

THE EFFECT OF EDUCATION ON POLITICAL ENGAGEMENT IN WEAKLY INSTITUTIONALIZED DEMOCRACIES: EVIDENCE FROM NIGERIA *

HORACIO A. LARREGUY [†] JOHN MARSHALL [‡]

OCTOBER 2013

Abstract

Developing countries are currently experiencing unprecedented increases in primary schooling. While education increases civic and political participation in developed democracies, this may not occur in weakly institutionalized countries. Beyond concerns about education's effectiveness, education could contribute to local political capture by dominant groups or conflict in divided societies. Leveraging variation across local governments areas and gender in the intensity of Nigeria's 1976 Universal Primary Education reform—possibly the largest-scale educational expansion in African history—to instrument for primary schooling, we identify large long-run political effects: up to 33 years after starting primary school, citizens are considerably more interested in politics, more likely to vote and contact local government councilors, participate in community associations, and supportive of democracy in the abstract. Contrary to concerns about potential anti-democratic effects, our results are strongest among minority ethnic and religious groups and in fractionalized areas, and respondents show no increase in support for political violence or own-group identification.

JEL: D72, I25.

Key words: primary education, political engagement, civic engagement, Nigeria.

*This paper benefited from many helpful conversations with and suggestions from Michael Gill, Shelby Grossman, Andy Hall, Mai Hassan, Nahomi Ichino, Olayinka Idowu, Ayodele Iretiayo, Jonathan Phillips, and Daniel Smith. Participants at the Boston Working Group in African Political Economy, the Harvard Comparative Politics Workshop and MIT Political Economy Workshop provided essential feedback. We are greatly indebted to Jonathan Phillips and Musiliu Adeolu Adewole who facilitated the public school census data, and the Nigeria National Bureau of Statistics who provided the 2009-2010 Harmonized Nigeria Living Standard Survey. Alejandra Menchaca provided support and patience throughout the project. All errors are our own.

[†]Department of Government, Harvard University, Cambridge, MA (hlarreguy@fas.harvard.edu).

[‡]Department of Government, Harvard University, Cambridge, MA (jlmarsh@fas.harvard.edu).

1 Introduction

Seeking to meet the Millennium Development Goal (MDG) of universal primary education, many developing countries—particularly the most democratic (Stasavage 2005)—are investing heavily in education. Primary school enrollment in sub-Saharan Africa has risen from 56% in 1999 to 77% in 2008 (UNESCO 2011). Since this newly educated generation will become increasingly politically relevant, it is crucial to understand how increased primary schooling will affect the quality of democracy. This is particularly pertinent as many of sub-Saharan Africa’s nascent democracies are failing to consolidate (Opalo 2012) or hold governments to account beyond the voting booth (Bratton and Logan 2006).

How education affects democracy remains contentious. An optimistic modernization literature suggested education encourages democratic norms of tolerance (e.g. Lipset 1959) and lays the groundwork for successful democratic consolidation (Dahl 1971). However, expanding education in weakly institutionalized environments—polities where legal enforcement is low and formal institutional rules change with fluctuations in political power (Levitsky and Murillo 2009)—could facilitate institutional capture and conflict by politically-empowering individuals where political institutions fail to develop in line (Huntington 1968). This concern is especially pertinent where local ethnic and religious divisions are salient. Recent cross-national statistical analyses dispute the causal relationship underpinning the clear positive correlation between education and democracy (e.g. Acemoglu, Johnson and Robinson 2005; Glaeser, Ponzetto and Shleifer 2007; Papaioannou and Siourounis 2008).

Despite considerable attention at the macro-level, there is little strong micro-level evidence identifying the causal effects of mass education on political and community engagement and support for democracy outside Western democracies. Although surveys in developed countries now provide unprecedented opportunities to examine political behavior and citizens preferences, identifying the effects of education has been stymied by concerns about selection bias (Kam and Palmer

2008). Recent work using field experiments to move beyond correlations has focused on foreign donor-supported educational programs outside formal schooling, but has found mixed results (Finkel and Rojo-Mendoza 2012; Finkel and Smith 2011; Friedman et al. 2011; Kuenzi 2006). Such studies focus on short and small-scale NGO-implemented programs which may differ substantially from the nationwide government-implemented programs current being enacted as part of the MDGs in the least developed countries. It is also hard to establish long-run impacts using surveys administered only a year after the intervention.

To illuminate this important issue, we identify the effects of publicly-provided primary education on individual civic and political participation and attitudes in Nigeria, following one of Africa's largest educational expansions. In 1976, Nigeria implemented its Universal Primary Education (UPE) program, providing six tuition-free years of primary education to all six year-olds. Combined with Afrobarometer survey data, from 1999-2009, we exploit variation in the impact of UPE across local government areas (LGAs) and gender to identify large positive long-run effects of primary schooling on political engagement using a difference-in-difference strategy to instrument for primary schooling. Contrary to concerns that participation could cause group conflict, institutional capture or support for violence, we find primary schooling's largest pro-democratic effects are for local minorities and in the most divided LGAs, while respondents show no increase in support for political violence or own-group identification.

Nigeria contains one-fifth of Sub-Saharan Africa's population, features considerable ethno-religious diversity, and has struggled with democratic consolidation. Its primary education expansion represents an important case in its own right. However, its diversity it also provides considerable insight for reformers across developing countries as they push to achieve universal primary education whilst striving to ingrain pro-democratic participation. The external validity of this quasi-experiment is thus unusually high.

Using surveys up to 33 years after Nigeria's nationwide publicly-implemented UPE reform, our focus is to identify the direction and magnitude of primary schooling's long-run political ef-

fects, in addition to evaluating the concern that education’s participatory effects reflect capture by a dominant ethnic or religious group. Given the importance of education in developing democracies, establishing the level and possibly damaging heterogeneity of primary education’s effects is a crucial first step in disentangling the relationship between education and democracy. Data limitations prevent us from exploring the mechanisms underpinning these relationships.

Our reduced form and instrumental variable estimates show that Nigeria’s UPE program had considerable political implications. First, primary schooling significantly increased interest in politics and basic forms of political participation such as voting and contacting local government councilors. However, primary schooling can only do so much, not cultivating more costly forms of political activity like contacting national-level Representatives or participation in peaceful political demonstration. Second, primary schooling substantially increased the likelihood of respondents attending community meetings and actively participating in local associations. Third, primary schooling increased support for democracy in the abstract without affecting satisfaction with Nigeria’s “partly free” democracy ([Freedom House 2013](#)) in practice or trust in politicians, indicating that education increases intrinsic support for democracy. Finally, we show that the effects of primary schooling are strongest in more religiously fragmented areas and among minority religion respondents, while there is no indication that primary schooling increases support for violence, ethnic identification or segregated participation. Together, these results provide strong evidence that publicly-provided primary education fosters pro-democratic civic and political engagement, even in weakly institutionalized contexts like Nigeria. The long-run effects are larger and more robust than recent studies examining the short-term effects of education-oriented programs.

The paper proceeds as follows. Section 2 generates hypotheses linking schooling and civic and political engagement in developing countries. Section 3 provides an overview of education policies in Nigeria, focusing particularly on the 1976 UPE reform. Section 4 details the research design. Section 5 shows our main results and robustness checks. Section 6 concludes.

2 Education in developing contexts

Research in developed democracies has consistently found that education increases turnout (see [Sondheimer and Green 2010](#)) and other forms of civic and political engagement.¹ [Converse \(1972: 324\)](#) even argues “education is everywhere the universal solvent, and the relationship is always in the same direction.” However, it is far from obvious that education similarly cultivates democratic and pro-social behaviors in developing democracies, especially in weakly institutionalized contexts where education has been associated with disenchantment with democracy and support for anti-democratic methods ([Friedman et al. 2011](#)), institutional capture ([Gugerty and Kremer 2008](#)) and violent behavior ([Berrebi 2007](#); [Krueger and Maleckova 2003](#); [Scacco 2007](#)).

2.1 Civic and political engagement and support for democracy

Cross-national correlative evidence has suggested higher educational qualifications are associated with limited civic and political engagement in developing countries.² Nevertheless, voters express dissatisfaction with the performance of democracy ([Bratton and Mattes 2001](#); [Mattes and Bratton 2007](#)), and fail to appreciate how governments can be held to account by citizens and opposition parties beyond polling day ([Bratton and Logan 2006](#)). Studies over the last decade have examined donor-sponsored programs providing less conventional educational opportunities, finding consistently large increases in political knowledge and local-level participation but mixed effects on behavioral outcomes like voting and weak effects on democratic attitudes.³

However, a major concern with these results is that education or participation in civic programs

¹Seminal analyses include: [Almond and Verba \(1963\)](#); [Putnam, Leonardi and Nanetti \(1994\)](#); [Verba, Schlozman and Brady \(1995\)](#).

²Experience of public schooling increases turnout, vote registration, protest and contacting political leaders ([MacLean 2011](#)). [Mattes and Bratton \(2007\)](#) find demand for democracy across sub-Saharan Africa increases with procedural understanding, information and awareness, while education increases tolerance ([Bratton, Mattes and Gyimah-Boadi 2005](#)).

³These include: [Bratton et al. \(1999\)](#); [Finkel \(2002\)](#); [Finkel and Ernst \(2005\)](#); [Finkel and Smith \(2011\)](#); [Finkel, Horowitz and Rojo-Mendoza \(2012\)](#); [Morduchowicz et al. \(1996\)](#).

reflects family background, early life experiences, the social hierarchy, or cognitive ability (Kam and Palmer 2008). Since education proxies for these hard-to-measure characteristics, education's correlation with political engagement could be attributed to selection into education and civic education programs.

Randomized field experiments have found less sanguine results. Friedman et al. (2011) show school performance incentives generated interest in and knowledge of democracy, but did not affect support for democracy, voting or participation among young, poor and rural women from minority ethnic groups in a male-dominated Kenyan society. Similarly, a community civic education program discussing decentralization and democracy in Democratic Republic of Congo finds increases in political knowledge across a range of questions, but did not increase feelings of political efficacy, change attitudes toward democracy or produce network spillovers (Finkel and Rojo-Mendoza 2012). Finally, Kuenzi (2006) finds providing informal basic numeracy and literacy education to Senegalese adults who missed school as children considerably increases their propensity to vote, contact public officials and participation in the community.

Despite their advantages, field experiments face important limitations. First, the external validity of studies based on short or small-scale interventions is questionable, especially when the results pertain to very specific groups of intervention-compliers. Second, NGO-administered programs differ substantially from government implementation efforts in practice, so may elicit differential appraisals of democracy. Third, since surveys are rarely administered more than a year after the intervention, it is hard to establish whether education's impacts are lasting or have reached fruition. Therefore, there remains limited evidence on the enduring political effects of the type of large-scale primary educational programs currently being implemented across the developing world.

2.2 The risks of increased engagement

Even if the associations previously highlighted represent robust political effects of education, increased participation may not necessarily be pro-democratic. Rather, there are reasons to believe education's effects may be less benign in the developing world, and especially in fragmented developing societies.

The concern that education could lead to political conflict and capture goes back to [Huntington \(1968\)](#), who argued that where social mobilization and economic development become incongruent with political institutions (that fail to develop as quickly), violence and regime instability emerge because conflict among increasingly complex sets of social groups cannot be effectively regulated. Rather than stable democratic practices, this destabilizing process can cause violence due to lack of opportunities and rising inter-group inequalities as well as institutional capture where new groups empowered to participate impose influence when political institutions do not modernize their behavior. By [Huntington's \(1968\)](#) standards, many of sub-Saharan Africa's nations remain weakly institutionalized. Our case of Nigeria has yet to observe turnover in the dominant political party since the return of democracy in 1999 and ranks as the 37th most corrupt nation in the world ([Transparency International 2012](#)), while elections have been disputed and characterized by violence ([Bratton 2008](#); [Collier and Vicente forthcoming](#)).

Empirically, education has had ambiguous effects on political capture in weakly institutionalized polities. [Nichter \(2008\)](#), [Blaydes \(2006\)](#) and [Kramon \(2009\)](#) respectively find evidence that vote buyers target the least educated in Argentina, Egypt and Kenya. Education could thus reduce political capture as educated voters choose to cast their preferences rather than sell their vote. However, education could also itself engender institutional capture. After providing funding and skills to disadvantaged women's groups in Kenya, [Gugerty and Kremer \(2008\)](#) find that rather than increase productivity the intervention instead populated treated groups with better-educated and richer women.

Whether education cultivates extreme political views and behavior remains contentious. [Finkel, Horowitz and Rojo-Mendoza \(2012\)](#) find that civic education reduced support for ethnic and political violence following Kenya’s disputed 2007 election. Conversely, [Friedman et al. \(2011\)](#) find participation in Kenya’s Girls Scholarship Program did not affect traditional modes of political participation, but increased a desire for autonomy, not necessarily through democratic means, as well as sympathy for the use of violence in politics. More directly, secondary education is associated with becoming Hezbollah fighters ([Krueger and Maleckova 2003](#)) and Palestinian suicide bombers ([Berrebi 2007](#)), while leaders and members of Boko Haram—a radical anti-education Islamist movement in Northern Nigeria—are primarily clerics and students ([Adesoji 2010; Aghedo and Osumah 2012](#)).

Such concerns are greatest where inter-group divisions are most salient ([Horowitz 1985](#)). An influential developing country literature observes greater conflict and worse governance in ethnically, religiously and linguistically fractionalized, competitive and polarized areas (e.g. [Alesina et al. 2003; Huntington 1996; La Porta et al. 1999; Wilkinson 2006](#)), although divisions are not always prominent ([Bates 1983; Laitin 1986](#)). [Posner \(2004\)](#) finds local ethnic differences in Malawi and Zambia were salient where the dominant group represented a politically-relevant proportion of the electorate. These concerns are particularly pertinent in Nigeria, where there is a history of religious and ethnic conflict. For example, [Scacco \(2007\)](#) finds individuals with strong local networks connections (e.g. attending community meetings), especially in areas with no clear religious majority, are more likely to participate in violent demonstrations.

2.3 Moving forward

We fill these important gaps in the literature by estimating the causal effects of government-provided primary education among Nigerian adults, for a large and highly empirically relevant set of compliers who would not have been educated without UPE. This paper focuses on identifying the direction of the effect of primary schooling on civic and political engagement up to 33

years after individuals were educated, in addition to examining whether any positive effects have anti-democratic implications.

Building on the extant literature, we test the following specific hypotheses:

H1 *Primary schooling increases interest in politics, political participation, community participation, and support for democracy.*

H2 *Positive participatory effects of primary schooling are concentrated among those who stand to gain from capturing political institutions or support inter-group conflict.*

H1 assesses the optimistic findings from advanced democracies—which have not yet been verified for primary education or in developing countries—that primary schooling causes greater civic and political engagement. H2 addresses the concern that education’s participatory effects may be used subversively in weakly institutionalized democracies. In our empirical analysis, we focus on the especially important concern that participation among locally dominant religious and ethnic groups reflects greater extraction capacity, or that minority groups turn to violence in the face of absent political voice.

3 Politics and primary education in Nigeria

Despite its political instability, Nigeria has experimented with some of Africa’s most ambitious nationwide education policies. For reasons outlined below, Nigeria represents an important test of education’s political effects with implications for countries through the developing world. This section provides a brief historical overview of politics and education in Nigeria, before detailing the 1976 educational reforms that underpin our identification strategy.

3.1 Social and political context

Africa's most populous nation containing 162.5m people in 2011, Nigeria is a major oil and gas producer but ranks poor by GDP per capita terms. Nigeria is also one of the continent's most ethnically, linguistically and religiously diverse, containing more than 300 tribes subsumed under the predominantly Muslim Hausa Fulani, religiously mixed Yoruba and overwhelmingly Christian Igbo groups. Religious and ethnic divisions remain the basis of violent political conflict despite its constitutionally secular state (Adesoji 2010). The issue is sufficiently contentious that the 2016 is the first since independence to ask about religion or ethnicity.

Since independence in 1960, Nigeria has oscillated between military and democratic rule, experiencing ten military coups. After most recently transitioning to democracy in 1999, Nigeria has regularly held federal elections for its Presidency, Senate and House. The 1999, 2003 and 2007 elections—which followed a period of military rule—correspond to our sampling period. However, political institutions in Nigeria remain weak, and voters are characterized by low demand for vertical democratic accountability (Bratton and Logan 2006). The People's Democratic Party (PDP) has retained the presidency and legislative majorities throughout this period, while elections regularly experience vote buying, polling irregularities and violence during the campaign and on election day (e.g. Bratton 2008; Collier and Vicente forthcoming). Although there is an informal agreement within the PDP to rotate the Presidency between Northern Muslims and Southern Christians, the 2011 Presidential election ignited tensions as Christian Jonathan Goodluck was elected despite Muslim President Umaru Yar'Adua dying in office.

3.2 Pre-1976 education

Prior to independence, Great Britain had divided Nigeria into three semi-autonomous administrative regions: the predominantly Muslim North, Christian East, and mixed West regions.⁴

⁴Former federal capital Lagos was semi-autonomous.

European-style education was introduced under colonial rule in the 1840s, but was provided by Christian missionaries seeking to civilize and convert the local population as the British government preferred to provide missionaries with grants than establish formal education (Fafunwa 1974). While the Western and especially Eastern regions were relatively densely populated with missions, large parts in the North were poorly served.⁵ Western-style education was widely prohibited in the North, as Britain did not want missionaries inciting local religious leaders by interfering with Islamic practices. Up until the 1950s, missions served as the primary source of education, and thus entrenched early Northern educational disadvantages.

Universal government-supported education began in the mid-1950s. In 1955, the Western region implemented a program of free six-year universal primary education. After doubling enrollment within a year (Csapo 1983), this was extended to Lagos and the East in 1957 with similarly dramatic enrollment increases (Abernethy 1969), and the North in 1958 (Bray 1981; Fafunwa 1974). However, these programs varied considerably in the length of education provided, how they were financed, and their success in enrolling students (Bray 1981). The East experienced severe financial problems, lacked trained teachers and faced considerable opposition from the local-majority Catholic church (Achor 1977), while particularly low enrollment in the North reflected the colonial government's earlier unwillingness to interfere with Muslim practices (Achor 1977; Csapo 1983; Fafunwa 1974; Osili and Long 2008), traditional attitudes towards women (Csapo 1983; Niles 1989) and lack of funding (Achor 1977).

After independence most primary education programs were reduced, with Nigeria's newly-designed regions differing in their willingness to fund education (Osili and Long 2008; Oyelere 2010). Using representative LGA survey data from the 2009-2010 Harmonized Nigeria Living Standards Survey (HNLSS),⁶ Figures 1 and 2 illustrate the considerable variation in the proportion of male and female students completing primary school in the ten cohorts preceding UPE.

⁵See Figure 7 in the Online Appendix.

⁶The World Bank and Nigerian National Bureau of Statistics implemented this survey: ten households from ten enumeration areas were surveyed across all 774 LGAs.

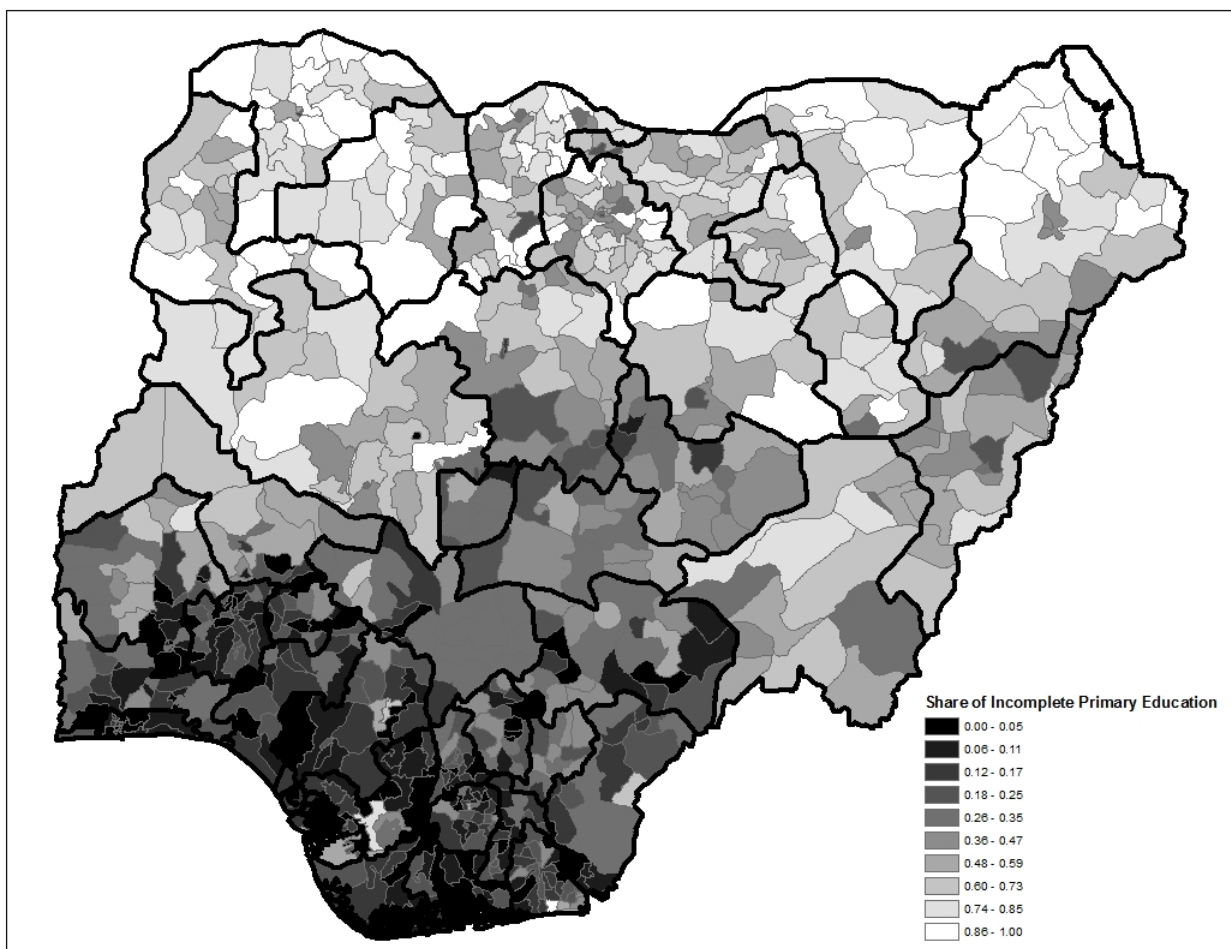


Figure 1: Proportion of male students not completing high school born 1960-1969 by LGA (source: HNLSS)

3.3 1976 Universal Primary Education program

By 1976, Nigeria's 19 states varied considerably in their primary education policies, schooling capacity and enrollment. Against this backdrop, and buoyed by their oil revenue boom, Nigeria's post-independence military federal government led by Olusegun Obasanjo announced in 1974 "one of the most ambitious education projects in African history" (Bray 1981:1). Starting 1st September 1976, the government implemented its nationwide UPE program, providing six years of free primary education starting from six years of age for all students. UPE aimed for 100% primary

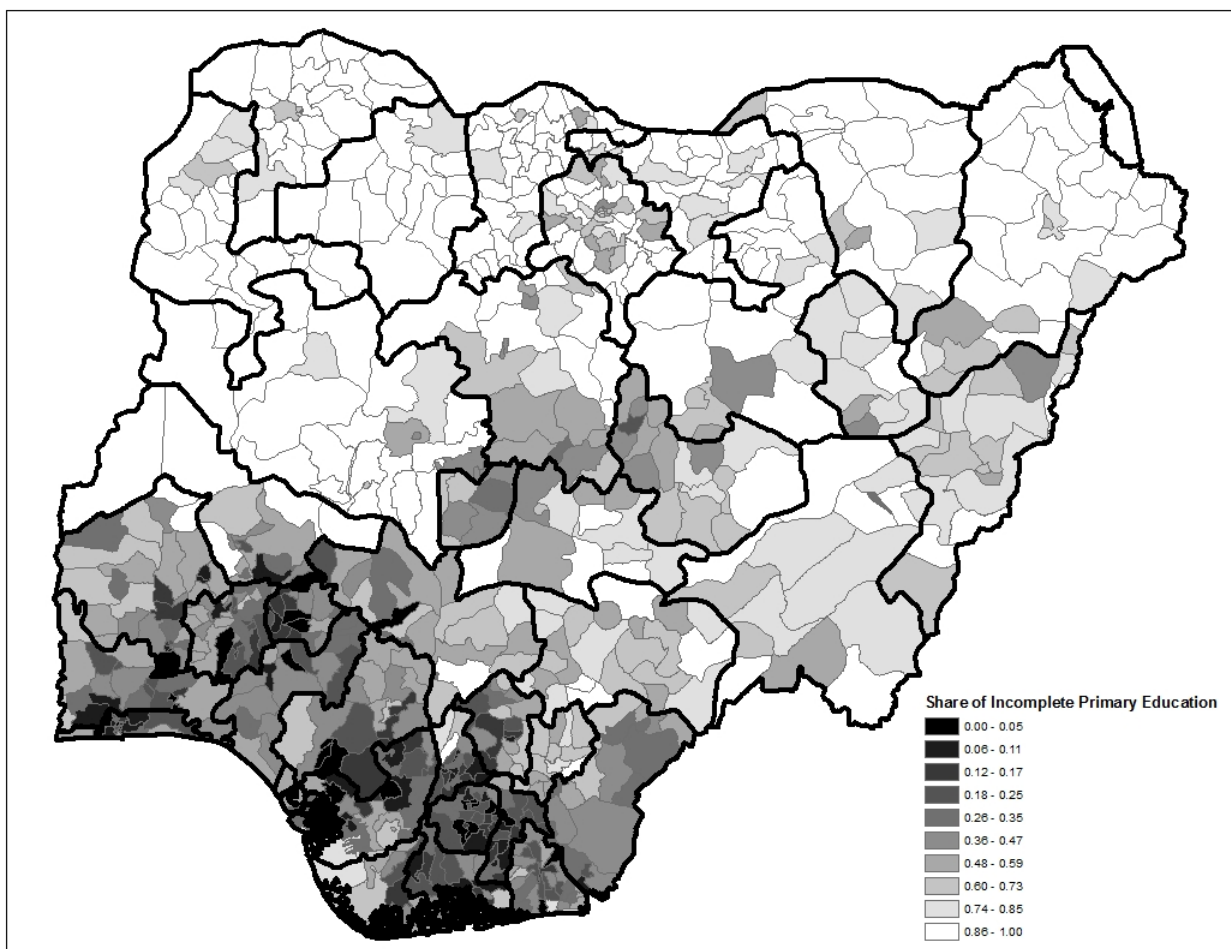


Figure 2: Proportion of female students not completing high school born 1960-1969 by LGA (source: HNLSS)

enrollment by 1981 (Csapo 1983), while enrollment would become compulsory by 1979.

Nigerian schooling aimed to instill the cognitive skills required by students to participate effectively in political and community affairs. As well as literacy and numeracy, the Nigerian primary curriculum emphasized national unity, citizenship rights and obligations and effective community. The government set seven grand objectives for the UPE curriculum: inculcating literacy, numeracy and communication; sound basis for effective thinking; citizenship education; character and moral training; developing adaptability; skills to function in the local community; and preparation for

further educational enhancement (Achor 1977).

Significant government investment was required to implement UPE, especially in classroom capacity, teacher training and teaching equipment. Investments varied substantially across the country according to need: Osili and Long (2008) show that federal budgetary allocations for primary school construction across states, totaling 700m Naira, reflected differential prior enrollment, with per capita funding disproportionately distributed to Eastern and particularly Northern states. This funding intended to construct 150,995 new classrooms by 1980, of which 106,505 were to be built in the North (Csapo 1983), in addition to 80,000 new teachers and 6,699 new classrooms for teacher training (Nwachukwu 1985). Figure 3 verifies this intended expansion, showing public school construction spiked around 1976 to accommodate UPE. Figure 3 also shows that the rise is almost entirely due to public, not private, school construction.

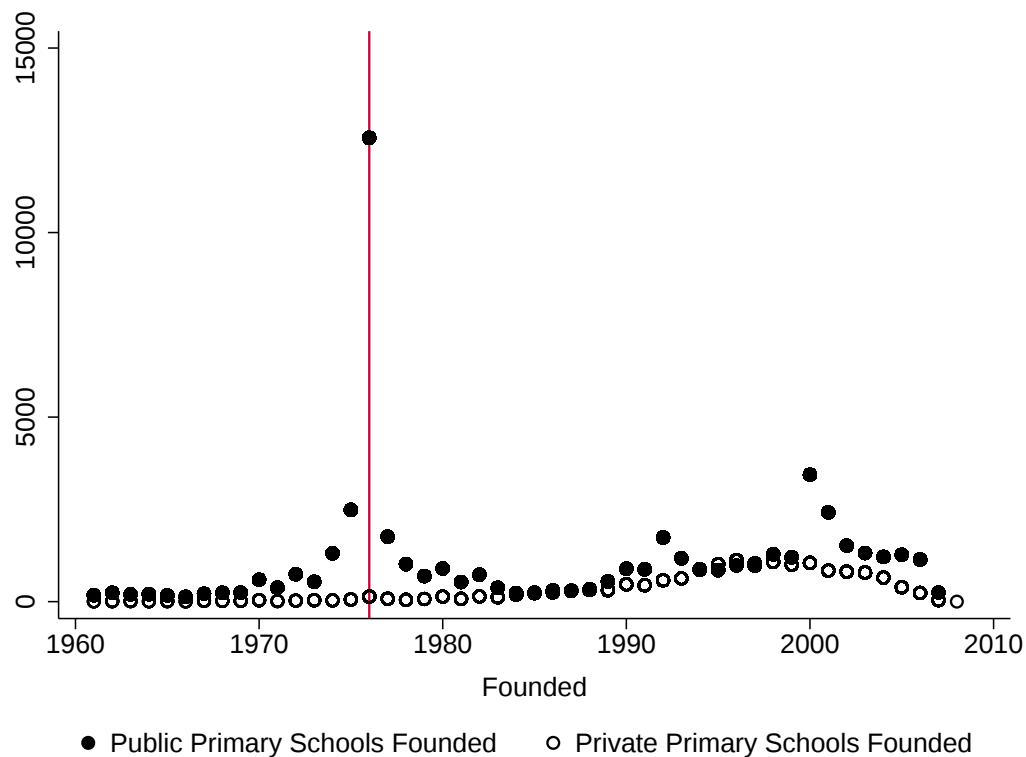


Figure 3: Number of public and private primary schools founded since independence (source: Nigerian Primary School Census 2008)

The result was dramatically increased enrollment. The number of students in primary school rose, much faster than population growth, by 124% from 4.4m in 1974 to 13.8m in 1981 (Osili and Long 2008; Oyelere 2010)—this exceeded government expectations, based on the 1963 Census, of 11.5m in 1980 (Bray 1981; Csapo 1983). The gross male primary enrollment rate increased from 60.3 in 1974 to 136.8 in 1981, while the gross female enrollment rate increased from 40.3 in 1974 to 104.7 in 1981 (Osili and Long 2008). Given the huge disparities between their initial levels, differences were also pronounced by region, with the largest enrollment effects in the North. Such spatial variation across genders is central to our identification strategy below. Nevertheless, as many as 25% of students in Benue and Plateau dropped out before completing primary school after UPE’s introduction (Csapo 1983); such incomplete primary schooling is reflected in our empirical analysis.

Once the civilian government, handed power in 1979 as oil revenues declined, was forced to finance an already under-funded UPE program, the policy ended in 1981.⁷ Although universal education remained a goal, most states then reintroduced school fees—excluding the Western states dominated by the United Nigeria Party—as the federal government ceased to provide grants for teacher salaries and training (Osili and Long 2008). As Figure 5 (below) shows, enrollment barely changed, and with time continued to increase. This implies that school availability and better inputs, rather than fees, principally drove enrollment decisions. Supporting this claim, Ozigi and Ocho (1981) find that the experience of UPE raised Northern parents’ willingness to pay for schooling.

4 Research design

This section first describes the Nigerian survey data containing political responses. We then explain how we identify the effect of primary schooling on civic and political engagement by using

⁷The 1976 program had mistakenly assumed oil revenues would persist (Csapo 1983) alongside economic growth of 5-10%, of which 25% could be captured as tax revenues (Achor 1977).

difference-in-differences and instrumental variable strategies, leveraging differences in the impact of UPE.

4.1 Survey data

Our main dependent and independent variables draw from the Afrobarometer, which is a nationally-representative sample of economic, political and social attitudes among citizens aged 18 or above.⁸ We use all four rounds for Nigeria, which cover 1999-2009 with samples conducted every two years, producing a maximum sample of 15,145 respondents covering 537 of Nigeria's 774 LGAs. To construct our variables measuring the differing intensity of the 1976 UPE reform we draw upon several Nigeria-specific datasets; see following subsection. Detailed variable definitions and summary statistics are provided in the Appendix.

4.1.1 Dependent variables

In order to address our hypotheses examining the effect of primary schooling on civic and political engagement, we examine dependent variables grouped under four main categories: interest in politics, political participation, community participation, and support for democracy. These outcomes extend beyond low-cost activities like voting to include fundamental ideological building blocks for establishing effective democratic accountability such as support for democratic institutions and social capital.

Interest in politics is measured by two variables. First, *Discuss politics often* is a dummy for the 19% of the sample that responded that they frequently discussed politics with friends or family.⁹ Second, we created *News scale*, a summative rating scale averaging five-point ordinal scales asking how frequently respondents follow the news on television, by radio or in newspapers; the scale has a high Cronbach's alpha inter-item reliability score of 0.71.

⁸Surveys are random samples stratified by state. See [Afrobarometer website](#) for further details.

⁹Since 67% of individuals stated that they discuss politics occasionally, we lack the variation to examine an alternative frequency.

We measured political participation using four self-reported behavioral indicators. *Voted* is a dummy for the 62% of the sample that reported voting at the last federal election. *Attend demonstration* is a dummy capturing participation in peaceful protest in the last year. Participation is also measured by contacting political figures; accordingly, *Contact local councilor* and *Contact Representative* are respectively dummy variables for 17% and 6% of respondents who contacted the relevant political figure in the last year.

Active community participation is measured by group membership and attendance. We code dummy variables for *Attend community meeting* in the last year and active participation in local associations—*Active association member*—over the last year.¹⁰

Support for democracy is differentiated by abstract support and support for its practice. Intrinsic support implies support for democracy as the best form of government *in the abstract*, regardless of socioeconomic circumstances. To approximate this, we measure *Support democratic institutions* using a summative rating scale combining eight items characterizing liberal democracy with separation of powers: three-point ordinal scales of support for checks and balances and support for term limits, as well as dummies for opposition to one-party rule, military rule and rule by one man, opposition to presidential discretion, opposition to governments banning organizations, and support for freedom of press (Cronbach's alpha of 0.60). We separately code a dummy variable, *Political violence unjustified*, for the 72% of respondents agreeing that political violence is never justified. Support for the existing practice of democracy in Nigeria is measured by a dummy for *Satisfied with democracy* and a *Trust politicians scale* averaging trust in six government institutions: the President, National Assembly, Independent Electoral Commission, local government council, ruling party, and opposition party (Cronbach's alpha of 0.84).

¹⁰We find almost identical results when simply considering association membership.

4.1.2 Primary education

The key explanatory variable is primary school education. The Afrobarometer asks respondents about their level of education, providing six responses: no schooling, incomplete and complete primary school, incomplete and complete secondary school, and some college. Across the full sample, 20% reported receiving no education, while 5% experienced some primary schooling and a further 11% only completed primary school. Given Nigeria’s comparatively progressive education policies in Africa, the proportion attending secondary school is high, although only 6% progressed to university. Since this paper focuses on Nigeria’s UPE program, the analysis will utilize a three-category ordinal variable, *Primary schooling*, coded 0 for no education, 1 for incomplete primary school and 2 for complete secondary school.¹¹ Although imposing linearity on this relationship is not ideal, using a dummy for completed primary education could seriously upwardly bias instrumental variable estimates (Angrist and Imbens 1995). Since by 1976, most students had at least some primary schooling, our results are primarily identifying the effect of moving from incomplete to complete primary school.

4.2 Identification strategy

To identify the effects of education on political behavior and their implications for democracy, we leverage varying impacts of Nigeria’s UPE program. More specifically, we use the pre-UPE variation in enrollment across LGAs by gender to proxy for the differential intensity of the reform. We now detail how such variation identifies the effects of UPE and primary schooling.

4.2.1 Reduced form

Our identification strategy—which is similar to Duflo (2001) and Bleakley (2010)—exploits temporal *and* spatial variation by gender. The temporal dimension distinguishes the periods before

¹¹The first-stage (below) shows our instrument does not affect secondary education. Using a six-category scale does not substantively affect the results.

and after the 1976 UPE reform. Although UPE was abandoned in 1981, it had powerful persistent effects. The exact reason enrollment did not revert to pre-1976 levels is hard to discern—school availability, input quality, information about the value of education or changed norms are all plausible explanations—but it is sufficient for our purpose to note that primary school enrollment remained relatively steady after 1981 before continuing to increase (see Figure 5). Since UPE affects all students of eligible age, a second dimension of variation is required to distinguish the introduction of UPE from cohort effects.

As Figures 1 and 2 show, there is considerable variation in the enrollment potential of UPE across LGAs and by gender. This second dimension defines the *intensity* of the UPE reform: where enrollment was already high, the potential impact of UPE was smaller. Such spatial variation permits a difference-in-differences (DD) strategy, where low-intensity areas serve as control units able to differentiate trends in educational qualifications from the impact of UPE in high-intensity areas. This ameliorates the concern that the introduction of UPE simply reflected underlying trends across Nigeria.

Given we are interested in individual survey responses, we must map the intensity of UPE to individuals. To operationalize this, we count any individual born after 1969—who is thus eligible to benefit from UPE’s educational expansion at age 6—as impacted by the UPE program;¹² this defines the reform dummy *Post-UPE*. Like Bleakley (2010), we measure the differential intensity of UPE’s impact across LGAs by using the gap between actual and potential capacity to approximate the scope of the program’s effect. To maximize power, we exploit the spatial variation in Figures 1 and 2 to define UPE *Intensity* as the male or female proportion of the LGA population born between 1960 and 1969 that had not completed primary school.¹³ UPE intensity thus varies

¹²Students born after 1964 were eligible for some free schooling. Figure 5 shows no sharp deviation before 1970, suggesting this nuance is unimportant. Nevertheless, our results are robust to coding cohorts born after 1964 as UPE-eligible and removing the partially-eligible 1964-1969 cohorts. Oyelere (2010) notes that grade skipping and over and under-age entry were uncommon.

¹³We prefer this measure to 1976 schools per capita and newly constructed classrooms 1975-81 because data is missing for 11% of LGAs and, while UPE specifically mandated new classrooms,

by gender across LGAs, but not over time. Figure 4 confirms that while some respondents in our Afrobarometer sample lived in LGAs with near-universal primary education for both genders, a large proportion—especially of female students—did not.

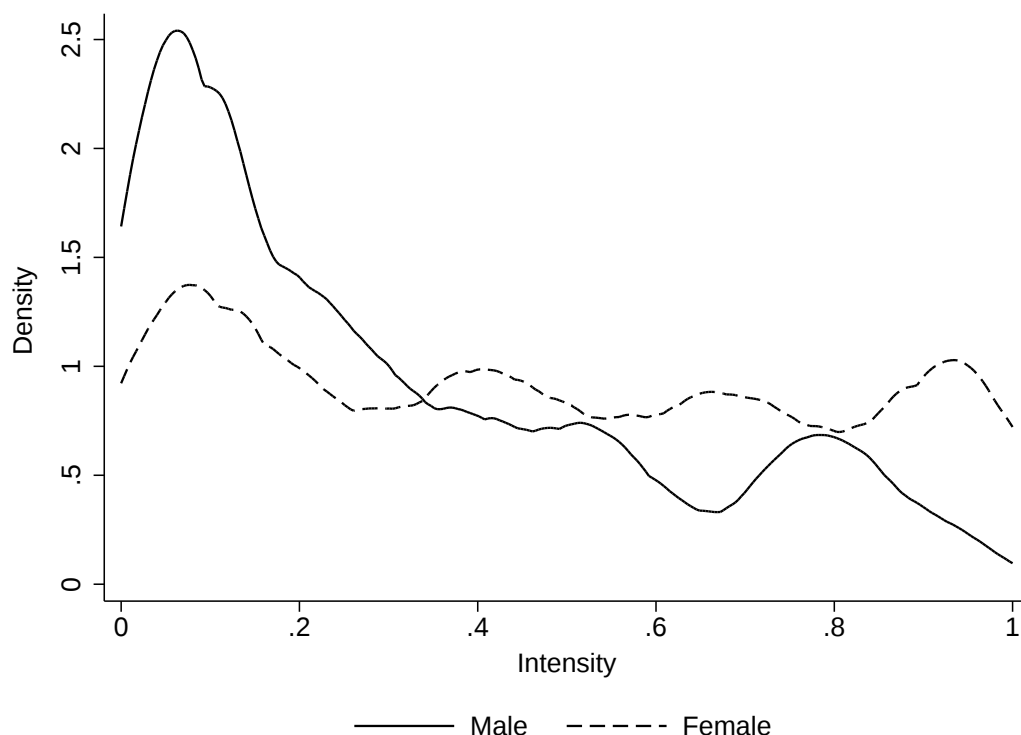


Figure 4: UPE intensity distribution across LGAs and by gender

Individuals are mapped to LGAs based on their current LGA of residence.¹⁴ We assume respondents were educated in the same LGA they currently reside in. This is unproblematic in Nigeria, where migration is rare: less than 5% of HNLSS respondents had not always lived in their current town or village, while [Osili and Long \(2008\)](#) find no differences between movers and non-movers in levels of schooling.

school sizes differed significantly across the country. The correlation with Intensity is 0.48. The effect loads on Intensity when included alongside construction-based variables in the first-stage, suggesting Intensity best captures the differential effects of UPE. See robustness checks for alternative measures of intensity.

¹⁴Although current LGA borders differ slightly from those at their inception in 1976, this is not a major concern because neighboring LGAs have similar intensities.

By interacting Post-UPE and Intensity, we can estimate the reduced form effect of UPE exposure in the following DD regression by including state and survey-year fixed-effects:

$$Y_{i,g,c,l,s,t} = \beta_1 \text{Intensity}_{g,l} + \beta_2 (\text{Post-UPE}_c \times \text{Intensity}_{g,l}) + X_i \gamma + \mu_g + \kappa_c + \eta_s + \zeta_t + \varepsilon_{i,g,c,l,s,t}, \quad (1)$$

where $Y_{i,g,c,l,s,t}$ is a political outcome variable, X_i is a vector of individual-specific covariates (religion dummies and a rural-urban dummy¹⁵), and μ_g , κ_c , η_s and ζ_t are respectively gender, cohort, state and survey fixed-effects.¹⁶ κ_c subsumes the non-interacted Post-UPE dummy, in addition to any effects of undertaking primary school during military and democratic governments. Throughout we conservatively cluster standard errors by state.¹⁷

By focusing on changes over time, the fact that education levels are non-randomly distributed across LGAs is unproblematic. Rather, the key identifying assumption in DD analyses is parallel trends (Abadie 2005). This requires that without UPE changes in $Y_{i,g,c,l,s,t}$ would not have differed across areas with different UPE intensities. Figure 5 is consistent with this assumption, showing very similar trends across above and below-median intensity cases before the reform. Furthermore, we show below that our results are robust to including state-specific time trends and performing placebo tests for cohorts unaffected by the reforms.

¹⁵Neither variables is unlikely to have changed over the course of a respondent's life, so they are counted as pre-treatment. The results are robust to their exclusion.

¹⁶Our robustness checks show LGA and gender-LGA fixed effects produce similar results at the significant cost of degrees of freedom.

¹⁷Although our variation in intensity covers the current 36 states (and Lagos), only 19 states existed in 1976. Clustered standard errors are slightly higher using fewer clusters, but remain highly statistically significant. Robust standard errors are never meaningfully larger.

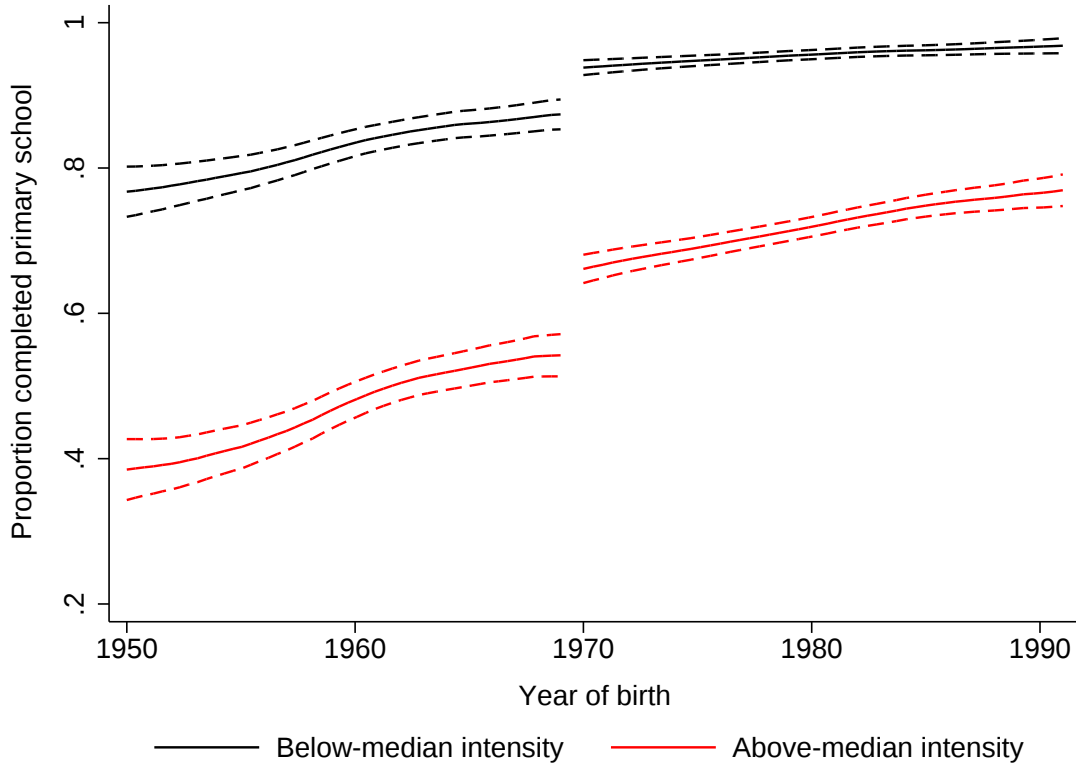


Figure 5: Trends in primary school completion by UPE intensity (source: Afrobarometer)

4.2.2 Instrumental variables

In order to estimate the effects of primary schooling, we would ideally estimate the following equation using OLS:

$$Y_{i,g,c,l,s,t} = \beta \text{Primary schooling}_i + X_i \gamma + \mu_g + \kappa_c + \eta_s + \zeta_t + \varepsilon_{i,g,c,l,s,t}. \quad (2)$$

Although we estimate such naive regressions for comparison purposes, these estimates are uninformative for two principal reasons. First, as noted above, which individuals receive longer schooling is unlikely to be (conditionally) random (Kam and Palmer 2008). Second, the effect of primary schooling is likely to differ across individuals: while individuals that would have attended primary school anyway might not be expected to experience large effects, schooling could make a big dif-

ference for those with the lowest propensity to attend school since they are unlikely to benefit from other stimuli encouraging political engagement.¹⁸

In order to obtain unbiased estimates for the population of students that comply with UPE incentives, we use an instrumental variable (IV) strategy. IV builds upon the reduced form estimation strategy by estimating a DD specification for our first-stage:

$$\begin{aligned} \text{Primary schooling}_{i,g,c,l,s,t} = & \alpha_1 \text{Intensity}_{g,l} + \alpha_2 \left(\text{Post-UPE}_c \times \text{Intensity}_{g,l} \right) \\ & + X_i \gamma + \mu_g + \kappa_c + \eta_s + \zeta_t + \varepsilon_{i,g,c,l,s,t}, \end{aligned} \quad (3)$$

using OLS, where $\text{Post-UPE}_c \times \text{Intensity}_{g,l}$ is the excluded instrument. We use 2SLS to estimate equation (2) using the predicted values from equation (3) to yield the causal effect for compliers (Angrist and Imbens 1995).¹⁹ In addition to the parallel trends assumption, identifying this causal effect of primary school on political outcomes requires a strong first-stage, monotonicity, and an exclusion restriction requiring that UPE intensity has no effect on political outcomes except through increasing primary schooling.

The first-stage for our excluded instrument is verified in Table 1. Column (1) shows a significant positive effect for the interaction between Post-UPE and Intensity: moving from the lowest to highest intensity LGA increased schooling by a third of a level, predominantly moving students from incomplete toward complete primary school.²⁰ This confirms that UPE was most effective in raising primary schooling in LGAs which had the lowest initial rates of primary enrollment. The

¹⁸In the best-case scenario where schooling is exogenous, OLS averages across all types of respondent in the sample.

¹⁹Given our endogenous variable, primary schooling, takes three values, 2SLS estimates the local average causal response for UPE intensity-compliers by weighting the causal effect at each value of primary schooling by the proportion of people affected by the instrument at that value (Angrist and Imbens 1995). With covariates, 2SLS requires re-weighting by covariate values (Abadie 2003). We ignore this subtlety because 2SLS provides a good approximation.

²⁰Allowing our excluded instrument to vary by gender shows the effect is 40% lower for women. Our 2SLS results are almost identical when using either IV strategy.

Table 1: First-stage—effect of UPE intensity on schooling

	Primary schooling (1) OLS	Primary schooling (2) OLS	Primary schooling (3) OLS	Primary schooling (4) OLS	Incomplete primary (5) OLS	Complete primary (6) OLS	Incomplete secondary (7) OLS	Complete secondary (8) OLS
Post-UPE $\times$ Intensity	0.333*** (0.069)	0.281*** (0.071)	0.174** (0.069)		0.193*** (0.033)	0.140*** (0.038)	0.037 (0.042)	-0.046 (0.035)
Placebo $\times$ Intensity				-0.024 (0.089)				
Linear cohort trends	No	State	LGA	No	No	No	No	No
Outcome mean	1.56	1.56	1.56	1.29	0.81	0.76	0.65	0.50
Outcome std. dev.	0.80	0.80	0.80	0.92	0.40	0.43	0.38	0.50
Instrument mean	0.38	0.38	0.38	0.39	0.38	0.38	0.38	0.38
Instrument std. dev.	0.31	0.31	0.31	0.30	0.31	0.31	0.31	0.31
Observations	15,145	15,145	15,145	5,218	15,145	15,145	15,145	15,145
F statistic	23.6	16.7	6.37	0.1	34.3	13.9	0.8	1.7

Notes: all models include religion, rural-urban, gender, cohort, state and survey dummies; state-clustered standard errors in parentheses; * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

relationship is strong, yielding an F statistic of 23.6 for the inclusion of our excluded instrument.

Checking the parallel trends assumption, columns (2) and (3) show the first-stage results are robust to including state and LGA-specific linear cohort time trends.²¹ Furthermore, restricting the sample to those born before 1970 and using 1959 as a placebo reform, column (4) finds no effect for the interaction.

The remaining specifications examine dummies for attaining different levels of schooling. Columns (5) and (6) show large effects on incomplete primary schooling, but also for completing primary schooling; supporting our three-point operationalization of primary school, the coefficients are broadly consistent with a linear relationship. Justifying the decision to restrict attention to primary schooling, columns (7) and (8) show that UPE intensity does not affect secondary school attendance.

The key IV identifying assumption is the exclusion restriction. We discuss this assumption in detail below, and provide tests strongly suggesting that UPE only affected those who attended primary school, rather than other members of the local community, and did not increase the quality of primary education. Our sensitivity analyses show that a very large violation of the exclusion restriction is required to nullify our results.

5 Empirical analysis

5.1 UPE, primary schooling and political engagement

Tables 2-5 report OLS, reduced form and 2SLS results estimating population-average correlations, the effect of exposure to high-intensities of UPE, and primary schooling estimates for UPE program-compliers respectively. Both the reduced form and 2SLS estimates suggest that UPE considerably increased civic and political engagement.

²¹Since male and female LGA cohort trends are highly collinear, adding LGA-specific cohort trends exploded standard errors without affecting point estimates due to extreme multicollinearity.

UPE-compliers are individuals that only attended primary school because of UPE. Unsurprisingly given education is an important status symbol in Nigeria, they come from relatively disadvantaged backgrounds. Since such compliers are less likely to have benefited from other stimuli promoting civic and political engagement, finding large 2SLS effects for this group is common (e.g. Finkel and Smith 2011; Friedman et al. 2011; Zaller 1992). Furthermore, by estimating effects up to 33 years after respondents benefited from UPE, we incorporate most of education's downstream effects (e.g. increased income, social status), which likely contribute to larger effects than surveys conducted shortly after an intervention.

5.1.1 Results

The UPE intensity reduced form and 2SLS primary schooling estimates in Table 2 strongly support the hypothesis that primary schooling increases measures of interest in politics. In particular, the 2SLS estimate in column (3) reinforces the reduced form effect by showing a unit-increase in primary school increases a respondent's propensity to frequently discuss politics by 16 percentage points.²² Given media outlets in Nigeria are politically-oriented, this interest is reflected in following the news across a combination of television, radio and newspaper media platforms in column (6), where a unit increase in primary schooling increases the news scale by around a third of a standard deviation.

The results in Table 3 show that primary schooling increases the likelihood that Nigerians engage in basic, low-cost but fundamental forms of political participation. Column (3) in Table 3 shows moving from no education to incomplete primary or incomplete primary to complete primary education increases the probability that an individual voted in the last election by 34 percentage points. This intuitively suggests that the uneducated are especially unlikely to turn out in a country where reported turnout is high.²³ Turning to attending demonstrations, columns (5)

²²Given the estimates in Table 1 most of the variation in primary schooling is people jumping across a single primary schooling category.

²³Supporting this, unreported results show a significant 46 percentage point increase in regis-

Table 2: Effect of primary schooling on political interest

	Discuss politics often			News scale		
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	2SLS	OLS	OLS	2SLS
Primary schooling	0.052*** (0.006)		0.157** (0.061)	0.451*** (0.018)		0.329** (0.149)
Post-UPE $\times$ Intensity		0.051** (0.021)			0.113* (0.057)	
Outcome mean	0.189	0.189	0.189	2.302	2.302	2.302
Outcome std. dev.	0.392	0.392	0.392	1.113	1.113	1.113
Observations	15,038	15,056	15,038	15,129	15,155	15,129
First-stage F statistic			24.1			23.7

Notes: reduced form and 2SLS estimates include Intensity as an additional control; see Table 1.

and (6) show no reduced form or 2SLS effect. Since peaceful demonstration is a costlier and more sophisticated form of participation only undertaken by 15% of the sample, it is unsurprising these are not the least educated.

The evidence from contacting political figures shows similar results, with primary education only affecting simple forms of engagement. The results show that a single-category increase in schooling raises the probability of UPE-compliers contacting local government officials by 17 percentage points, while the UPE reform had no effect on the less common and costlier activity of contacting a nationally-elected Representative.

Supporting the claims of “civic culture” and “social capital” theories, Table 4 shows primary schooling substantially increases community participation. A unit increase in primary schooling increases respectively the probability that an individual at least occasionally attends community

tered voters.

Table 3: Effect of primary schooling on political participation

	Voted		Attended demonstration			Contact local councilor			Contact Representative			
	(1) OLS	(2) OLS	(3) 2SLS	(4) OLS	(5) OLS	(6) 2SLS	(7) OLS	(8) OLS	(9) 2SLS	(10) OLS	(11) OLS	(12) 2SLS
Primary schooling	0.056*** (0.007)		0.338*** (0.122)	0.030*** (0.005)		-0.065 (0.066)	0.049*** (0.006)		0.173** (0.082)	0.017*** (0.004)		0.012 (0.049)
Post-UPE × Intensity		0.109*** (0.033)			-0.022 (0.021)			0.056*** (0.026)			0.002 (0.017)	
Outcome mean	0.624	0.623	0.624	0.149	0.149	0.149	0.169	0.169	0.169	0.063	0.063	0.063
Outcome std. dev.	0.484	0.485	0.484	0.356	0.356	0.356	0.375	0.375	0.375	0.243	0.243	0.243
Observations	10,516	10,528	10,516	14,944	14,968	14,944	15,095	15,121	15,095	15,066	15,092	15,066
First-stage <i>F</i> stat.			22.4			24.3			23.2			24.2

Notes: see Table 2.

Table 4: Effect of primary schooling on community participation

	Attend community meeting			Active association member		
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	2SLS	OLS	OLS	2SLS
Primary schooling	0.067*** (0.009)		0.360*** (0.126)	0.055*** (0.007)		0.391*** (0.082)
Post-UPE $\times$ Intensity		0.123*** (0.044)			0.133*** (0.026)	
Outcome mean	0.504	0.504	0.504	0.310	0.310	0.310
Outcome std. dev.	0.500	0.500	0.500	0.462	0.462	0.462
Observations	15,044	15,069	15,044	15,070	15,094	15,070
First-stage F statistic			25.5			25.7

Notes: see Table 2.

meetings or is an active association member by 36 and 39 percentage points. Given that half the population attend meetings while a third are active association members, our effects suggest primary education provides compliers with the basic skills required to confidently attend meetings.

Table 5 shows that primary schooling increases support for democracy in the abstract, but does not affect satisfaction with democracy in practice. To distinguish support for democratic institutions in general from particular support for the current regime, we compare a scale eliciting support for established liberal democratic institutions and an indicator for the belief that political violence is never justified with results for satisfaction with democracy and a scale eliciting trust in various political figures and institutions. Looking across columns (1)-(12), the results are clear: primary school substantially increases support for democracy in the abstract—the 2SLS estimates show a unit increase in primary education increases support by half a standard deviation—and increases opposition to political violence just outside conventional levels of statistical significance.

Table 5: Effect of primary schooling on support for democracy

	Support democratic institutions			Political violence unjustified			Satisfied with democracy		Trust politicians scale			
	(1) OLS	(2) OLS	(3) 2SLS	(4) OLS	(5) OLS	(6) 2SLS	(7) OLS	(8) OLS	(9) 2SLS	(10) OLS	(11) OLS	(12) 2SLS
Primary schooling	0.056*** (0.010)		0.273*** (0.101)	0.018** (0.007)		0.190 (0.142)	0.024*** (0.009)		0.039 (0.070)	-0.004 (0.007)		-0.050 (0.046)
Post-UPE $\times$ Intensity		0.093** (0.036)			0.057 (0.042)			0.015 (0.024)			-0.016 (0.015)	
Outcome mean	0.013	0.013	0.013	0.721	0.721	0.721	0.483	0.483	0.483	0.348	0.348	0.348
Outcome std. dev.	0.595	0.595	0.595	0.449	0.449	0.449	0.500	0.500	0.500	0.359	0.359	0.359
Observations	15,126	15,152	15,126	12,584	12,604	12,584	14,814	14,833	14,814	15,032	15,058	15,032
First-stage F statistic			23.9			18.6			26.3			24.2

Notes: see Table 2.

However, consistent with evidence that evaluations of democratic performance are far more instrumental (Mattes and Bratton 2007), there is no evidence suggesting primary education increases support for democracy in practice.²⁴

These findings support previous correlative work suggesting that the cognitive awareness that schooling presumably imparts—possibly through the greater interest and participation it induces—translates into support for democracy (Bratton and Mattes 2001; Mattes and Bratton 2007). Since Nigeria is not an exemplar democracy—Freedom House awarded Nigeria a score of 4.5 (on a scale from 7 to 1) in 2013 while Polity gave Nigeria a 4 (on a scale from -10 to 10)—our results also suggest that more educated citizens are able to see how Nigeria’s political practice deviates from democratic ideals.

5.1.2 Assessing the exclusion restriction

The key identifying assumption underlying the 2SLS estimates is the exclusion restriction. We use placebo tests and qualitative information to show plausible violations do not hold, before using sensitivity analysis to show any violation of the exclusion restriction must be implausibly large to nullify our results.

A plausible concern is that the greater construction entailed by the UPE program in high-intensity areas could affect political outcomes through indirect labor market externalities, showing citizens that government can effectively deliver services, or by generating local political engagement where UPE entailed structural changes requiring local contracting, planning and community meetings and discussions. Similarly, better-educated individuals could relay or perpetuate their civic norms within their networks (Finkel and Smith 2011). To address these concerns, we conduct placebo tests restricting the sample to respondents born before 1969, and hence too old to be affected by UPE’s educational opportunities.

²⁴Results are similar (insignificantly negative) when asking if respondents believe Nigeria is a well-functioning democracy.

Table 6: Placebo tests of the exclusion restriction

	Discuss politics often (1) OLS	Voted (2) OLS	Attend community meeting (3) OLS	Support democratic institutions (4) OLS
<i>Test 1: 1965 placebo reform, born before 1970 only</i>				
Placebo $\times$ Intensity	0.020 (0.046)	-0.003 (0.042)	0.012 (0.062)	0.146** (0.065)
Observations	5,193	3,670	5,202	5,226
<i>Test 2: 1960 placebo reform, born before 1965 only</i>				
Placebo $\times$ Intensity	-0.114*** (0.037)	0.015 (0.069)	0.072 (0.073)	-0.036 (0.053)
Observations	3,717	2,622	3,730	3,746

Notes: see Table 2.

Reduced form results are shown in Table 6 for four key outcomes, while the Online Appendix shows the results for our eight other outcomes.²⁵ Test 1 treats those born between 1965 and 1969 as if they were treated, and compares them to those born before 1965. Test 2 removes those born between 1965 and 1969, treats those born between 1960 and 1964 as treated instead, and uses those born before 1960 as the control group. With one positive result from 24 tests, these tests clearly support the validity of our exclusion restriction.

Another concern is that UPE simultaneously increased the quality of education. If anything, however, quality decreased as schools struggled to meet the influx of new students. Asagwara (1997) and Csapo (1983) point to under-estimated enrollment and major initial reductions in qualified teachers, teacher-pupil ratios, adequate learning environments, learning materials and student supervision that were partially recovered but never surpassed—and not just in Northern states.

²⁵Given the lack of reduced form effects, 2SLS estimates also support our exclusion restriction.

Moreover, [Oyelere \(2010\)](#) considers quality in detail, finding no evidence that UPE affected school quality or created differential returns to schooling.

Even though we provide good evidence against the most plausible exclusion restriction violations, alternative avenues can be imagined. Since showing that more than just the most worrying are unfounded is impractical, we check the sensitivity of our estimates to including the excluded instrument in the following second stage specification:

$$Y_{i,g,c,l,s,t} = \beta \text{Primary schooling}_i + \lambda \left(\text{Post-UPE}_c \times \text{Intensity}_{g,l} \right) + X_{i,g,l} \gamma + \mu_g + \kappa_c + \eta_s + \zeta_t + \epsilon_{i,g,c,l,s,t}, \quad (4)$$

where $X_{i,g,l}$ includes the linear intensity term. Since equation (4) is unidentified with 2SLS, we follow [Conley, Hansen and Rossi \(2012\)](#) by adjusting our 2SLS estimates to consider different assumptions about the effect of the excluded instrument λ . Following [Conley, Hansen and Rossi \(2012\)](#), the solid confidence intervals in Figure 6 plot the union of all confidence intervals as parameter δ varies the set of possible values of λ such that $\lambda \in [-2\delta, 2\delta]$, while the dashed lines plot the local-to-zero large-sample approximation (where uncertainty about λ is modelled alongside sampling uncertainty) as $\lambda \sim N(0, \delta^2)$ varies with δ .

Figure 6 shows that, for the case of voting, $\lambda > 0.04$ is required to nullify our results in the conservative union of confidence intervals specification.²⁶ Given the total reduced form effect shown in Table 3 is 0.109, this implies that at least 35% of the reduced form effect must go through channels other than primary schooling. Given the most probable violations of the exclusion restriction find no support, we find this implausible. However, even the most cautious reader can still turn to the large reduced form estimates as evidence of UPE's large general equilibrium effects.

²⁶In our just-identified case, $\text{plim} \hat{\beta}_{2SLS} = \beta + \lambda / \alpha_2$. Since bias decreases in α_2 , our strong first stage means the large λ required for the 95% confidence to cover zero is unsurprising. Our other main dependent variables are similarly robust to such sensitivity analyses.

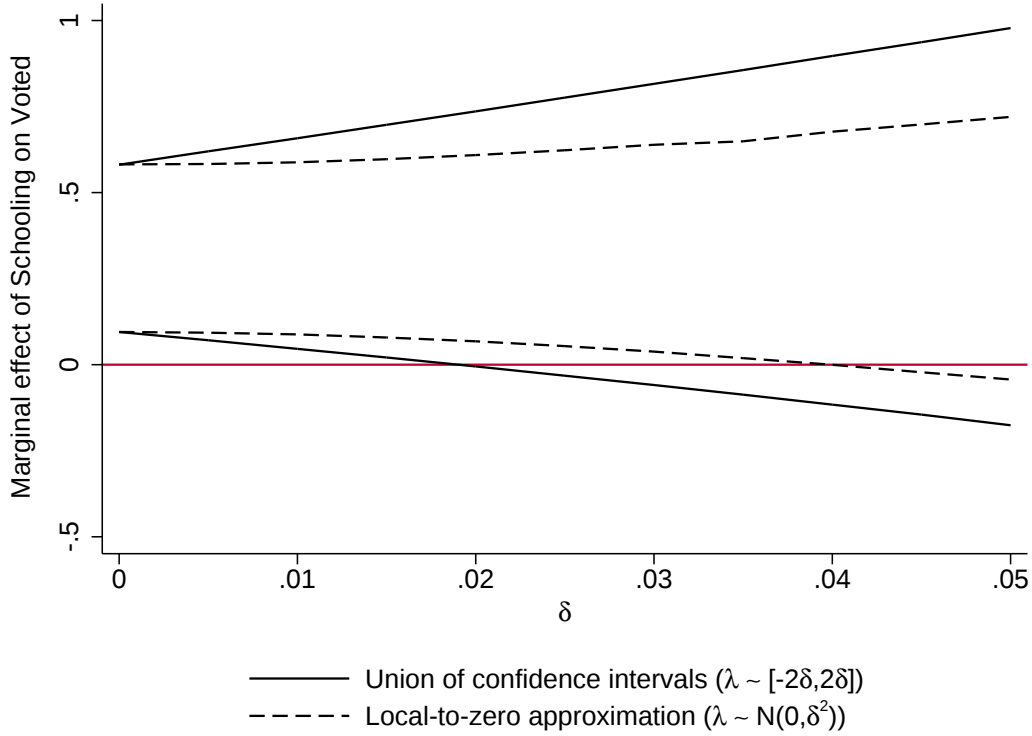


Figure 6: Sensitivity of Voted 95% confidence intervals to exclusion restriction violations

5.1.3 Specification checks

We employ a variety of specification checks to show our results are robust to other possible violations of the assumptions required to estimate the causal effect of primary schooling. All robustness checks are available in the Online Appendix or replication code.

Our results are robust to alternative covariate specifications. First, at the cost of using only the 2005-2009 survey data, we included tribe fixed-effects and found very similar results. Second, using LGA and gender-LGA instead of state fixed-effects produced very similar point estimates; using [Guggenberger's \(2010\)](#) test, neither reduced form nor 2SLS estimates significantly different from the results reported above. Third, we included state and LGA-specific linear survey and cohort trends to address the concern that our results reflect regional survey or cohort trends, and found very similar results. Finally, allowing for polynomial age terms in addition to cohort dummies, as

in [Acemoglu and Angrist \(2000\)](#), does not affect the results.

The results are also robust to alternative operationalizations of UPE reform intensity. Defining UPE intensity by those born 1960-1964, by the proportion lacking incomplete primary schooling, and using state rather than LGA variation in intensity all provide similar results.²⁷

Finally, social desirability bias in responses from more educated people is a potential concern. We consider a series of checks suggesting it is unlikely that such bias explains our results. Although fully disproving this is impossible, there are good reasons to doubt that it explains our results. First, we cross-checked Afrobarometer responses with the nationally-representative National Living Standards Survey (NLSS), where possible, and found considerable consistency.²⁸ Second, we do not find effects on contacting Representatives or trust of politicians, where we also would expect social desirability to apply. Third, if the results solely reflect such bias, it is hard to explain the heterogeneous ethno-religious effects presented below. Finally, unreported specifications find education affects measurable outcomes such as occupation, employment and assets, suggesting education is producing changes along other dimensions.

5.2 Heterogeneity by religion and ethnicity

Despite the fact that primary schooling increases support for democracy in the abstract, political engagement induced by schooling could have a downside in a country where 25% of our respondents see political violence as legitimate. This greater participation could represent institutional capture to further a homogeneous majority group's interests (e.g. [Gugerty and Kremer 2008](#)) or lead to inequalities and violence between groups ([Huntington 1968](#)).

²⁷The correlation between the five- (1960-1964) and ten-year measures is 0.95. Defining UPE intensity by the proportion lacking incomplete primary schooling is almost-perfectly correlated (0.99) with the complete primary schooling measure. As expected, we obtain similar point estimates—but with less power—if the intensity is defined by state rather than LGA.

²⁸For community association membership the NLSS shows 83.8% membership, compared to 86.4% in the Afrobarometer. Trusting local and state government were also similar: 33.0% against 31.6%, and 24.5% against 30.6% respectively for NLSS and Afrobarometer figures.

To assess whether our optimistic outlook masks a more sinister reality, we first compare the effects of primary schooling across LGAs with differing religious and tribal compositions. We use the HNLSS data to split the sample by above and below-median religious (Herfindahl index) fragmentation scores, above and below-median religious group competition,²⁹ and whether respondents are from majority or non-majority religious groups in their LGA. We also defined members of the main tribe in each LGA by identifying cases where the tribe corresponds with the LGA's main language, as defined by the Local Government Handbook 1998, and cases where the Afrobarometer data tells us that all the survey people share a tribe that coincides with the majority tribe within the Afrobarometer sample.³⁰

Table 7 finds very little evidence of stronger effects among dominant groups. Rather, primary schooling increases political interest and political participation much more in fragmented and competitive areas and among non-majority members, although there is little difference in community participation or abstract support for democracy. The Online Appendix reports similar results for our other outcomes: although differences are again more pronounced for political than community variables, positive effects are generally observed across all categories and the differentials are small. Less hopeful is the result that respondents in fractionalized and competitive LGAs tend to contact local councilors and Representatives more often. While this is unsurprising given that such respondents are most likely to have voted for or feel connected to such politicians, this shows that primary schooling cannot resolve all differentials. Nevertheless, these results suggest that primary schooling does not accentuate existing divisions—if anything, education encourages democratic engagement most among locally weak social groups and in LGAs more susceptible to capture or conflict.

Secondly, results in the Online Appendix show that primary schooling does not affect a UPE-

²⁹Religious competition is defined for LGAs as $1 - |n_1 - n_2|$ where n_1 and n_2 denote the LGA share of the population of the two largest religious groups. There is a correlation of 0.95 with religious fragmentation.

³⁰This was only possible for the 2005-2009 surveys.

Table 7: Differences in primary schooling's effect by religion and tribe

	Discuss politics often (1) 2SLS	Voted (2) 2SLS	Attend community meeting (3) 2SLS	Support democratic institutions (4) 2SLS
Panel A				
<i>Above-median LGA religious fragmentation only</i>				
Primary schooling	0.162* (0.096)	0.485*** (0.155)	0.320*** (0.120)	0.272 (0.170)
Observations	7,566	5,296	7,579	7,611
<i>Below-median LGA religious fragmentation only</i>				
Primary schooling	0.103 (0.085)	0.162 (0.141)	0.314 (0.199)	0.261* (0.156)
Observations	7,472	5,220	7,465	7,515
Panel B				
<i>Above-median religious competition LGAs only</i>				
Primary schooling	0.184* (0.111)	0.358*** (0.139)	0.320** (0.160)	0.230 (0.162)
Observations	7,587	5,369	7,601	7,630
<i>Below-median religious competition LGAs only</i>				
Primary schooling	0.107 (0.078)	0.269* (0.141)	0.317* (0.177)	0.301** (0.141)
Observations	7,451	5,147	7,443	7,496
Panel C				
<i>LGA religious minority members only</i>				
Primary schooling	0.399* (0.227)	0.819* (0.453)	0.282 (0.315)	0.251 (0.278)
Observations	2,847	2,036	2,846	2,855
<i>LGA religious majority members only</i>				
Primary schooling	0.140** (0.055)	0.236** (0.114)	0.364*** (0.115)	0.297*** (0.103)
Observations	12,191	8,480	12,198	12,271
Panel D				
<i>LGA non-main tribe members only</i>				
Primary schooling	0.271** (0.110)	0.507* (0.299)	0.332** (0.146)	0.264** (0.125)
Observations	2,403	1,527	2,399	2,421
<i>LGA main tribe members only</i>				
Primary schooling	0.276 (0.214)	0.390 (0.243)	0.657** (0.322)	-0.048 (0.325)
Observations	4,538	3,090	4,524	4,559

complier's likelihood of increasing their ethnic identity relative to their national identity, while primary schooling did not make compliers less supportive of a united Nigeria. [Finkel, Horowitz and Rojo-Mendoza \(2012\)](#) and [Friedman et al. \(2011\)](#) similarly find education does not affect ethnic and religious group identification in Kenya. Furthermore, primary schooling does not increase participation or activity in religious associations, or the propensity to contact religious or traditional leaders in any 2SLS estimate. This evidence, which is consistent with [Finkel, Horowitz and Rojo-Mendoza \(2012\)](#), further suggests that primary education is not exacerbating local social divisions or increasing participation that may represent institutional capture.

6 Conclusion

In this paper, we present evidence on the long-term effects of government-provided primary education on adult civic and political engagement in Nigeria. Utilizing variation in Nigeria's nationwide UPE program implemented in 1976, we find primary schooling increases basic but fundamental forms of political participation such as voting, interest in politics and community association participation. Moreover, primary schooling increases support for liberal democratic institutions in the abstract, without affecting satisfaction with the practice of democracy in Nigeria. These results are identified for the large and policy-relevant group of citizens who only attended primary school because of the UPE reform.

Primary education provides an important step in supporting democracy, but certainly cannot guarantee democratic consolidation. Although we find education plays a key role in shaping basic forms of civic participation and support for democratic institutions, it does not induce higher-level engagement with politics through demonstration or contacting non-local political figures. Primary education has the potential to facilitate informed accountability, protect political rights and increase the responsiveness of government by increasing civic and political engagement well into adulthood, although testing these claims here was not possible. Addressing the key concern

that education produces anti-democratic political participation, we find no evidence that primary schooling—contrary to [Huntington’s \(1968\)](#) concern that educational expansion may be incongruent with a weakly institutionalized political system—engenders institutional capture or conflict between Nigeria’s array of ethnic and religious groups.

Our findings are also optimistic in that they show, unlike recent research ([Finkel and Ernst 2005](#)), that standard publicly-provided primary schooling can produce substantial pro-democratic effects in the long-run. Establishing the direction and substantial magnitude of these effects is highly relevant for the many developing countries currently expanding primary education. Unlike many studies examining the causal effects of programs supporting education, our findings identify long-run effects for a wide range of compliers in a nationwide government-run program.

Having established strong pro-democratic effects of primary education in a major diverse society, future research should consider the mechanisms underpinning these effects to help governments design their education systems to support pro-democratic behavior. While beyond the scope of this study, it is particularly important to differentiate the skills and values learned at school from downstream effects such as increased income, community interactions and empowered social status.

7 Appendix

7.1 Variable definitions

The following variables come from the 1999-2009 Afrobarometer rounds:

- *Discuss politics often*. Indicator for respondents answering “frequently” when asked “When you get together with your friends or family, would you say you discuss political matters: Never, Occasionally, or Frequently.”
- *News scale*. Summative rating scale combining five-point ordinal responses to the question “How often do you get news from the following sources: television/Radio/Newspapers?” A summative rating scale averages observed responses across all scale items. Where items are non-binary, we pre-standardized all items to address biases created by missing values. Cronbach’s alpha inter-item scale reliability score of 0.71.
- *Voted*. Indicator coded 1 if respondent voted in most recent federal election.
- *Attend demonstration*. Indicator coded 1 if the respondent attended a demonstration or protest march during the last year.
- *Contact local councilor/Representative*. Indicator coded 1 if the respondent contacted a local government councilor/Representative to the National Assembly at least once in the last year.
- *Active association member*. Indicator coded 1 if the respondent is an active member or official leader in a voluntary association or community group.
- *Attend community meeting*. Indicator coded 1 if the respondent attended a community meeting once or twice, several times or often in the last year.

- *Support democratic institutions.* Summative rating scale combining responses to the following questions recoded as indicator variables: agree or strongly agree that the National Assembly should act as a check on the President; agree or strongly agree that the constitution should prevent presidents from serving more than two terms in office; disapprove or strongly disapprove of one-party rule; disapprove or strongly disapprove of military rule; disapprove or strongly disapprove of rule by one man; agree or strongly agree that the President must always obey the law and courts; agree or strongly agree that citizens should be able to join any organization freely, regardless of whether the government approves it; agree or strongly agree that the media should be able to publish any story it wishes without fear of being shut down. Cronbach's alpha of 0.60.
- *Political violence unjustified.* Indicator coded 1 if respondent is agrees or strongly agrees that "The use of violence is never justified in Nigerian politics." Unavailable in 2009 survey.
- *Satisfied with democracy.* Indicator coded 1 if respondent is fairly or very satisfied "with the way democracy works in Nigeria".
- *Trust politicians scale.* Summative rating scale combining the indicators, defined by respondents trust the following politicians and institutions somewhat or a lot: President, National Assembly, Independent Electoral Commission, your elected local government councilor, the ruling party, and opposition political parties. Cronbach's alpha of 0.84.
- *Female.* Indicator coded 1 if respondent is female.
- *Religion.* Set of indicators coded 1 for respondents identifying as Christian, Muslim, no religion, other religion or traditional religion.
- *Urban.* Indicator coded 1 if respondent lives in an urban area.
- *Ethnic over national group.* Indicator coded 1 for respondents strongly or weakly identifying themselves as part of their ethnic group as opposed to Nigeria.

- *Support united Nigeria*. Indicator coded 1 for respondents agreeing or strongly agreeing that Nigeria should not split because there are problems.
- *Contact religious/traditional leader*. Indicator coded 1 if the respondent contacted a religious/traditional leader at least one in the last year.
- *Religious association member*. Indicator coded 1 if the respondent is an inactive member, active member or official leader in a religious association.
- *Active religious association member*. Indicator coded 1 if the respondent is an active member or official leader in a religious association.

Finally the variable *Intensity* was calculated as follows:

$$\text{Intensity}_{g,l} = 1 - \overline{\text{Primary schooling}}_{g,l} \quad (5)$$

where $\overline{\text{Primary schooling}}_{g,l}$ is the proportion of the LGA (l) population by gender (g) that completed high school among the cohorts born between 1960 and 1969, as measured by the HNLSS; see robustness checks for alternative definitions. This is then interacted with a dummy *Post-UPE* for cohorts affected by UPE—those born after 1969—to produce our excluded instrument.

Table 8: Summary statistics

	Obs.	Mean	Standard deviation	Minimum	Maximum
<i>Dependent variables</i>					
Discuss politics often	15,105	0.19	0.39	0	1
News scale	15,204	2.30	1.11	0	4
Voted	10,558	0.62	0.48	0	1
Attend demonstration	15,016	0.15	0.36	0	1
Contact local councilor	15,170	0.17	0.37	0	1
Contact Representative	15,141	0.06	0.24	0	1
Attend community meeting	15,117	0.50	0.50	0	1
Active association member	15,142	0.31	0.46	0	1
Support democratic institutions	15,201	0.01	0.60	-1.97	1.06
Political violence unjustified	12,643	0.72	0.45	0	1
Satisfied with democracy	14,882	0.48	0.50	0	1
Trust politicians scale	15,102	0.35	0.36	0	1
<i>Education variables</i>					
Incomplete primary schooling	15,194	0.05	0.22	0	1
Complete primary schooling	15,194	0.11	0.31	0	1
Incomplete secondary schooling	15,194	0.15	0.35	0	1
Complete secondary schooling	15,194	0.44	0.50	0	1
<i>UPE reform variables</i>					
Post-UPE	15,220	0.66	0.47	0	1
Intensity	15,220	0.39	0.31	0	1
Post-UPE $\times$ Intensity	15,220	0.25	0.31	0	1
<i>Pre-treatment controls</i>					
Female	15,220	0.50	0.50	0	1
Christian	15,220	0.56	0.50	0	1
Muslim	15,220	0.41	0.49	0	1
No religion	15,220	0.01	0.07	0	1
Other religion	15,220	0.01	0.08	0	1
Traditional	15,220	0.02	0.15	0	1
Urban	15,220	0.54	0.50	0	1

8 Online Appendix

8.1 Further background information

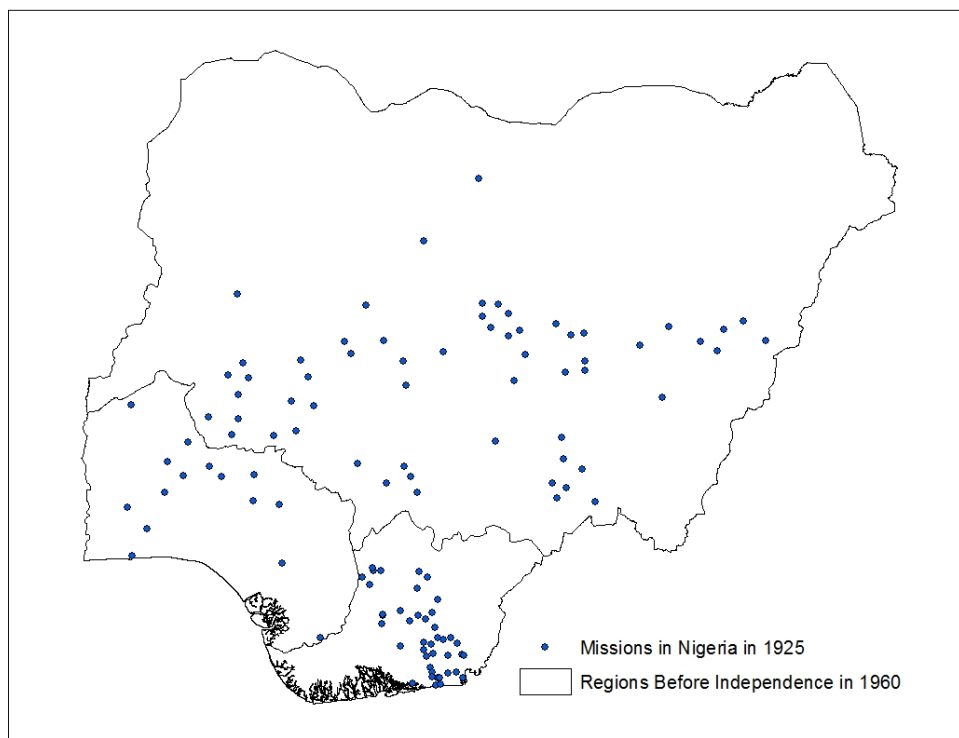


Figure 7: Christian missionary stations in Nigeria 1925 (source: [Streit 1929](#))

8.2 Additional results

Table 9 shows the exclusion restriction tests conducted for the variables not included in Table 6, showing that no outcome is statistically significant and positive at the 5% level. Tables 10 and 11 show heterogeneous effects by religion and tribe for the variables not included in Table 7. Table 12 shows the results for the additional indicators of ethno-religious division cited in the paper. The variables used in Table 12 are defined in the Appendix of the main paper. All other checks cited in the main text can be replicated using our replication materials.

Table 9: Placebo tests of the exclusion restriction—all other outcomes

	News scale	Attend demonstration	Contact local councilor	Contact Rep.	Active association member	Political violence unjustified	Satisfied with democracy	Trust politicians scale
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
<i>Test 1: 1965 placebo reform, born before 1970 only</i>								
Placebo × Intensity	0.136 (0.089)	-0.053 (0.032)	-0.020 (0.042)	0.009 (0.025)	-0.003 (0.050)	0.029 (0.042)	-0.012 (0.040)	-0.065* (0.037)
Observations	5,224	5,174	5,214	5,198	5,219	4,619	5,108	5,194
<i>Test 2: 1960 placebo reform, born before 1965 only</i>								
Placebo × Intensity	-0.392* (0.196)	0.003 (0.030)	0.012 (0.050)	-0.021 (0.026)	-0.075 (0.059)	0.001 (0.060)	-0.014 (0.051)	-0.013 (0.036)
Observations	3,745	3,709	3,743	3,733	3,745	3,334	3,658	3,725

Notes: reduced form and 2SLS estimates include Intensity as an additional control; standard errors clustered by state in parentheses; * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table 10: Differences in primary schooling's effect by religion and tribe 1—all other outcomes

	News scale (1) 2SLS	Attend demonstration (2) 2SLS	Contact local councilor (3) 2SLS	Contact Rep. (4) 2SLS	Active association member (5) 2SLS	Political violence unjustified (6) 2SLS	Satisfied with democracy (7) 2SLS	Trust politicians scale (8) 2SLS
Panel A								
<i>Above-median LGA religious fragmentation only</i>								
Primary schooling	0.477** (0.195)	-0.040 (0.069)	0.071 (0.077)	-0.095* (0.055)	0.343*** (0.096)	0.199* (0.117)	0.003 (0.064)	-0.053 (0.052)
Observations	7,613	7,550	7,601	7,590	7,598	6,405	7,510	7,581
<i>Below-median LGA religious fragmentation only</i>								
Primary schooling	0.071 (0.312)	-0.132 (0.105)	0.237** (0.108)	0.107* (0.063)	0.360*** (0.133)	0.217 (0.198)	0.093 (0.094)	-0.044 (0.071)
Observations	7,516	7,394	7,494	7,476	7,472	6,179	7,304	7,451
Panel B								
<i>Above-median religious competition LGAs only</i>								
Primary schooling	0.511** (0.233)	-0.081 (0.069)	0.069 (0.085)	-0.103 (0.064)	0.307*** (0.100)	0.186 (0.129)	-0.044 (0.076)	-0.054 (0.063)
Observations	7,632	7,573	7,620	7,611	7,618	6,465	7,536	7,609
<i>Below-median religious competition LGAs only</i>								
Primary schooling	0.118 (0.293)	-0.093 (0.097)	0.228** (0.107)	0.099* (0.057)	0.393*** (0.126)	0.198 (0.183)	0.139 (0.103)	-0.020 (0.059)
Observations	7,497	7,371	7,475	7,455	7,452	6,119	7,278	7,423

Notes: see Table 2.

Table 11: Differences in primary schooling's effect by religion and tribe 2—all other outcomes

	News scale (1) 2SLS	Attend demonstration (2) 2SLS	Contact local councilor (3) 2SLS	Contact Rep. (4) 2SLS	Active association member (5) 2SLS	Political violence unjustified (6) 2SLS	Satisfied with democracy (7) 2SLS	Trust politicians scale (8) 2SLS
Panel C								
<i>LGA religious minority members only</i>								
Primary schooling	0.963** (0.487)	-0.011 (0.156)	0.179 (0.182)	-0.010 (0.132)	0.597* (0.322)	0.308 (0.198)	0.357 (0.255)	-0.334* (0.181)
Observations	2,857	2,829	2,849	2,849	2,846	2,414	2,806	2,842
<i>LGA religious majority members only</i>								
Primary schooling	0.231 (0.149)	-0.061 (0.071)	0.183** (0.083)	0.012 (0.050)	0.341*** (0.074)	0.133 (0.142)	-0.011 (0.076)	-0.026 (0.048)
Observations	12,272	12,115	12,246	12,217	12,224	10,170	12,008	12,190
Panel D								
<i>LGA non-main tribe members only</i>								
Primary schooling	0.580** (0.234)	0.154 (0.111)	0.417*** (0.125)	0.079 (0.088)	0.402*** (0.116)	0.097 (0.147)	0.067 (0.132)	-0.044 (0.065)
Observations	2,424	2,356	2,408	2,397	2,402	1,601	2,361	2,403
<i>LGA main tribe members only</i>								
Primary schooling	0.133 (0.578)	0.177 (0.181)	0.305 (0.291)	-0.113 (0.209)	0.855* (0.451)	-0.445 (0.607)	0.132 (0.203)	0.099 (0.151)
Observations	4,562	4,472	4,544	4,533	4,549	3,002	4,451	4,505

Notes: see Table 2.

Table 12: Effect of primary schooling on ethnic and religious identification

	Ethnic over national group			Support united Nigeria			Religious association member		
	(1) OLS	(2) OLS	(3) 2SLS	(4) OLS	(5) OLS	(6) 2SLS	(7) OLS	(8) OLS	(9) 2SLS
Primary schooling	-0.018*** (0.006)		0.024 (0.074)	0.000 (0.009)		-0.069 (0.115)	0.036*** (0.008)		0.034 (0.071)
Post-UPE $\times$ Intensity		0.007 (0.025)			-0.017 (0.033)			0.012 (0.024)	
Observations	14,808	14,827	14,808	6,913	6,927	6,913	15,129	15,155	15,129
First-stage F statistic			21.8			15.2			23.4
	Active religious association member			Contact religious leader			Contact traditional leader		
	(10) OLS	(11) OLS	(12) 2SLS	(13) OLS	(14) OLS	(15) 2SLS	(16) OLS	(17) OLS	(18) 2SLS
Primary schooling	0.049*** (0.007)		0.154 (0.109)	0.053*** (0.009)		-0.108 (0.115)	0.027*** (0.009)		0.060 (0.096)
Post-UPE $\times$ Intensity		0.053 (0.038)			-0.036 (0.035)			0.020 (0.033)	
Observations	15,129	15,155	15,129	15,099	15,125	15,099	15,094	15,120	15,094
First-stage F statistic			23.4			24.2			23.8

Notes: see Table 2.

References

- Abadie, Alberto. 2003. "Semiparametric instrumental variable estimation of treatment response models." *Journal of Econometrics* 113(2):231–263.
- Abadie, Alberto. 2005. "Semiparametric difference-in-differences estimators." *The Review of Economic Studies* 72(1):1–19.
- Abernethy, David B. 1969. *The Political Dilemma of Popular Education: An African Case*. Stanford, CA: Stanford University Press.
- Acemoglu, Daron and Joshua D. Angrist. 2000. "How Large Are Human Capital Externalities? Evidence from Compulsory Schooling Laws." *NBER Macroeconomics Annual 2000* pp. 9–59.
- Acemoglu, Daron, Simon Johnson and James A. Robinson. 2005. "From Education to Democracy?" *American Economic Review* 95(2):44–49.
- Achor, Ruth B. 1977. Universal primary education in Nigeria. Master's thesis University of Wisconsin-Madison.
- Adesoji, Abimbola. 2010. "The Boko Haram Uprising and Islamic Revivalism in Nigeria." *Africa Spectrum* 45(2):95–108.
- Aghedo, Iro and Oarhe Osumah. 2012. "The Boko Haram Uprising: How Should Nigeria Respond?" *Third World Quarterly* 33(5):853–869.
- Alesina, Alberto, Arnaud Devleeschauwer, William Easterly, Sergio Kurlat and Romain Wacziarg. 2003. "Fractionalization." *Journal of Economic Growth* 8(2):155–194.
- Almond, Gabriel A. and Sidney Verba. 1963. *The Civic Culture: Political Attitudes and Democracy in Five Nations*. Princeton, NJ: Princeton University Press.

- Angrist, Joshua D. and Guido W. Imbens. 1995. "Two-Stage Least Squares Estimation of Average Causal Effects in Models With Variable Treatment Intensity." *Journal of the American Statistical Association* 90(430):431–442.
- Asagwara, Ken C. Prince. 1997. "Quality of Learning in Nigeria's Universal Primary Education Scheme—1976-1986." *The Urban Review* 29(3):189–203.
- Bates, Robert H. 1983. Modernization, Ethnic Competition and the Rationality of Politics in Contemporary Africa. In *State versus Ethnic Claims: African Policy Dilemmas*, ed. Donald Rothchild and Victor A. Olorunsola. Boulder, CO: Westview pp. 152–171.
- Berrebi, Claude. 2007. "Evidence about the Link Between Education, Poverty and Terrorism among Palestinians." *Peace Economics, Peace Science and Public Policy* 13(1):1–38.
- Blaydes, Lisa. 2006. Who votes in authoritarian elections and why? Determinants of voter turnout in contemporary Egypt. In *Annual Meeting of the American Political Science Association*. Philadelphia, PA: .
- Bleakley, Hoyt. 2010. "Malaria eradication in the Americas: A retrospective analysis of childhood exposure." *American Economic Journal: Applied Economics* 2(2):1–45.
- Bratton, Michael. 2008. "Vote buying and violence in Nigerian election campaigns." *Electoral Studies* 27(4):621–632.
- Bratton, Michael and Carolyn Logan. 2006. "Voters But Not Yet Citizens: The Weak Demand for Vertical Accountability in Africa's Unclaimed Democracies."
- Bratton, Michael, Philip Alderfer, Georgia Bowser and Joseph Temba. 1999. "The Effects of Civic Education on Political Culture: Evidence from Zambia." *World Development* 27(5):807–824.
- Bratton, Michael, Robert B Mattes and Emmanuel Gyimah-Boadi. 2005. *Public Opinion, Democracy, and Market Reform in Africa*. Cambridge, UK: Cambridge University Press.

- Bratton, Michael and Robert Mattes. 2001. "Support for Democracy in Africa: Intrinsic or Instrumental?" *British Journal of Political Science* 31(03):447–474.
- Bray, Mark. 1981. *Universal Primary Education in Nigeria: A study of Kano State*. London, UK: Routledge & Kegan Paul.
- Collier, Paul and Pedro C. Vicente. forthcoming. "Votes and Violence: Evidence from a Field Experiment in Nigeria." *Economic Journal* .
- Conley, Timothy G., Christian B. Hansen and Peter E. Rossi. 2012. "Plausibly Exogenous." *Review of Economics and Statistics* 94(1):260–272.
- Converse, Philip E. 1972. Change in the American Electorate. In *The Human Meaning of Social Change*, ed. Angus Campbell and Philip E. Converse. New York, NY: Russell Sage Foundation pp. 263–337.
- Csapo, Marg. 1983. "Universal Primary Education in Nigeria: Its Problems and Implications." *African Studies Review* 26(1):91–106.
- Dahl, Robert A. 1971. *Polyarchy: Participation and Opposition*. New Haven, CT: Yale University Press.
- Duflo, Esther. 2001. "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment." *American Economic Review* 91(4):795–813.
- Fafunwa, Babs. 1974. *History of Education in Nigeria*. London, UK: Allen and Unwin.
- Finkel, Steven E. 2002. "Civic Education and the Mobilization of Political Participation in Developing Democracies." *Journal of Politics* 64(4):994–1020.

- Finkel, Steven E. and Amy Erica Smith. 2011. "Civic education, political discussion, and the social transmission of democratic knowledge and values in a new democracy: Kenya 2002." *American Journal of Political Science* 55(2):417–435.
- Finkel, Steven E. and Howard R. Ernst. 2005. "Civic Education in Post-Apartheid South Africa: Alternative Paths to the Development of Political Knowledge and Democratic Values." *Political Psychology* 26(3):333–364.
- Finkel, Steven E., Jeremy Horowitz and Reynaldo T. Rojo-Mendoza. 2012. "Civic Education and Democratic Backsliding in the Wake of Kenya's Post-2007 Election Violence." *Journal of Politics* 74(1):52–65.
- Finkel, Steven E. and Reynaldo Rojo-Mendoza. 2012. "Can Civic Education Induce Support for Decentralization and Democracy? Evidence from a Field Experiment in the Democratic Republic of the Congo.".
- Freedom House. 2013. "Freedom in the World.".
- Friedman, Willa, Michael Kremer, Edward Miguel and Rebecca Thornton. 2011. Education as Liberation? National Bureau of Economic Research Working Paper.
- Glaeser, Edward L., Giacomo A.M. Ponzetto and Andrei Shleifer. 2007. "Why Does Democracy Need Education?" *Journal of Economic Growth* 12(2):77–99.
- Gugerty, Mary Kay and Michael Kremer. 2008. "Outside funding and the dynamics of participation in community associations." *American Journal of Political Science* 52(3):585–602.
- Guggenberger, Patrik. 2010. "The impact of a Hausman pretest on the size of a hypothesis test: The panel data case." *Journal of Econometrics* 156(2):337–343.
- Horowitz, Donald. 1985. *Ethnic Groups in Conflict*. Los Angeles, CA: University of California Press.

- Huntington, Samuel P. 1968. *Political Order in Changing Societies*. New Haven, CT: Yale University Press.
- Huntington, Samuel P. 1996. *The Clash of Civilizations and the Remaking of World Order*. New York, NY: Simon and Schuster.
- Kam, Cindy D. and Carl L. Palmer. 2008. "Reconsidering the Effects of Education on Political Participation." *Journal of Politics* 70(3):612–631.
- Kramon, Eric. 2009. "Vote Buying and Turnout in Kenya's 2002 Elections."
- Krueger, Alan B and Jitka Maleckova. 2003. "Education, poverty and terrorism: Is there a causal connection?" *Journal of Economic Perspectives* 17(4):119–144.
- Kuenzi, Michelle T. 2006. "Nonformal Education, Political Participation, and Democracy: Findings from Senegal." *Political Behavior* 28(1):1–31.
- La Porta, Rafael, Florencio Lopez-de Silanes, Andrei Shleifer and Robert Vishny. 1999. "The quality of government." *Journal of Law, Economics, and Organization* 15(1):222–279.
- Laitin, David D. 1986. *Hegemony and Culture: Politics and Change among the Yoruba*. Chicago, IL: University of Chicago Press.
- Levitsky, Steven and María Victoria Murillo. 2009. "Variation in Institutional Strength." *Annual Review of Political Science* 12:115–133.
- Lipset, Seymour M. 1959. "Some Social Requisites of Democracy: Economic Development and Political Legitimacy." *American Political Science Review* 53(1):69–105.
- MacLean, Lauren M. 2011. "State retrenchment and the exercise of citizenship in Africa." *Comparative Political Studies* 44(9):1238–1266.

- Mattes, Robert and Michael Bratton. 2007. "Learning about democracy in Africa: Awareness, performance, and experience." *American Journal of Political Science* 51(1):192–217.
- Morduchowicz, Roxana, Edgardo Catterberg, Richard G. Niemi and Frank Bell. 1996. "Teaching Political Information and Democratic Values in a New Democracy: An Argentine Experiment." *Comparative Politics* 28(4):465–476.
- Nichter, Simeon. 2008. "Vote buying or turnout buying? Machine politics and the secret ballot." *American Political Science Review* 102(1):19–31.
- Niles, F Sushila. 1989. "Parental Attitudes Toward Female Education in Northern Nigeria." *Journal of Social Psychology* 129(1):13–20.
- Nwachukwu, A.E. 1985. "An Historical Analysis of the Roots of Universal Public Primary Education in Nigeria (1900-1980).".
- Opalo, Kennedy O. 2012. "African Elections: Two Divergent Trends." *Journal of Democracy* 23(3):80–93.
- Osili, Una Okonkwo and Bridget Terry Long. 2008. "Does female schooling reduce fertility? Evidence from Nigeria." *Journal of Development Economics* 87(1):57–75.
- Oyelere, Ruth Uwaifo. 2010. "Africa's education enigma? The Nigerian story." *Journal of Development Economics* 91(1):128–139.
- Ozigi, A. O. and Lawrence Ocho. 1981. *Education in Northern Nigeria*. London, UK: Allen & Unwin.
- Papaioannou, Elias and Gregorios Siourounis. 2008. "Economic and social factors driving the third wave of democratization." *Journal of Comparative Economics* 36(3):365–387.

- Posner, Daniel N. 2004. "The political salience of cultural difference: Why Chewas and Tumbukas are allies in Zambia and adversaries in Malawi." *American Political Science Review* 98(4):529–545.
- Putnam, Robert D., Robert Leonardi and Raffaella Y Nanetti. 1994. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.
- Scacco, Alexandra. 2007. "Individual Participation in Violent Demonstrations in Nigeria."
- Sondheimer, Rachel M. and Donald P. Green. 2010. "Using Experiments to Estimate the Effects of Education on Voter Turnout." *American Journal of Political Science* 41(1):178–189.
- Stasavage, David. 2005. "Democracy and Education Spending in Africa." *American Journal of Political Science* 49(2):343–358.
- Streit, Karl. 1929. *Atlas Hierarchicus: Descriptio Geographica et Statistica Sanctae Romanae Ecclesiae (Second Edition)*. Typographia Bonifaciana.
- Transparency International. 2012. "Corruption Perceptions Index."
- UNESCO. 2011. "Education for All Global Monitoring Report."
- Verba, Sidney, Kay Lehman Schlozman and Henry E. Brady. 1995. *Voice and Equality: Civic Voluntarism in American Politics*. Cambridge, MA: Harvard University Press.
- Wilkinson, Steven I. 2006. *Votes and Violence: Electoral Competition and Ethnic Riots in India*. Cambridge, UK: Cambridge University Press.
- Zaller, John. 1992. *The Nature and Origins of Mass Opinion*. Cambridge, UK: Cambridge University Press.