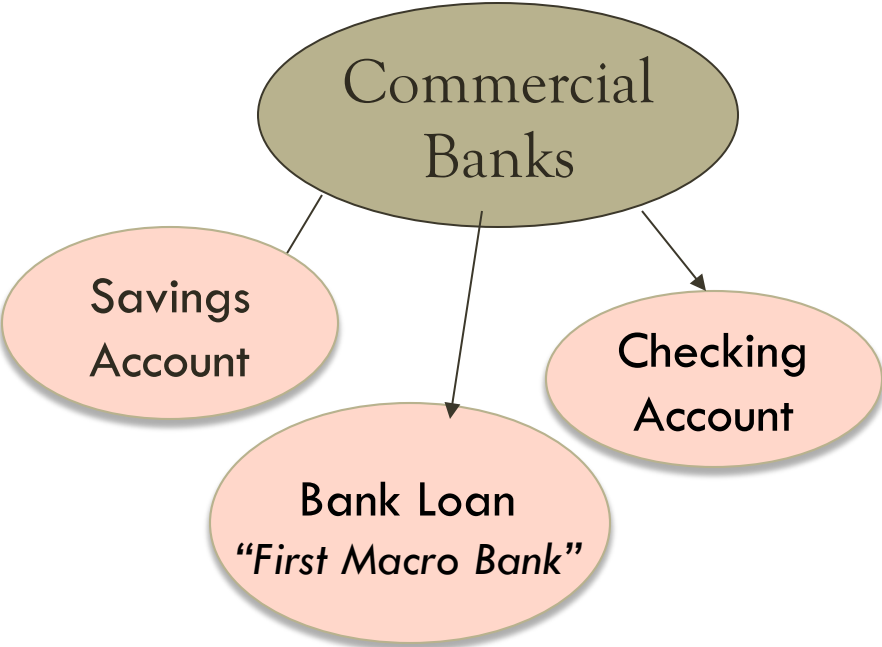
Source	Definition	Political Qualities	Common Informal Arrangements
Bombay 5-6er	This is a loan shark of Indian nationality who charges high rates.	The Bombay 5-6er is known in the community but in no way linked to politics.	<p>"5-6 loan"</p> <p><i>Receive 500 pesos for any purpose, but must repay 600 in the following week.</i></p>
Lending Group	A local lending group, often through Barangay.	Locally based, group-lending projects are likely to overlap with local political affairs.	<p>"Repa-repa" - Savings group wherein one member can take out on a given month</p> <p>"Tampuhay" - Year long savings to divide among group per annum.</p>
Individual Lender	1:1 informal lending.	Case specific: Patron-client relationships.	<p>"Dory" - interest free credit offered as gratitude by informal sources.</p> <p>"Suking tindahan" - specific credit for micro entrepreneurs in a barangay</p>

Political Implications of Financial Formality

Informal



Formal



Informality & Clientelism



Barangay office, basketball court and local meeting center. San Miguel, Pasig. Photo Credit: Hite 2009



Barangay government office. Laguna, Philippines
Photo Credit: Hite 2008

Why Informal Banking is a Broker's Best Friend

- Highly personal – relationship based; requires face-to-face interaction
- Local - easily monitored
- High transaction costs – diffuse, frequent and small transactions
- Discrimination – local elites usually control access to informal credit market
- Coercion – no recourse beyond local power structures; often necessary for survival

Validating the Experiment: Assignment to Treatment and Movement Towards Formality

Dependent Variable	Mean (Treatment)	Mean (Control)	Beta Coefficient	Diff Treatment vs. Control
Formal Bank Loans	1.107	0.402	0.658	(+) ***
Informal Group Loans	0.181	0.448	-0.221	(-) ***

*** Significant at 0.5%, Significant at ** 1%, Significant at *5%

The analysis employed First Macro Bank financial diaries data.

Individual Covariates: Tests of Orthogonal Treatment

variable	coding	definition	Control (mean)	Treatment (mean)	ALL	diff test
female	(0- male, 1-female)	gender	0.801	0.823	0.819	0.023
married	(0- no, 1-yes)	marriage status	0.705	0.756	0.746	0.045*
age	years	age in years	41.536	41.207	41.268	-0.014
branch	(1-9)	the bank branch applicant visited	4.913	5.261	5.197	0.059*
cluster_size	(1-53)	number of other participants in barangay	9.429	9.933	9.840	0.004
no_travel_work	(0- no, 1-yes)	work is in the home	0.342	0.361	0.357	0.016
b_in_barangay	(0- no, 1-yes)	the business is in the barangay	0.880	0.855	0.859	-0.028
b_moved_once	(0- no, 1-yes)	the business moved once in term of study	0.071	0.069	0.069	-0.003
whole_life_one_place	(0- no, 1-yes)	the person lived in same barangay for life	0.112	0.139	0.134	0.031
longtime_address	(0- no, 1-yes)	> 40% of life in current barangay	0.358	0.350	0.351	-0.007
address_tenure	(.016 - 1)	percentage of life at current address	0.361	0.375	0.372	0.016
short_b_tenure	(0: >3 yrs; 1:<3 yrs,)	business less than three years	0.254	0.215	0.222	-0.037
same_birth_prov	(0- no, 1-yes)	born in same province they currently reside	0.407	0.408	0.408	0.001
distance_geo	(0-29 miles)	the distance travelled to apply bank loan	2.868	3.236	3.167	0.006
distance_manila	(9-52 miles)	distance from Manila city center	23.879	26.573	26.063	0.116*
bad_floor	(0- no, 1-yes)	the home residence has unfinished/ dirt floor	0.969	0.960	0.962	-0.017
above_medl~p	(0- no, 1-yes)	above medium income at time of application	0.473	0.506	0.500	0.027

Survey Instruments

- Data from the follow up survey include responses to questions on both political attitudes and behavior:
 - A. Interest in Politics
 - B. Participation in both elections and non-electoral political activities (petitions, demonstrations, meetings)
 - C. Political Efficacy (both internal & external)
 - D. Confidence in Political Institutions

Estimation

I. Sample Average Treatment Effect:

$$Y = \alpha + \beta_1 X_1 + \varepsilon$$

II. Conditional Average Treatment Effect:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 (X_1 * X_2) + \varepsilon$$

The dependent variable, Y , are political survey responses. X_1 is the binary assignment to treatment. X_2 is an indicator variable, through which to test for heterogeneity in treatment.

Intention-To-Treat Results:

	Scale	Control	Treatment	ITT Effect	Beta. Coeff	Std. Err
<u>Interest</u>	(1-4)					
How interested in politics?		2.5	2.388	(-)	-0.112*	0.0646
<u>Confidence</u>	(1-3)					
Police		0.817	0.755	(-)	-0.0616*	0.0323
Courts		0.912	0.855	(-)	-0.0569*	0.0317
National government		0.83	0.754	(-)	-0.0763**	0.0352
Political parties		0.884	0.764	(-)	-0.119***	0.035
Charities		1.515	1.386	(-)	-0.130***	0.0449
<u>Political Efficacy</u>	(1-10)					
Politicians pay attention		4.838	4.906		0.068	0.204
Personal influence		7.47	7.288		-0.181	0.199
Elections matter		7.421	7.208		-0.213	0.21
Political Understanding		7.789	7.362	(-)	-0.428**	0.209
<u>Voting</u>	(0,1)					
Voted in Prior Election		91.77%	89.46%		-0.0231	0.0199
Plan to Vote in Next Election		99.59%	97.05%	(-)	-0.0254***	0.00661
<u>Informal Engagement</u>	(0,1)					
Meet with a group to discuss politics		57%	54.38%		-0.0262	0.0388
Sign a petition.		66.52%	59.40%	(-)	-0.0713**	0.0345
Attend peaceful demonstrations		54.31%	43.37%	(-)	-0.109***	0.0361



As people enter new market relations, they also become available to new patterns of behavior, and previous social, economic and psychological commitments are eroded.






(Karl Deutsch 1961)

Employing GIS to Explain the Mechanism

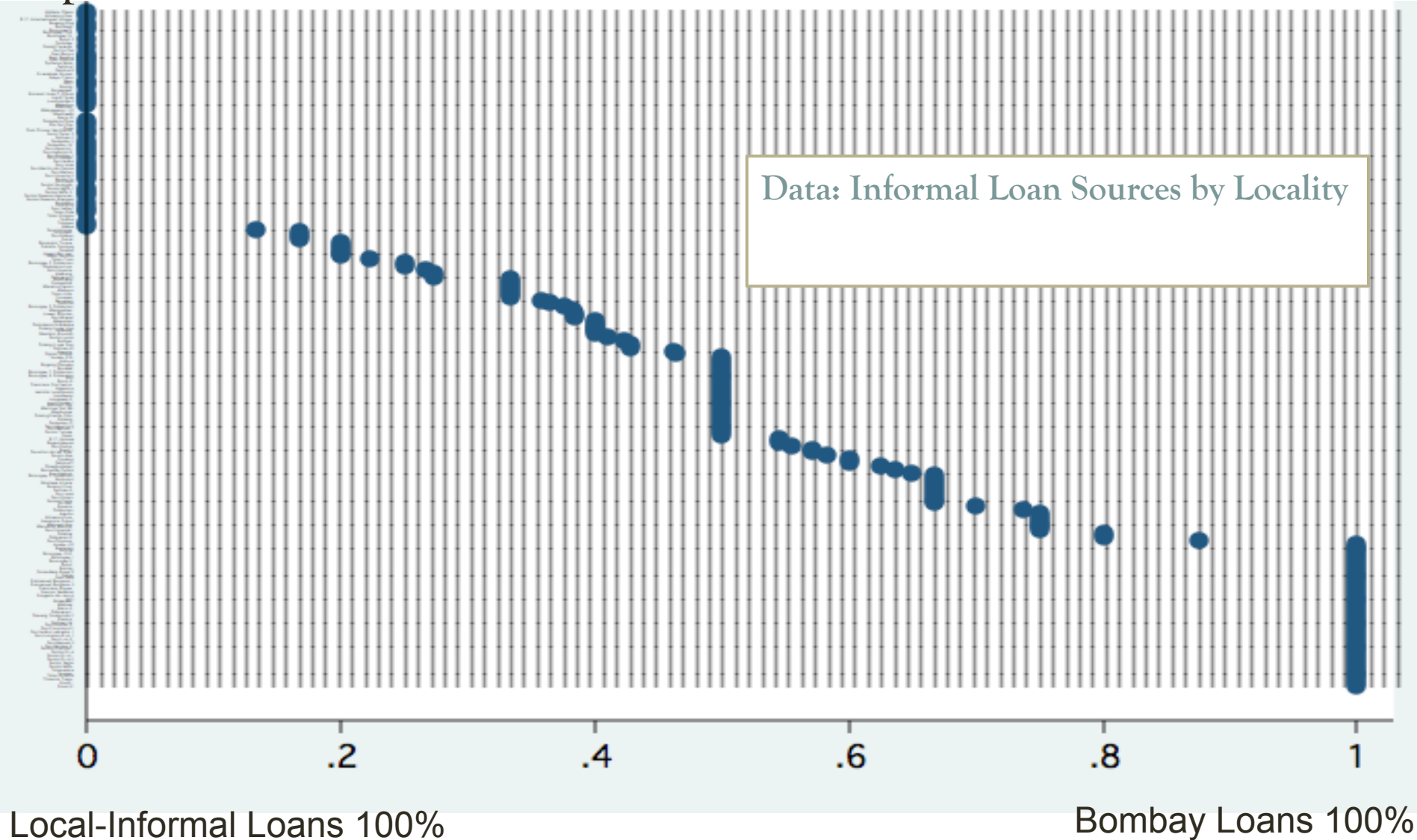
Additional temporal, spatial and demographic data provide new avenues of inquiry.

- Hypothesis I:
 - Does the availability of certain forms of local, informal loans influence how people respond to treatment?

Typology of Informal Financial Arrangements Found within Barangays

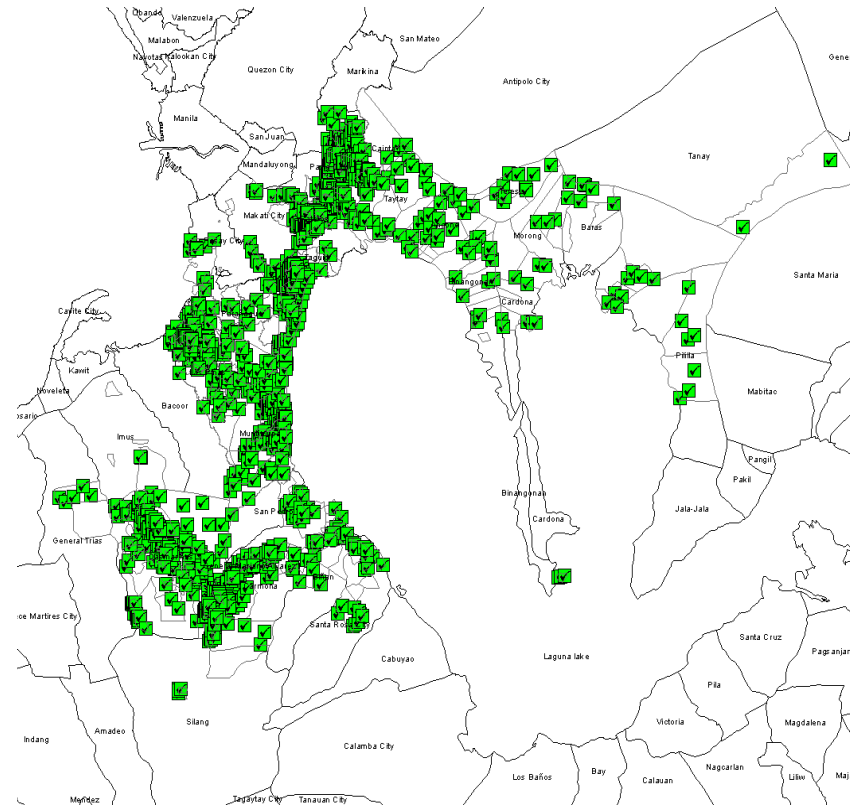
Source	Definition	Political Qualities	Common informal arrangements
Bombay 5-6er 	This is a loan shark of Indian nationality who charges high rates.	The Bombay 5-6er is known in the community but in no way linked to politics.	"5-6 loan" Receive 500 pesos for any purpose, but must repay 600 in the following week.
Paluwagan 	A local lending group, often through Barangay.	Locally based, group-lending projects are likely to overlap with local political affairs.	"Kubaway" or "suki-ay" groups to procure finances for festivals "Repa-repa" - savings group wherein one member can take out on a given month "Tampuhay" - year long savings to divide among group per annum.
Individual Employer 	The person provides a salary and gives them loans.	This patron-client relationship may be political if the employer is involved locally.	"Dory" - interest free credit offered as gratitude by informal sources.
Family/Friends 	This can be anyone in the household or direct area who will lend or borrow money.	Case specific.	"Dajong" - carry together mortuary risk pooling "Gala"- families pool together to cover wedding expenses.
Barangay Syndicate 	The financial arrangement is directly through Barangay official.	Directly related to local politics.	"Suking tindahan" - specific credit for micro entrepreneurs in a barangay "Dory" - interest free credit offered as gratitude informal sources.

Heterogeneous Treatment Effects: Does the availability of certain forms of local, informal loans influence how people respond to treatment?

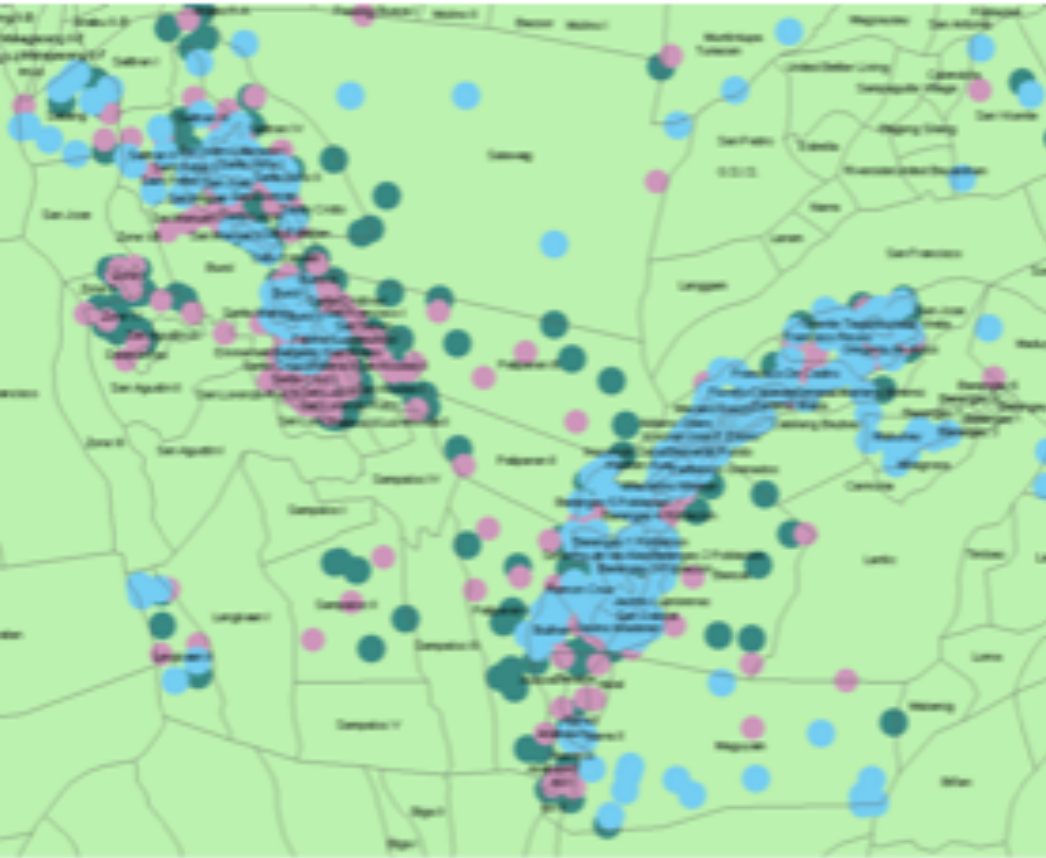


Explaining the Mechanism

If the movement away from clientelistic informal markets leads to political disengagement, wouldn't people living in communities with most politicized informal lending have the greatest 'disengagement' effect?



Data: “Bombay” Loans Vary in Prevalence



Municipalities where B-56 are most common:

Dasmariñas

Pasig

Tanay

Pateros

Least Common:




Las Pinas

Makati

Teresa

Muntlupa

Snapshot of Finance Clustering in Cavite Province:

 = formal bank loans,  = bombay loans
 = “other” informal loans.

Heterogeneous Findings: Local Financial Markets Determine Political Impact

Dependent Variable	Full Sample	High Bombay	Low Bombay
Interest in Politics	-0.112*	-0.0373	-0.243**
	-0.0646	-0.185	-0.119
Confidence in Political Institutions	-0.512***	-0.742	-0.341
	-0.122	-0.496	-0.271
Political Efficacy	-0.447**	0.235	-0.806**
	-0.205	-0.65	-0.348
Political Behavior	-0.456***	0.173	-0.901***
	-0.175	-0.498	-0.331
N	1354	192	288

Robust standard errors in parentheses

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

Political Implications of Formalizing Financial Institutions



Campaign in Manila
Photo Credit: Hite 2010



As formal market expansion continues, people will disengage from politics, at least temporarily.

- ❑ Positive – citizens are less beholden to political power brokers. Politicians may become more inclined to offer programmatic policy, rather than clientelistic incentives, to mobilize voters.
- ❑ Negative – local volunteerism and civic engagement suffer. Poor localities will be even more constrained as they rely on social networks for public service delivery.

Summary Statistics : Low vs. High Bombay Municipalities

Variable	Coding	Definition	Low Bombay	High Bombay	diff test
css_loande~n		Assignment to Treatment	0.786	0.815	-0.0420
female	(0- male, 1-female)	gender	0.835	0.829	0.0083
married	(0- no, 1-yes)	marriage status	0.807	0.736	0.0804*
age	years	age in years	41.754	41.948	-0.0068
cluster_size	(1-53)	number of other participants in barangay	14.986	5.744	0.3550*
no_travel_work	(0- no, 1-yes)	work is in the home	0.270	0.413	-0.1435*
b_in_barangay	(0- no, 1-yes)	the business is in the barangay	0.881	0.867	0.0198
b_moved_once	(0- no, 1-yes)	the business moved once in term of study	0.039	0.085	-0.0882*
whole_life_one_place	(0- no, 1-yes)	the person lived in same barangay for life	0.109	0.137	-0.041
short_b_tenure	(0: >3 yrs; 1:<3 yrs,)	business less than three years	0.182	0.254	-0.0821*
same_birth_prov	(0- no, 1-yes)	born in same province they currently reside	0.421	0.488	-0.0645
distance_geo	(0-29 miles)	the distance travelled to apply bank loan	2.677	2.684	-0.0019
bad_floor	(0- no, 1-yes)	the home residence has unfinished/ dirt floor	0.971	0.964	0.0171

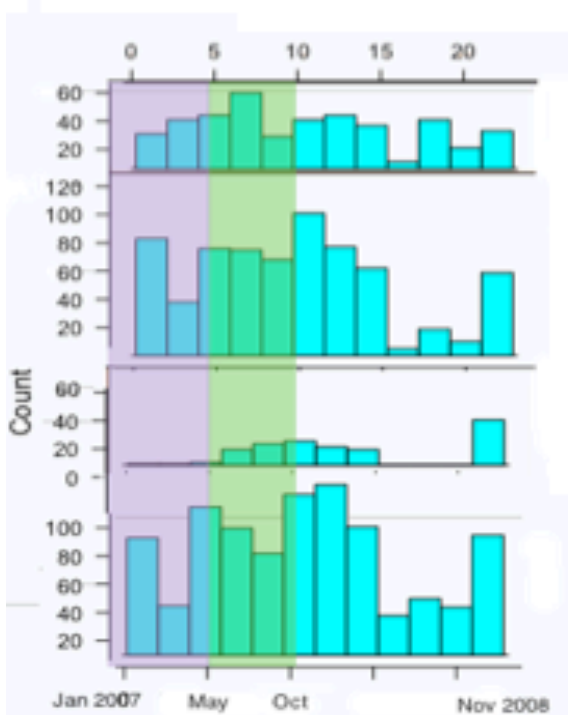
Thank You.



email:

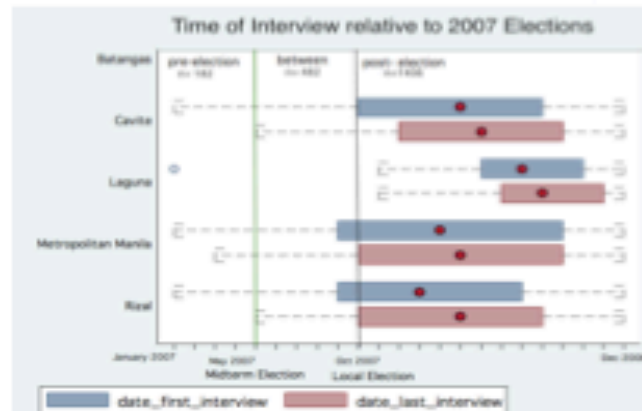
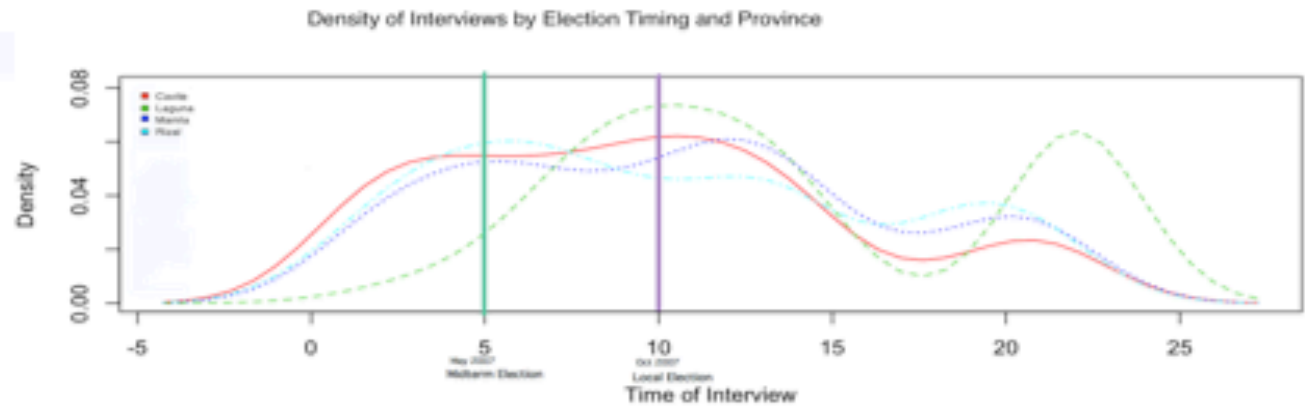
Nancy.Hite-Rubin@tufts.edu

Extra Analysis: Distribution of Interview Timing



Interview prior to May 2007 Election

After May and before Oct 2007 Election



Rizal
Metro Manila
Laguna
Cavite



Robustness checks for interview timing vis-à-vis 2007 elections.