Knowledge, Political Participation and Good Governance: A Regression Discontinuity Design in Uganda

Daniel Rubenson*

Ryerson University

Chris Gore

Ryerson University

Emmanuelle Auriol

Université de Toulouse I

Devra C. Moehler

University of Pennsylvania

Leonard Wantchekon

New York University

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Abstract

This project is in the very early planning stages. The document below is a slightly modified version of parts of a grant proposal to the Canadian *Social Sciences and Humanities Research Council*, so it has the tone of a grant proposal. I hope it can form the basis of a discussion and feedback on some of the central design questions around the regression discontinuity design we are proposing. Specifically, I am interested in feedback on the set up of the RD design in this context—in particular around some of the assumptions of the design with regard to spillovers between treatment and control. In addition, discussion of some of the measurement issues involved—that is, individual level vs village level measures and potential non-survey based, individual level behavioural measures—would be very useful.

—DR

1. Introduction and Objectives

Political participation, defined as "those legal activities by private citizens that are more or less directly aimed at influencing the selection of government personnel and/or

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*rubenson@ryerson.ca

the actions they take" (Verba, Nie, and on Kim 1978, 46), is central to democracy (Verba, Schlozman, and Brady 1995). By taking political action, citizens can make their preferences known, determine who holds public office, and influence decisions made by politicians. In countries that are transitioning to democracy, particularly in sub-Saharan Africa, the willingness and ability of citizens to take part in politics is directly related to the ongoing consolidation of democracy in the region (Bratton, Mattes, and Gyimah-Boadi 2005, 347). That increases in knowledge and information lead to an increase in the probability of taking political action is one of the most well known findings in the political behaviour literature(Blais 2000; Parry, Moyser, and Day 1992; Verba, Schlozman, and Brady 1995; Wolfinger and Rosenstone 1980). Access to information can also impact the quality (i.e., degree of *critical* engagement) of political participation, thereby affecting good governance.

Although some recent studies have investigated links between access to information and political participation using data from developing democracies (eg Bratton, Mattes, and Gyimah-Boadi 2005; Moehler 2008), the majority of research has been conducted in the context of advanced western democracies. Our primary aim is to study the relationship between access to media information, on the one hand, and political attitudes, participation and government performance, on the other in Uganda.

One major difference between advanced democracies and countries transitioning to democracy, such as Uganda, is the ubiquity of political information. In the former, almost all citizens have access to broadcast media (i.e. radio and television) and the 24-hour news cycle (Prior 2007). In contrast, the majority of citizens in many transitioning countries do not have household access to television and radio because access to electricity is very limited: When a household does gain access to electricity, following the acquisition of a light bulb, it is principally used to power radios and televisions (33 World Bank 2008). Hence, evidence is emerging that electricity and information acquisition are related, and that regular access to information and knowledge afforded by technologies that are connected to a steady supply of electricity (as opposed to costly battery-operated devices) increases citizen political knowledge and information and makes citizens more critical of leaders and institutions (Mattes and Shenga 2007; Moehler 2008; Norris 2000). Taking advantage of the current state of electricity distribution in Uganda, we are afforded a 'natural experiment' within which we can identify

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the causal effect of media access on good governance through the intervening variable of political participation. To do this, we address two primary objectives: (1) to examine how access to knowledge and information, provided through electrified means (electricity), affects the political attitudes and behaviour of citizens in a country transitioning to democracy; and (2) to advance our theoretical understanding of the determinants of political participation. The proposed research overcomes the considerable shortcomings of extant work by making the explicit theoretical link between political participation and the media access/good governance connection.

2. CONTEXT AND THEORETICAL FRAMEWORK

Evidence from economic and political economy research suggests that access to media and information can strengthen good governance and democracy. Strong relationships have been reported between measures of media access and information availability and indicators of good governance in emerging, non-Western democracies including: (a) government accountability, effectiveness, and rule of law (Besley, Burgess, and Prat 2002; Besley and Prat 2006; Norris and Zinnbauer 2002); (b) control of corruption (Brunetti and Weder 2003; Djankov, Mcliesh, Nenova, and Shleifer 2001; Reinikka and Svensson 2004); (c) representation, government responsiveness and spending across groups and electoral areas (Besley and Burgess 2002; Majumdar, Mani, and Mukand 2007; Strömberg 2004); and (d) regime type (i.e. democratic, authoritarian etc.) (Andriantsoa, Andriasendrarivony, Haggblade, Minten, Rakotojaona, Rakotovoavy, and Razafinimanana 2005; Gunther, Montero, and Wert 2000; Gunther and Mughan 2000).

A study of 14 African countries by Afrobarometer (2009)—an international, independent, non-partisan research project that collects data on Africans' opinions and attitudes about democracy and economics—shows a clear and positive link between access to information and the likelihood of citizen interest in public affairs. Recent research also reveals that regular access to information and knowledge is directly related to citizen knowledge about domestic and global political issues and helps in the development of a 'critical citizenry'—a citizenry that adheres to democratic values and has a healthy, critical skepticism of leaders and institutions (see Almond and Verba 1963; Mattes and Shenga 2007; Mishler and Rose 1997; Moehler 2008; Norris 2000). By participating

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more often and more critically in politics, citizens create incentives for governments and politicians to perform better.

The issue of medium is important when considering these relationships. Evidence suggests that the common research practice of using newspaper readership and circulation as the measure of media and information access is an inappropriate strategy. A study in Mozambique used a series of multiple regression models controlling for level of education to demonstrate that "watching news programs and listening to them on the radio (but, notably, not by reading newspapers)...makes an important, independent contribution" to access to political information and the development of a critical citizenry (Mattes and Shenga 2007, 28). The Afrobarometer study noted above showed that with more access to a range of information-providing technology, citizen knowledge of global issues also increases (Afrobarometer 2009). Our own analysis of Round 3 ('05-'06) Afrobarometer data from 16 newly-democratic countries on the continent shows that: 59% of respondents get news from the radio everyday, 29% watch television news every day, but only11% percent report reading a newspaper daily. On the other end of the spectrum, only 9% say they never get news from the radio, 44% never watch television news and 55% never read newspapers. We overcome the problem in existing research of using newspaper readership by examining more salient broadcast media.

Our theoretical model builds on an assumption implicit in all of this research: that citizens have imperfect information about governments and that the media allows citizens to gain more information thereby more effectively monitoring government action and policy and leading to improvements in good governance. One observable implication of our theory is that the amount and type of political participation will be affected by access to information and knowledge provided by media. That is, our theory suggests that as participation levels increase and citizens become more 'critically' engaged, the incentives for politicians to improve their performance change. If citizens are better able to monitor government performance and actions, their political participation will represent the threat of credible electoral sanctions for poorly performing governments and politicians. Existing research on the connection between media access, information and good governance only hints at this political participation mechanism, but does nothing to demonstrate it; our project will test the theory explicitly.

In studying the relationship between access to media information, on the one hand,

and political attitudes, participation and government performance, on the other we are confronted with a familiar problem: while access to information may be *correlated* with participation, it is difficult to determine whether changes in information *cause* changes in participation. The relationship between citizen attitudes and behaviours on the one hand, and media use on the other hand is reciprocal. We hypothesize that broadcast media increases political participation and knowledge. However, it is also the case that participation and knowledge may influence access to and use of communication technology. Therefore, it is difficult to distinguish the causes from the consequences of communication technologies. By approaching this question from the perspective of access to electricity we are able to more cleanly test these relationships. Electricity access can be used as an instrumental variable for electricity facilitated communication technologies, such as radio and television, thereby allowing us to untangle the effects of these technologies from factors that affect communication choices in the first place. By exploiting a natural experiment in occurring in Uganda as the result of a unique administrative rule governing access to electricity (described more fully in the Methodology section), we overcome this fatal shortcoming of previous research and are able to identify causal effects.

Uganda makes an ideal country to study these relationships because of the character of electricity access in the country. Since the end of the national civil war in 1986, Uganda has had consistent economic growth, improvements in social welfare, and relative political stability (Dijkstra and van Donge 2001; Kappel, Lay, and Steiner 2005; World Bank 2005). Although a degree of participatory socialization has occurred in Uganda due to the national government's promotion of decentralization (Steiner 2008), this has not translated into a consensus about the character and quality of its political transition (Afrobarometer 2005). It was only in 2005 that Ugandans voted to restore a multi-party political system after parties had been banned for 19 years. Uganda also remains ranked as 'partly free'—a ranking that has not changed in 20 years (Freedom House 2009). But in those cases where participatory political processes have been promoted, the outcome has been to produce citizens with lower levels of trust in the country's political institutions and they are less likely to view government as legitimate (Moehler 2008). These recent developments in the process of democratic consolidation in Uganda provide citizens with heretofore unavailable opportunities to develop and act as 'critical

citizens'.

Uganda currently has one of the lowest levels of access to electricity in the world. Although statistics vary, roughly 5% of its population of 28 million has access to electricity; in rural areas, about 1% of citizens have direct access to electricity (see Davidson and Mwakasonda 2004; Gore 2008; Kappel, Lay, and Steiner 2005; Karekezi and Kimani 2004). This is well below the average access of 20% in sub-Saharan Africa, 40% in South Asia, and 85% in North Africa, Latin America, and the Middle East (Saghir 2005, 9). At the same time, demand for electricity continues to far exceed available supply (Gore 2008). The character of Uganda's settlement patterns and its low levels of urbanization are significant reasons why improving access to electricity is so difficult. Uganda has a very low population density and one of lowest levels of urbanization in the world (13%). As a result, most of its population does not live in densely populated settlements that facilitate the provision of infrastructure services. A map of the current electricity distribution network along with the concentration of electricity customers, indicates that 50km outside the capital, Kampala, the density of the network decreases significantly as do the number of electricity customers. Uptake of alternative systems, such as solar, has been very limited. The current connectivity plan is to connect all willing customers within 1km of the network. Given low levels of access and ongoing programs to increase the number of connections, this situation allows us to easily identify households gaining access to electricity and to examine how electricity and access to knowledge influence citizen attitudes about democracy.

3. METHODOLOGY

In order to identify causal relationships, if any, between access to electricity, access to the media information it affords, political participation and good governance we need to be able to compare people who are very similar to one another *except* on the crucial variable of electricity access. The vast majority of studies to date are unable to do this because they rely on traditional analysis of "observational" data. If we were to simply conduct a national random sample survey of Ugandans and ask them about their access to electricity, their political participation and variables that may impact on political participation such as income and education, we run into several

difficulties (Banerjee and Duflo 2008; Green and Gerber 2004). One problem, that of *unobserved heterogeneity*, would occur because access to electricity is not random and we would not be able to determine if any observed outcomes were a function of access to electricity or unobserved factors that influence individuals' access in the first place. For example, living in a village that is an economic hub increases the likelihood of having access to electricity *and* the likelihood of participating in politics, making the identification of a causal link between electricity and participation problematic. Another problem, that of *endogeneity,* occurs when an observed outcome, for example, political participation, actually causes the effect, electricity. That is, it may also be the case that individuals' political participation affects the likelihood that they have access to electricity. Traditional, observational approaches render nearly impossible the task of disentangling cause and effect.

A growing line of research has sought to confront problems of unobserved heterogeneity and endogeneity by engaging in field experiments. Policymakers, funding agencies, and organizations that implement programs have embraced the use of randomized trials as a strategy for assessing the impact of interventions in health, education, agriculture and a range of other sectors in developing countries (see, for example Banerjee, Duflo, Glennerster, and Kothari 2007; Banerjee and Duflo 2008; Banerjee, Rukmini, Duflo, Glennerster, and Khemani 2008; Duflo, Kremer, and Robinson 2008; Duflo 2001, 2004, 2006). The most important feature of these experiments is the random assignment of a "treatment" of interest to a well-defined population, followed by a statistical analysis of the effects of the treatment (Green and Gerber 2004). In our case, we cannot randomly assign electricity to some areas and not others. However, an approach that allows us to take advantage of the logic of a randomized experiment is the "regression discontinuity" (RD) design (Thistlewaite and Campbell 1960). The RD design has gained in use in political science, economics, psychology and education because it allows researchers to take advantage of the benefits of randomized experiments in situations where a fully randomized design is not possible for either practical or ethical reasons (see, for example Brookman 2009; Eggers and Hainmueller 2008; Gerber and Hopkins 2009; Green, Leong, Kern, Gerber, and Larimer 2009; Imbens and Lemieux 2008; Lee 2008; Merideth, Kessler, and Gerber 2008; Merideth and Malhotra 2008; Robinson, McNulty, and Krasno 2009). Our research design takes advantage of what is essentially a natural experiment

occurring as a result of the character of electricity access and the specific electrification process in Uganda, which allows us to leverage an "as-if" random situation (Dunning 2008) and affording us much the same advantage as the ideal randomization scenario described above. The primary organization responsible for household electricity connection in Uganda, Umeme, has a contractual obligation to connect households within one kilometer from the existing electrical distribution network. Thus, the assignment to "treatment"—in our case, electricity—is determined by a household's distance from the main, existing network. The one kilometer threshold creates a "discontinuity" in access to electricity with households on one side naturally falling in the treatment group (those closer than 1km from the existing network), while those on the other side of the threshold fall in the control group (those further than 1km away).

The logic of the RD design is then to compare households situated in areas very close, on either side, to the cutoff distance of one kilometer. To illustrate, if we study the political participation of people living in villages either 700 meters or 1300 meters from the existing distribution network, we have a situation in which people are likely to be very similar in the characteristics that otherwise differentiate those who have access to electricity from those who do not. Furthermore, crucially, it is also likely the case that living either 700 meters or 1300 meters from the existing electrical grid is due to chance factors and not to systematic differences that would also predict political participation. The RD design attempts to estimate differences in political participation at precisely the threshold where access to electricity is determined. Recent econometric work shows that if local treatment status (that is, treatment status close to the threshold, or cutoff) is random, then the RD design will yield inferences that are comparable to those from randomized experiments (Lee 2008).

We will conduct surveys in both treatment and control sites. Based on previous work in Uganda (Gore 2008a,b), our team has a close working relationship with senior officials at Umeme and the Rural Electrification Agency. As a result of these relationships, we have access to, and knowledge of, the schedule of past and forthcoming electrification projects and expansion. Therefore, we will be able to sample sites where electricity has been present for up to a two year period, sufficient to detect effects, if any. We will sample geographic sites at the village level. Villages—Local Council 1 (LC1) in the official Ugandan terminology—are the lowest level of local government administration

in Uganda. In order to create a sample of LC1s that is balanced and comparable on important characteristics, we will use data from the most recent Ugandan Census to stratify by wealth, education, ethnic demography (measured using the ethno-linguistic fractionalization index) and geographic size. Sampling will be proportionate to LC1 population size. All LC1s will be included in the sampling; that is, our strategy simply stratifies, it does not assign different weights to different types of LC1.

The individual level sample size for our survey will be 1000 households (500 in treatment, 500 in control), as determined through our power analysis, which we carried out using simulation in the statistical program R (R Development Core Team 2008). We proceeded with simulation instead of analyzing power analytically because of the complex nature of statistical power in the RD design. It should also be noted that RD designs generally require larger sample sizes than fully randomized experimental designs. Indeed, recent research suggests that samples three to four times larger are required to detect effects with the same statistical precision (Schochet 2009). However, as a fully randomized experiment is not possible and a traditional observational approach is of limited value at best, the RD design is optimal. We therefore feel that the sample size is justified given the crucial questions our research will address.

The Uganda-based company, Wilsken Agencies Ltd., which has been operating in Uganda for 11 years, will undertake the survey. The survey instrument will be designed by the five members of the research team and finalized in Spring 2010. Wilsken has extensive experience undertaking national social scientific surveys and has been responsible for implementing the Afrobarometer studies in Uganda since the late 1990s. The survey will be conducted via face-to-face interviews. Interviewers are trained in a five-day workshop immediately prior to fieldwork. Teams of five interviewers travel together to the field under the leadership of a field supervisor. Our respondent recruitment strategy is the following: one member of each household will be interviewed; we will stratify respondent gender so that we have an even 50/50 split and within the randomly selected households, respondents will be randomly selected from among adult residents of the appropriate gender; interviewers will be given randomly generated starting locations and routes and instructed to make contact with the fourth residential structure; if contact is unsuccessful, they will go to the next house; if contact is successful, they will count another four houses. Based on our previous survey work in Uganda and elsewhere as

well as the draft survey instrument, we estimate interviews will take about 45 minutes; they will be conducted in the appropriate language of the districts and counties we are surveying.

The questionnaire will measure our dependent variables by (1) including questions about both electoral and non-electoral political participation (i.e., registering and voting in local and national elections, contact with elected officials and civil servants, activity in political groups); (2) through an extensive battery of measures of political knowledge and citizen competence. We will work closely with the survey firm and local academic contacts as well as drawing on our team's experience to develop appropriate measures of political knowledge and competence. In order to measure critical citizenry and other attitudes, the survey will also ask about access to, and use of, different kinds of media; civic engagement (i.e., membership and activity in various groups and associations); trust (both interpersonal and trust in institutions and politicians); and attitudes toward various groups in society. We will also collect basic socio-demographics.

In order to measure levels of good governance, we will ask questions on perceptions and experience of crime, corruption and bribes, service deliver and government performance. The idea is not just to measure the effects on political behaviour but to also capture whether that behaviour is consequential for welfare. We will also have the survey supervisor collect information on the location and quality of services such as roads, water, schools and clinics for each location where we conduct the survey. We will supplement the survey data with information from alternative sources on the performance of subcounty officials (from the Ministry of Local Government Annual Assessment); amount spent on schools and student attendance and failure rates (Ministry of Education); and election turnout and vote outcomes (Electoral Commission). Treatment and control groups will receive the same survey instrument. The questionnaire will be pretested on a visit to Uganda by Rubenson in June 2010 and will be conducted in early 2011, after the next general elections.

The analysis of data from a regression discontinuity design is in many ways similar to a standard nonparametric regression problem (Imbens and Lemieux 2008). However, certain aspects of the RD design make standard approaches inappropriate. Instead, we will model the effects on either side of the treatment threshold by adding fourth-order polynomials to the regression equation (Lee, Moretti, and Butler 2004). As Brookman

(2009) suggests, doing so captures "the discontinuity between the two curves at the treatment threshold with a simple dummy variable, a strategy identical to using local linear regression but less sensitive to noise" (2009, 429). Using such a model, we capture the causal effect of narrowly having access to electricity on political participation and attitudes. That is, we capture the causal effect living just close enough to existing network, holding all other factors not affected by having electricity *naturally* constant. We do not have to rely on statistically controlling for factors; we can rely on natural control in our design. Our models will be estimated using the open source statistical program R (R Development Core Team 2008).

We will complement this quantitative strategy with qualitative data collection and analysis. While our theory suggests certain relationships and effects that are best tested with quantitative data, it is nevertheless the case that there is an exploratory nature to this research in that it is the first of its kind. Therefore, a deeper contextual approach is also appropriate and "can inductively suggest explanations of experimentally assessed effects" (Paluck In press, 11). We will randomly select 50 households each from the treatment and control groups, 5 from 10 randomly selected sites for each, for which we will collect qualitative data in order explore how context may play a role in the quantitatively assessed causal effects and the extent to which there is heterogeneity in these effects. For example, this strategy will allow us to more effectively understand intra-household dynamics—such as those due to gender differences in electricity use—and the impact this may have on the interpretation of our quantitatively derived inferences. We will obtain first person, in-depth data on how access or lack of access to knowledge and information influences household level decisions and attitudes about the political system. For example, for treatment groups, we will gain first person accounts of how or if behaviour and attitudes changed with the arrival of electricity; what technology was purchased and why; whether sources of knowledge and information changed; and overall, how household and community dynamics and routines changed with electricity and communication technology.

In half of the qualitative interviews we will reverse our respondent gender by selecting female/male respondents in households where men/women were interviewed in the, giving us balance across gender/respondent categories. Gore will visit Uganda in June 2011 to conduct and supervise household qualitative data collection, to be under-

taken by teams of Canadian and Ugandan graduate students (Ugandan students will be hired who speak regional languages we require). Interviews will be tape-recorded with participants' permission and will be transcribed and translated by our Ugandan students. Using an approach to qualitative data analysis that our team has employed in past work in Uganda (Moehler 2008), we will read through all the interviewer notes or transcriptions and code passages for topic and tone. We will use `NVivo` qualitative analysis software to help retrieve boolean combinations of topics and tones that will allow us to assess both frequency and content of the related passages. This qualitative work will both inform the quantitative analysis and help in the interpretation of quantitative results.

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