UC Berkeley
UC Berkeley Previously Published Works

Title
Infrastructure Provisioning and Health Service Utilization in AfricaDoes Governance Explain the Gap?

Permalink
https://escholarship.org/uc/item/9pz920g8

Journal
Sociology of Development, 3(1)

ISSN
2374-538X

Author
Quamruzzaman, Amm

Publication Date
2017-03-01

DOI
10.1525/sod.2017.3.1.47

Peer reviewed

eScholarship.org Powered by the California Digital Library
University of California

AMM QUAMRUZZAMAN
Department of Sociology, McGill University, Email: amm.quamruzzaman@mail.mcgill.ca.

Infrastructure Provisioning and Health Service Utilization in Africa

Does Governance Explain the Gap?

ABSTRACT Although the positive developmental effects of infrastructure provisioning are well documented, research on the potential role of governance in the improvement of infrastructure performance and individual-level service utilization is lacking. I explore the effect of infrastructure provisioning on individual-level health service utilization, paying close attention to whether governance at different levels shapes people's access to health care. The different geographical levels of infrastructure provisioning, governance, and health service utilization require a multilevel analysis, which I perform using Afrobarometer Round 5 survey data on 34 African countries in a three-stage mixed-effects modeling. Results show that the presence of health infrastructure is crucial for enhancing people's health service utilization. However, people encounter certain problems when receiving services at their local health clinics or hospitals, and these problems are directly linked with governance in the health sector as well as overall governance at the country level. Improvements in people's health service utilization therefore require both better infrastructure provisioning and better governance at different levels, as the former does not guarantee the latter. Development scholars need to widen their focus beyond national-level governance and help policy makers identify at which level state interventions are most needed for removing barriers to development. KEYWORDS infrastructure provisioning, governance, health service utilization, developmental state, Africa

INTRODUCTION

A growing literature identifies a big gap between infrastructure provisioning and people's actual health service utilization (Abdulraheem, Olapipo, and Amodu 2012; Balabanova et al. 2004; Hsia et al. 2012; Jaro and Ibrahim 2012; Kasper 2000). Studies find that many developing countries have accessible health clinics but that people receive few services because doctors and health workers are often absent at the facility and people have to make informal payments to receive services (Alcázar and Andrade 2001; Chaudhury and Hammer 2004; Ensor 2004; Garcia-Prado and Chawla 2006). Chaudhury and his colleagues (2006) report that on average 39 percent of doctors and 31 percent of health workers were absent at the service point during random spot checks in Bangladesh, Ecuador, India, Indonesia, Peru, and Uganda. Low pay was one reason, but the study offers evidence that poor working conditions at the facility were the main cause of such absenteeism. Of course, not all developing countries offer the same scenario. In the Indian state of Kerala, for example, people's health service utilization is high because the state "has a health delivery system that actually functions, with doctors at their posts serving clients rather than enjoying their professional perquisites elsewhere" (Evans 1995:236).

Sociology of Development, Vol. 3, Number 1, pps. 47–69. electronic ISSN 2374-538X. © 2017 by the Regents of the University of California. All rights reserved. Please direct all requests for permission to photocopy or reproduce article content through the University of California Press's Reprints and Permissions web page, www.ucpress.edu/journals.php?p=reprints. DOI: https://doi.org/10.1525/sod.2017.3.1.47.

Infrastructure performance is thus closely linked with governance issues, as sufficient infrastructure provisioning—physical infrastructure, staff, and supplies—does not guarantee that people receive services. However, the importance of governance in the infrastructure sector for improving people's service utilization is not well researched, although donor communities often express concerns about the weak infrastructure performance of many developing countries (Kessides 2004; World Bank 1994). In this article, I explore the effect of infrastructure provisioning on individual-level health service utilization, paying close attention to whether governance at different levels shapes individual access to health care. The different levels of infrastructure provisioning, governance, and health service utilization require a multilevel analysis. National-level analyses often fail to capture the mixed effects produced at lower levels because of the large within-country variation in state capacity and therefore may under- or overestimate the effect of institutional characteristics on local-level developmental conditions (Sacks and Levi 2010). Moreover, national-level studies commonly use child health as a developmental outcome, whereas people may receive other health services beyond child health from a health infrastructure. Many of these studies also focus on service delivery rather than service utilization. Shifting the focus from service delivery to service utilization helps us explore the impact of infrastructure provisioning on broader developmental outcomes and enables us to identify the barriers that may prevent individuals from enjoying their entitled services. Service utilization concerns whether services actually reach the target population; identifying barriers helps remove those in order to improve people's lives. This is a growing concern in development literature, thanks to Amartya Sen and others (Evans 2010, 2011; Sen 1983, 1999). In this paper, I link this concern with governance, using empirical evidence from Africa, where the issues of infrastructure provisioning, governance, and health service utilization are very pertinent.

INFRASTRUCTURE PROVISIONING, GOVERNANCE, AND SERVICE UTILIZATION: THE LINK

In the 1970s and 1980s, neoliberal development thinkers identified corruption, rent seeking, and bureaucratic ineffectiveness as the main problems of service delivery in African countries (Bates 1981; Bhagwati 1982; Colander 1984; Krueger 1974; Srinivasan 1985; World Bank 1981, 1984). To improve service delivery, they proposed deregulating markets, downsizing public service, and privatizing service infrastructure. As part of neoliberal structural adjustment policies, developing countries in Africa and elsewhere received considerable foreign direct investment commitments for transferring the operational responsibility of infrastructural projects to the private sector, but there was also a sharp decline in donor support for public infrastructure projects at this time (Kirkpatrick, Parker, and Zhang 2006). For many of these countries, limited investment in infrastructure and human resources has over time reduced state capacity to provide basic services to people (Cornia, Jolly, and Stewart 1987; Epping-Jordan et al. 2005). Yet many neoliberal thinkers have argued that any increase in state capacity, such as through tax revenue extraction undertaken at the expense of the private sector, would hamper economic growth and thereby reduce people's service utilization (Friedman and Friedman 1980; Olson 1982). Studies testing these claims in Africa and elsewhere find mixed results. Some studies find that state capacity or state intervention in terms of state size has positive effects

on population well-being (Bradshaw and Huang 1991; Bradshaw and Tshandu 1990; Lena and London 1993), others find negative effects (London and Williams 1990; Moon and Dixon 1985; Shen and Williamson 1997, 2001), and still others find no significant effect (Bradshaw et al. 1993; Frey and Field 2000).

Dawson (2010) claims that the mixed findings often result from the fiscal measures most studies use for state capacity or governance. Using the rule of law as a nonfiscal dimension of governance, he finds that governance has a strong, negative and robust effect on child mortality. He does not find a statistically significant effect of state size measured by tax revenue as a share of GDP when the rule of law and other politico-economic variables are controlled for. The fiscal measures of state capacity are directly related to economic growth, which in turn depends on the quality of governance. There is growing evidence that the quality of governance measured in nonfiscal terms of government effectiveness, democratic accountability, rule of law, and control of corruption positively affects economic growth and service utilization outcomes independent of the size or fiscal strength of the state (Kaufmann and Kraay 2002; Rodrik 1999; Rodrik, Subramanian, and Trebbi 2004). As described below, the various dimensions of governance can affect infrastructure performance in the health sector in different ways.

GOVERNANCE MECHANISMS

In most developing countries, the public sector is the largest provider of health infrastructure and health care services. Countries with an effective public sector encourage higher levels of human capital accumulation through meritocratic recruitment into the public service (Baum and Lake 2003; Easterly, Ritzen, and Woolcock 2006). An effective bureaucracy increases the productivity of public spending (Rajkumar and Swaroop 2008; Rauch and Evans 2000) and contributes to economic growth by improving credit ratings, attracting more investment, and ensuring better use of foreign aid resources (Asteriou and Price 2005; Burnside and Dollar 2000). An effective government utilizes its infrastructure to increase government revenues and consequently public spending on health and social welfare (Kiser and Sacks 2009).

According to Vu (2007), "a stable, centralized government, a cohesive bureaucracy, and effective coercive institutions" constitute necessary "developmental structures" that help states play their "developmental roles" (p. 28). In the infrastructure sector, state leaders have to negotiate with industrial capitalists and civil societal groups and direct the coordination of public and private resources toward achieving developmental outcomes related to service utilization (Evans 1995; Heller 2013). An effective government can enhance people's service utilization by incentivizing, regulating, and supporting investment in infrastructure development and industrial activity (Evans, Huber, and Stephens 2014).

Mann (1984, 2008) argues that infrastructurally strong modern democratic states enjoy more legitimacy and stability as they enhance people's service utilization by logistically, as opposed to coercively, implementing decisions. Moon and Dixon (1985) also find that democratic states that channel the preferences of mass publics to the level of state policy are more likely to provide for the basic needs of their populations, irrespective of state strength and the ideological orientation of the ruling class. In contrast, authoritarian regimes are able to extract resources but seldom provide sufficient goods and services to people, and when

they provide services to the citizenry they do this to gain civil obedience in exchange for their civil and political rights, which in other ways hinders their service utilization (Mann 2014). In extreme cases, authoritarian regimes may create developmental disasters with their high modernist aspirations and central planning for infrastructure development and service delivery (Scott 1998).

However, there is inconclusive evidence as to whether democratic states are better able to enhance people's health service utilization, since some scholars have found a strong negative relationship between democracy and health (Lena and London 1993; Navia and Zweifel 2003; Powell-Jackson et al. 2011), while others have found no significant relationship (Gerring, Thacker, and Alfaro 2012; Halleröd et al. 2013; Ross 2006; Shandra et al. 2004). In a recent study, Wullert and Williamson (2016) find that infant mortality rates are higher in hybrid regimes and lower in both democracies and autocracies and claim that hybrid regimes divert attention and resources away from health care in ways that have detrimental effects on health service utilization. External pressure and conditional foreign aid for democratization may not work, since long-term dependence on foreign aid often reduces governments' need to tax their populations and may reduce public pressure for democratic accountability and service provisioning (Bräutigam 2000; Knack 2000; Moore 1995; Svensson 2000).

In situations like this, a strong rule of law can help prevent government officials from abusing their powers through the impartial application of laws and enforcement of penalties, which can positively affect health service utilization (O'Donnell 2004). Dawson (2010) proposes two other mechanisms through which the rule of law can influence health service utilization in terms of child health. These mechanisms are mainly related to state-society coordination structures, where a strong rule of law can help improve market efficiency and strengthen civil society. Regarding the first mechanism, Dawson argues that a strong rule of law may reduce transaction costs of market exchange by enforcing contracts and property rights. Efficient markets can facilitate economic growth, provide necessary resources to deliver adequate public services, and increase private health care alternatives where public provisioning of health services is inadequate. Regarding the second, Dawson argues that a strong rule of law may strengthen civil society organizations to partner with the state to provide better health services to people.

Closely related to the rule-of-law dimension is a state's capacity to control corruption. In the infrastructure development sector, corruption is more widespread; this decreases the value of investment by foreign and domestic investors and undermines economic growth in developing countries (Alesina and Weder 2002; Transparency International 2011). Corruption in construction lowers the standard of the infrastructure and requires expensive repair and maintenance, and the loss of revenue and diversion of public funds associated with this may cause governments to spend less on infrastructure services (Dal Bó and Rossi 2007). Corruption can divert resources away from social sectors, such as health and education, and can bias resource allocation toward major infrastructure projects because of opportunities for financial kickbacks and political patronage (Kenny 2006; Sohail and Cavill 2008). Corruption also lowers people's health service utilization level by contributing to ghost and absent doctors and health workers, informal payments for services, siphoning off of medical supplies to market, and elite capture of infrastructure services (Chaudhury and Hammer

2004; Chaudhury et al. 2006; Ensor 2004; Lewis 2006, 2007; World Health Organization 2006). However, transportation and communications networks can closely monitor government officials, doctors, and health workers to ensure that they serve in their posts and provide services to people. Controlling corruption also makes possible the improvement of working conditions at the service point and the prevention of emigration of valuable and experienced human resources (Globalisation Knowledge Network 2007).

In summary, the literature suggests that countries with an effective government and effective institutions for democratic accountability, law enforcement, and control of corruption can increase state-society partnership in development and produce better developmental outcomes, including improved levels of health service utilization. As Sacks and Levi (2010) find, people living in countries with an effective government, reliable law enforcement, and improved infrastructure enjoy, on average, higher levels of food security. They claim that there is more variation within than between countries in government infrastructure performance. In the following section, I use multilevel modeling to explore how governance at different levels affects state infrastructure performance for enhancing service utilization at the individual level.

DATA AND METHODS

Data on infrastructure provisioning, governance, and individuals' health service utilization comes from 34 African countries surveyed by Afrobarometer between October 2011 and June 2013 (Afrobarometer 2015). Data collectors recorded if there was a health clinic, a piped water supply, an electricity grid, a sewage system, and a paved road that most houses could access in a primary sampling unit (PSU) or census enumeration area. In most cases, eight households were randomly selected from each PSU for data collection. The sample was further stratified by key social characteristics in the population such as subnational area (e.g., region or province and district) and residential locality (urban and rural).

The hierarchical nature of the Afrobarometer data requires a multilevel modeling strategy. In this study, I reconfigure the Afrobarometer data into a three-level hierarchical structure, with variables used from each of the following three levels: individual respondents (level 1) nested in PSUs (level 2), which in turn are nested in countries (level 3). When individual-level observations are nested into higher-level units, the observations are no longer independent, and hence a pooled estimator cannot be used to correctly estimate the varying intercepts and slopes at each level. Since intercepts may vary across countries, and since the individual-level variables may have unequal slopes across countries, we need to use multilevel mixed-effects models to correct for biases in parameter estimates and standard errors (Gelman and Hill 2007; Snijders and Bosker 1999). Mixed-models estimate both fixed effects as standard regression coefficients and random effects as a sum of variance and covariance parameters. The fixed effects are estimated controlling for all time-invariant differences between individuals such as culture, religion, nationality, ethnicity, and gender, so the estimated coefficients cannot be biased because of omitted time-invariant characteristics.

I also run models excluding infrastructure variables to see how governance alone shapes individuals' health service utilization outcomes. These outcomes are related to specific

problems that they encounter while receiving services at their local clinics. Notably, there is wide variation in infrastructure provisioning by rural-urban sampling units. The data of this study are weighted to correct for either deliberate (e.g., to provide an adequate sample of specific subgroups for analytical purposes) or inadvertent over- or undersampling of particular sample strata for some Afrobarometer Round 5 surveys (Afrobarometer 2015). In those cases, Afrobarometer includes weighting factors in the data set, and I use both within-country and across-country weighting factors to account for the variation in sampling when national-level statistics are calculated.

Afrobarometer surveys have a number of variables to measure health service utilization at the individual level. I combine the following three variables using exploratory factor analysis (EFA) to obtain factor scores on my *health service utilization* dependent variable, with higher scores corresponding to better health service utilization:

> *Gone without medicine or medical care*. Afrobarometer interviewers asked the respondents a crucial question about their health service utilization: "Over the past year, how often, if ever, have you or anyone in your family [involuntarily] gone without medicines or medical treatment?" Responses to this question are coded as 1 = never, 0 = at least once.
> *Received free visits or medicines*. Respondents were asked: "Do you or anyone in this household receive any of the following: Free visits or medicines from a public or government-run health clinic or hospital?" Responses to this question are coded as 1 = yes, 0 = no.
> *Had difficulty receiving medical treatment*. Respondents were asked: "Based on your experience, how easy or difficult is it to obtain the following services from government . . . Medical treatment at a public clinic or hospital?" Responses to this question are coded as 1 = very easy/easy, 0 = difficult/very difficult. Those who never tried to get the service or reported "don't know" were treated as missing values and excluded from the analysis.

I also combine six variables using EFA to create another dependent variable regarding *problems encountered with local clinic*, with higher scores corresponding to greater extents of the problems encountered. Respondents were asked: "Have you encountered any of these problems with your public clinic or hospital during the past 12 months: Services are too expensive/unable to pay?" The same question was asked separately for each of the following problems: absent doctors, lack of medicines or other supplies, lack of attention or respect from staff, long waiting time, and dirty facilities. Responses related to each of the six problems are coded as 0 = never or only once or twice, 1 = a few times or often encountered the problem. Those who never had to go to a local health clinic in the year prior to the survey were excluded from the analysis.

The independent variable *infrastructure provisioning* is measured by the physical presence (coded as 1) or absence (coded as 0) of the following service infrastructures at the PSU level that most houses could access: health clinic, electricity grid, piped water, sewage system, and paved road. Access to a health clinic is directly related to health service utilization, while other infrastructures are indirectly related. For example, an electricity grid is important for operating medical equipment and refrigerating certain medicines. Piped water system is important for supplying clean water that prevents waterborne diseases. Sewage system is related

to safe waste disposal and public health. Finally, paved roads help transportation of medical supplies to remote clinics; patients can also reach a clinic more easily and quickly if there is a paved road network in the locality.

Afrobarometer (2015) also offers data on the following dimensions of governance:

Rule of law. This variable is measured by respondents' perceptions about how often (a) the president or prime minister ignores the law or constitution of the country, (b) people are treated unequally under law, (c) government officials who commit crime go unpunished, and (d) common people who commit crime go unpunished. Responses to each of these questions are first coded as 1 = never/rarely, 0 = often/always, and then combined using EFA to obtain factor scores, with higher scores corresponding to better rule of law.

Control of corruption. Respondents were asked to give their perceptions about the extent of corruption in their country among (a) government officials, (b) police, and (c) judges and magistrates. Responses to each of these items are first coded as 1 = none/some of them were corrupt, 0 = most/all of them were corrupt, and then are combined using EFA to obtain factor scores, with higher scores corresponding to lesser extents of corruption, which I take for greater control of corruption.

Satisfaction with democratic rule. Respondents were asked about their level of satisfaction with the democratic rule in their country. Responses are coded as 1 = they were fairly/very satisfied, 0 = either their country was not a democracy or they were not at all/not very satisfied with democracy.

Government effectiveness. Respondents were asked to give their perception about how well or badly their current government was (a) managing the economy, (b) fighting corruption, (c) reducing crime, (d) maintaining roads and bridges, and (e) providing electricity supply. Responses to each of these items are first coded as 1 = well, 0 = badly, and then are combined using EFA to obtain factor scores, with higher scores corresponding to better government effectiveness.

The Afrobarometer data set also allows me to control for potential individual-level determinants of health service utilization such as the age of respondents (in years), level of education (0 = no schooling, 1 = informal schooling only, 2 = some primary, 3 = primary completed, 4 = some secondary, 5 = secondary completed, 6 = college/diploma, 7 = some university, 8 = university completed, 9 = postgraduate), and employment status (1 = employed). I also control for the types of residential area one lives in (1 = urban).

At the country level, I control for several variables that potentially link infrastructure provisioning with service utilization. In most cases, these variables have 2012 values, but in a few cases I use 2011 or 2010 values depending on the availability of the data:

GDP per capita. This is a common measure of economic growth that might be correlated with infrastructure provisioning and health service utilization. I use the natural logarithm of GDP per capita measured in 2011 constant international dollars, PPP adjusted, from the World Bank's (2015) World Development Indicators (WDI) database.

Democratization. To see if people's service utilization status is better in more democratic states, I use a country-level measure of democratization from the data set created by Vanhanen (2014). In the data set, the index of democratization is formed by multiplying the political competition and the political participation variables and then dividing the

outcome by 100. The competition variable is calculated by subtracting from 100 the percentage of votes won by the largest party, the party which wins most votes, in parliamentary elections or by the party of the successful candidate in presidential elections. The participation variable is calculated as the percentage of the total population who actually voted in the election.

Net official development assistance (ODA) per capita (in current US$). I use the log of net ODA per capita as a control that may affect infrastructure performance, as Knack (2000) and Svensson (2000) argue. These data come from the World Bank's WDI database.

Foreign direct investment (net inflows as percentage of GDP). Foreign direct investment (FDI) is a common measure of a country's investment dependency, which may affect infrastructure performance and health service utilization (Lena and London 1993; London and Williams 1990). I take the FDI data from the WDI database.

Tax revenue (as percentage of GDP). Tax revenue refers to compulsory transfers to the central government for public spending purposes. It is a common measure of state size or state strength (Shen and Williamson 1997). These data come from the WDI database.

Public spending on health (as percentage of GDP). I control for public spending on health as an infrastructure provisioning in the form of capital flows. It should be considered together with infrastructure provisioning in the form of physical stocks such as health clinics. These data come from the WDI database.

Colonial origins. Infrastructure provisioning in most African countries was largely shaped by their colonial origins, as Cooper (2002) and Herbst (2000) claim. To account for this path dependency, I control for the colonial origins of countries, coded as 1 = never colonized by a Western overseas colonial power, 2 = British, 3 = French, 4 = Portuguese, 5 = Belgian, and 6 = former German colony. These data were collected by Hadenius and Teorell (2007) and come from the compiled data set by Teorell et al. (2015).

A multicollinearity test using all the variables shows that only two variables—tax revenue and health expenditure as percentage of GDP—are correlated at 0.627 level with relatively low tolerance (0.455 and 0.497, respectively). I put these two variables separately and then in the same equation but find no significant difference in the results. For the rest of the variables the test shows no significant multicollinearity issues. In addition, I have performed a residual analysis after running each regression equation to identify potential outlying cases (following Loy 2013). A few outliers are detected, but I find no problematic difference in results when excluding outliers and therefore keep them in the final models.

RESULTS

Table 1 gives the percentages of PSUs with easy access to service infrastructure in 34 African countries, along with their colonial origins and sample size as surveyed by Afrobarometer (2015). The data show that on average service infrastructure was quite widespread in African countries, with the sewage system being the main exception. Overall, some African countries had better infrastructure provisioning than others, and within each country urban areas had better infrastructure provisioning than rural areas. On average, 61 percent of the total sample belonged to rural areas.

TABLE 1. Percentages of PSUs with Easy Access to Infrastructure Provisioning in 34 African Countries, along with Their Colonial Origins and Sample Size as Surveyed by Afrobarometer

Country	Colonial Origin	Sample Size	% PSUs with Easy Access to:				
			Health Clinic	Electricity Grid	Piped Water	Sewage System	Paved Road
Algeria	French	1204	71	100	93	86	82
Benin	French	1200	59	56	78	17	41
Botswana	British	1200	76	89	90	36	68
Burkina Faso	French	1200	63	27	26	8	19
Burundi	Belgian	1200	44	23	43	12	29
Cameroon	French	1200	94	89	86	67	50
Cape Verde	Portuguese	1208	34	100	87	34	87
Côte d'Ivoire	French	1200	67	81	70	33	39
Egypt	British	1190	78	99	97	64	73
Ghana	British	2400	48	79	52	46	49
Guinea	French	1200	63	39	83	13	25
Kenya	British	2399	54	71	45	16	22
Lesotho	British	1197	59	49	62	14	51
Liberia	None	1199	48	19	11	10	31
Madagascar	French	1200	87	30	45	12	25
Malawi	British	2407	31	37	26	4	40
Mali	French	1200	59	29	49	13	31
Mauritius	British	1200	61	100	100	31	100
Morocco	French	1196	76	97	78	66	83
Mozambique	Portuguese	2400	72	58	27	7	19
Namibia	German[a]	1200	15	54	61	35	29
Niger	French	1199	57	29	36	6	28
Nigeria	British	2400	58	90	40	22	60
Senegal	French	1200	72	74	82	23	49
Sierra Leone	British	1190	76	26	22	25	23
South Africa	British	2399	64	95	84	72	71
Sudan	British	1199	68	80	66	25	64
Swaziland	British	1200	52	95	58	18	25
Tanzania	British	2400	41	26	48	4	72
Togo	French	1200	67	53	55	11	35
Tunisia	French	1200	71	100	91	68	79
Uganda	British	2400	77	41	29	13	14
Zambia	British	1200	61	52	40	26	49
Zimbabwe	British	2400	62	57	42	34	41

[a] Since Namibia's development trajectory has largely been shaped by German colonial policy (from 1884 to 1945), which also continued under the South African administration (Kossler 2007), its colonial origin is coded here as German.

While infrastructure provisioning was more or less widespread in 34 African countries, access to important services was not. In response to a question on whether the respondent or anyone in his or her family had ever had to go involuntarily without medicine or medical care, 53 percent reported that they had had to go without medicine or medical care at least once over the year prior to the interview. In response to another question on how easy or difficult it was to obtain medical treatment at a public clinic or hospital, 43 percent of those who had experience with this said that it was difficult or very difficult, while 57 percent said it was relatively easy or very easy. Respondents were asked separate questions regarding if they had ever encountered specific problems with their local health clinic or hospital. Of those who had gone to a public clinic or hospital during the 12 months prior to the interview, 37 percent reported absent doctors; 33 percent said the services were too expensive for them; 43 percent reported lack of medicine or other supplies; 42 percent said they encountered lack of attention or respect from the staff; 62 percent reported a long waiting time, and 32 percent reported that the facilities were dirty (see table 2). Of the total observations, only 26 percent reported that they had received free visits or medicines or both from a local health clinic during the previous year.

Regression estimates show mixed results for infrastructure provisioning on individual health service utilization. As shown in table 3, the presence of a health clinic within the accessible reach of a household is significantly associated with an increase in the probability of an individual's health service utilization, with all else equal. The presence of piped water also remains significant and positively associated with the health service utilization outcome across all models, while the presence of an electricity grid, a sewage system, and a paved road is not significant in the full models. Urban residence is not significant in any model. I include an interaction term for health clinic and urban residence in the final models to test for interaction effects. The interaction term is significant and negatively associated with health service utilization (results not shown in table 3), suggesting that although urban areas have more infrastructure provisioning, people's health service utilization is lower in urban areas compared to rural areas.

While service infrastructures have differential effects, all Afrobarometer governance indicators have strong favorable effects on health service utilization across all models. Of all dimensions, government effectiveness has the largest effect on increased health service utilization. Notably, the Vanhanen index of democratization at the country level is not significant in model 3 of table 3. To see if the relationship between democratization and health service utilization is quadratic, as Wullert and Williamson (2016) claim, I include a square term for democratization in model 4. Now, the square term is significant and positive, suggesting that people in both autocracies and democracies may enjoy better health services compared to hybrid regimes. However, while GDP per capita is significant in model 3, it is not in model 4. To see if this is due to an interaction between GDP per capita and democratization, I add an interaction term in model 5 and find that the interaction term has even a larger effect on health service utilization than the square term. The results suggest that economic growth is needed for a democracy to enhance people's health service utilization. Other interaction terms for GDP per capita and different Afrobarometer governance indicators are included in the final model, but none is

TABLE 2. Descriptive Statistics for 34 African Countries Surveyed by Afrobarometer

Variables	Obs.	Mean	SD
Individual-level Dependent Variables:			
Health service utilization (principal factor scores)	48696	0.000	1.000
Problems encountered with local clinic (combined scores)	39975	0.000	1.000
Problems encountered with local clinic: absent doctors	41739	0.372	0.483
Problems encountered with local clinic: lack of medicines	49166	0.431	0.495
Problems encountered with local clinic: lack of attention	42443	0.415	0.493
Problems encountered with local clinic: service expensive	42752	0.334	0.472
Problems encountered with local clinic: long waiting time	42654	0.623	0.485
Problems encountered with local clinic: dirty facilities	41797	0.317	0.465
PSU-level Infrastructure Provisioning:			
Health clinic present in the PSU (1 = yes)	51286	0.602	0.489
Electricity grid present in the PSU (1 = yes)	51587	0.627	0.483
Piped water present in the PSU (1 = yes)	51477	0.557	0.497
Sewage system present in the PSU (1 = yes)	51166	0.284	0.451
Paved road present in the PSU (1 = yes)	51587	0.464	0.499
Afrobarometer Governance Indicators:			
Rule of law (principal factor scores)	51359	0.000	1.000
Control of corruption (principal factor scores)	51414	0.000	1.000
Satisfaction with democratic rule (1 = satisfied)	51575	0.493	0.500
Government effectiveness (principal factor scores)	51414	0.000	1.000
Individual-level Controls:			
Age of respondents (in years)	51143	37.192	14.594
Levels of education (no formal education to postgraduate)	51461	3.272	2.133
Employment status (1 = employed)	51378	0.332	0.471
Area of residence (1 = urban)	51587	0.386	0.487
Country-level Controls:			
GDP per capita (in 2011 constant int. dollars, PPP)	51587	4191.883	4232.641
Net ODA per capita (in current US$)	51587	71.811	74.239
Foreign direct investment (net inflows as % of GDP)	51587	7.450	13.286
Tax revenue (as % of GDP)	51587	17.322	9.656
Public health expenditure (as % of GDP)	51587	3.365	1.631
Democratization (Vanhanen index)	51587	10.082	5.538

Notes: Obs. = observation; SD = standard deviation.

significant (results not shown in table 3). Similarly, the interactions between health clinic and those governance indicators are insignificant, suggesting that both health infrastructure and governance have independent and direct effects on the health service utilization outcome.

TABLE 3. Mixed-effects Linear Regression of Infrastructure Provisioning on Individuals' Health Service Utilization in 34 African Countries Surveyed by Afrobarometer

	Health Service Utilization[a]				
Variables	(1)	(2)	(3)	(4)	(5)
Health clinic	0.095***	0.089***	0.084***	0.084***	0.084***
	(0.022)	(0.021)	(0.020)	(0.020)	(0.020)
Electricity grid	0.094*	0.090*	0.052	0.052	0.053
	(0.037)	(0.037)	(0.038)	(0.038)	(0.038)
Piped water	0.088**	0.074*	0.062*	0.062*	0.062*
	(0.030)	(0.031)	(0.029)	(0.029)	(0.028)
Sewage	0.041	0.050	0.019	0.020	0.020
	(0.038)	(0.036)	(0.034)	(0.034)	(0.034)
Paved road	0.037	0.043*	0.028	0.028	0.027
	(0.024)	(0.021)	(0.021)	(0.021)	(0.021)
Rule of law		0.074***	0.080***	0.080***	0.080***
		(0.009)	(0.010)	(0.010)	(0.010)
Control of corruption		0.036***	0.042***	0.042***	0.042***
		(0.006)	(0.006)	(0.006)	(0.006)
Satisfaction with democracy		0.090***	0.092***	0.093***	0.092***
		(0.017)	(0.016)	(0.016)	(0.016)
Government effectiveness		0.147***	0.142***	0.142***	0.142***
		(0.013)	(0.013)	(0.013)	(0.013)
Age of respondents			−0.001	−0.001	−0.001
			(0.000)	(0.000)	(0.000)
Education			0.031***	0.031***	0.031***
			(0.005)	(0.005)	(0.005)
Employment			0.052**	0.052**	0.052**
			(0.019)	(0.019)	(0.019)
Urban residence			0.029	0.029	0.029
			(0.028)	(0.028)	(0.028)
Log GDP pc			0.133*	0.080	−0.161**
			(0.064)	(0.056)	(0.050)
Log ODA pc			−0.005	−0.060	−0.040
			(0.063)	(0.061)	(0.046)
FDI			−0.005	−0.004	−0.003
			(0.003)	(0.003)	(0.002)
Tax revenue			−0.007	−0.005	−0.010
			(0.008)	(0.007)	(0.006)
Health expenditure			0.128**	0.136**	0.154***

TABLE 3. Mixed-effects Linear Regression of Infrastructure Provisioning on Individuals' Health Service Utilization in 34 African Countries Surveyed by Afrobarometer (*continued*)

	Health Service Utilization[a]				
Variables	(1)	(2)	(3)	(4)	(5)
			(0.046)	(0.045)	(0.034)
Democratization			0.009	−0.059***	−0.250***
			(0.012)	(0.013)	(0.034)
Democratization squared				0.003***	
				(0.001)	
Democratization*GDP pc					0.031***
					(0.004)
Random intercepts					
PSUs (in SD)	0.305***	0.289***	0.288***	0.288***	0.288***
	(0.016)	(0.015)	(0.015)	(0.015)	(0.015)
Countries (in SD)	0.407***	0.353***	0.281***	0.237***	0.205***
	(0.050)	(0.040)	(0.031)	(0.031)	(0.027)
Observations	46,884	46,884	46,884	46,884	46,884

Notes: Standard errors are in parentheses.
[a]Three variables—gone without medicines, received free visits or medicines, and had difficulty receiving medical treatment—are combined using EFA to obtain factor scores on this variable.
***$p < 0.001$; **$p < 0.01$; *$p < 0.05$.

Besides the physical presence of health infrastructure, public health spending has strong favorable effects on health service utilization in table 3. A one-unit increase in the public spending on health (as percentage of GDP) is associated with a 12.8 percent increase in the health service utilization outcome in model 3 (and a 15.4 percent increase in model 5), all else equal. State size in terms of tax revenue collection (as percentage of GDP) is not significant, nor are net ODA per capita and foreign direct investment (as percentage of GDP). Colonial origins of the country are not found to be significantly associated with people's health service utilization and are not shown in table 3. At both national and PSU levels, all random intercepts (given in standard deviation units) are significant, justifying the use of the nested models in this study. At the same time, they show how much influence the time-invariant characteristics at each level have on the outcome.

As already mentioned, Afrobarometer surveys provide information on the problems people encountered with their local health clinics in 34 African countries. Table 4 presents regression estimates of governance and other variables on a combined dependent variable that represents six such problems: absent doctors, lack of medicines and other supplies, lack of attention and respect, expensive services, long waiting time, and dirty facilities.[1] Results show that all four Afrobarometer governance indicators are significantly associated with a decrease in the probability of encountering problems with local health clinics. Country-level

democratization also has strong negative (favorable) effects on the outcome when it interacts with the levels of economic growth, although GDP per capita alone is not significant in any model. No other fiscal controls are significant as well. Of the individual-level controls, only urban residence is significantly associated with an increase in the probability of encountering problems with local health clinics. Colonial origin dummies were also entered in the final model but were not found significant and therefore are not shown in table 4.

TABLE 4. Mixed-effects Linear Regression of Governance Indicators on Problems Encountered with Local Clinics (combined) in 34 African Countries Surveyed by Afrobarometer

	Problems Encountered with Local Clinics[a]			
Variables	(1)	(2)	(3)	(4)
Rule of law	−0.117***	−0.114***	−0.114***	−0.114***
	(0.014)	(0.014)	(0.014)	(0.014)
Control of corruption	−0.067***	−0.065***	−0.065***	−0.064***
	(0.010)	(0.010)	(0.010)	(0.010)
Satisfaction with democracy	−0.082***	−0.079***	−0.079***	−0.079***
	(0.020)	(0.020)	(0.020)	(0.020)
Government effectiveness	−0.112***	−0.115***	−0.115***	−0.114***
	(0.015)	(0.015)	(0.015)	(0.015)
Age of respondents		−0.001	−0.001	−0.001
		(0.001)	(0.001)	(0.001)
Education		0.006	0.006	0.006
		(0.007)	(0.007)	(0.007)
Employment		−0.024	−0.024	−0.024
		(0.025)	(0.025)	(0.025)
Urban residence		0.070*	0.069*	0.069*
		(0.032)	(0.032)	(0.032)
Log GDP pc		−0.030	0.012	0.233***
		(0.060)	(0.058)	(0.068)
Log ODA pc		0.014	0.058	0.046
		(0.065)	(0.063)	(0.052)
FDI		0.001	0.000	−0.001
		(0.003)	(0.003)	(0.002)
Tax revenue		0.001	−0.001	0.003
		(0.009)	(0.009)	(0.008)
Health expenditure		−0.067	−0.073	−0.089
		(0.058)	(0.058)	(0.049)
Democratization		−0.015	0.039**	0.218***
		(0.011)	(0.014)	(0.040)

TABLE 4. Mixed-effects Linear Regression of Governance Indicators on Problems Encountered with Local Clinics (combined) in 34 African Countries Surveyed by Afrobarometer (*continued*)

	Problems Encountered with Local Clinics[a]			
Variables	(1)	(2)	(3)	(4)
Democratization squared			−0.003***	
			(0.001)	
Democratization*GDP pc				−0.028***
				(0.005)
Random intercepts				
PSUs (in SD)	0.320***	0.317***	0.317***	0.317***
	(0.020)	(0.020)	(0.020)	(0.020)
Countries (in SD)	0.333***	0.302***	0.278***	0.249***
	(0.038)	(0.037)	(0.043)	(0.041)
Observations	38,398	38,398	38,398	38,398

Notes: Standard errors are in parentheses.
[a]Six variables—absent doctors, lack of medicine, lack of attention, service too expensive, long waiting time, and dirty facilities—are combined using EFA to obtain factor scores on this variable.
***$p < 0.001$; **$p < 0.01$; *$p < 0.05$.

Table 5 presents the results for each of the six specific problems people encountered with their local health clinics. Consistent with previous results, all governance indicators are highly significant and negatively associated with each of the problems related to health service utilization. The country-level democratization and GDP per capita interaction term is also significant and is negatively associated with each of the problems. Public spending on health is negatively associated with three specific problems, namely absent doctors, expensive services, and dirty facilities, but it is not significant for the other three problems. Foreign direct investment is weakly significant and negatively associated with only one problem, expensive services, suggesting that foreign investment in the medical service sector may play a role in reducing costs of medical services. Net ODA per capita and tax revenue (as percentage of GDP) are not significantly associated with any of the six problems. As for the individual-level controls, those with higher levels of education are less likely to report that services are too expensive but are more likely to report absent doctors and dirty facilities. Compared to rural areas, those living in urban areas are more likely to encounter certain problems with local health clinics, such as lack of attention, long waiting time, and dirty facilities.

DISCUSSIONS AND CONCLUSIONS

This multilevel analysis explores the effect of infrastructure provisioning on health service utilization and examines if governance shapes access with or without infrastructure provisioning. Results show that the presence of certain infrastructures, particularly health clinics

TABLE 5. Mixed-effects Linear Regression of Governance Indicators on Various Problems Encountered with Health Clinics in 34 African Countries Surveyed by Afrobarometer

Variables	Absent Doctors	Lack of Medicines	Lack of Attention	Service Expensive	Waiting Time Long	Dirty Facilities
Rule of law	−0.046***	−0.029***	−0.048***	−0.020**	−0.033***	−0.047***
	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.006)
Control of corruption	−0.021***	−0.017***	−0.030***	−0.012*	−0.019***	−0.020***
	(0.005)	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)
Satisfaction with demo.	−0.017	−0.022**	−0.039***	−0.034***	−0.027**	−0.023*
	(0.010)	(0.008)	(0.009)	(0.010)	(0.009)	(0.009)
Gov. effectiveness	−0.038***	−0.045***	−0.035***	−0.032***	−0.042***	−0.037***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)
Age of respondents	−0.001**	0.001***	−0.001**	0.000	−0.001**	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education	0.006*	−0.000	0.002	−0.011***	0.004	0.008*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Employment	0.001	−0.005	−0.008	−0.010	−0.019*	−0.001
	(0.010)	(0.010)	(0.011)	(0.010)	(0.009)	(0.012)
Urban residence	0.007	−0.015	0.054***	0.006	0.050***	0.041***
	(0.012)	(0.013)	(0.013)	(0.011)	(0.014)	(0.010)
Log GDP pc	0.088***	0.085*	0.103***	−0.001	0.085**	0.075*
	(0.026)	(0.039)	(0.028)	(0.026)	(0.027)	(0.034)
Log ODA pc	0.013	0.037	0.015	0.031	0.035	−0.028
	(0.018)	(0.025)	(0.017)	(0.018)	(0.018)	(0.024)
FDI	0.001	−0.001	0.000	−0.003*	−0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Tax revenue	0.005	0.002	0.001	−0.002	−0.002	0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Health expenditure	−0.051**	−0.028	−0.017	−0.051*	0.013	−0.050*
	(0.019)	(0.021)	(0.022)	(0.021)	(0.017)	(0.020)
Democratization	0.064***	0.112***	0.082***	0.085***	0.041*	0.053*
	(0.016)	(0.024)	(0.016)	(0.018)	(0.016)	(0.022)
Democratization *GDP	−0.009***	−0.014***	−0.010***	−0.010***	−0.006**	−0.007*
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)
Random intercepts:						
PSUs (in SD)	0.135***	0.128***	0.134***	0.117***	0.149***	0.129***
	(0.008)	(0.008)	(0.008)	(0.009)	(0.010)	(0.007)
Countries (in SD)	0.089***	0.115***	0.096***	0.103***	0.099***	0.111***
	(0.014)	(0.014)	(0.014)	(0.012)	(0.017)	(0.013)
Observations	40,077	40,921	40,724	41,024	40,924	40,106

Notes: Standard errors are in parentheses.
***$p < 0.001$; **$p < 0.01$; *$p < 0.05$.

and piped water, is crucial for enhancing people's health service utilization. However, people encounter different problems when receiving services at their local public clinics or hospitals. Results show that all governance indicators are significantly associated with the problems people encounter with their local clinics. Absent doctors, insufficient medicines and medical supplies, lack of attention, expensive services, long waiting time, dirty facilities, and such other problems that people often encounter with their local clinics are some examples of the lack of governance in the health sector in African countries.

There is some subnational variation in people's health service utilization, as service infrastructures are more concentrated in urban areas compared to rural areas. Results show that urban residents are more likely than rural residents to encounter certain problems with their local health clinics, such as lack of attention, long waiting time, and dirty facilities. These problems are more likely to be due to higher population density and greater service demand in urban areas than rural areas. However, these and other problems like lack of medical supplies, absent doctors, and expensive services are significantly related to public spending on health as well as lack of governance in the health sector. Improvements in health service utilization therefore require both better infrastructure provisioning—in terms of physical and capital stocks—and better governance, as the former does not guarantee the latter.

My results for country-level democratization provide partial support to Wullert and Williamson's (2016) findings that health services (in terms of child mortality) are worse in hybrid regimes than in both democracies and autocracies. However, Wullert and Williamson did not include an interaction term for democracy and GDP per capita, and I find that the model with the interaction term is more consistent with other models than the one with the democracy square term. My results suggest that democratization is most likely to enhance health service utilization in countries with higher levels of economic growth. This finding supports the classic claim made by Lipset (1959) and also supports Moon and Dixon (1985) as well as Mann's (1984, 2008) claims that infrastructurally powerful modern democratic states are better able to provide basic services to people. However, for democratization external pressure and conditional foreign aid may not work; as Wullert and Williamson (2016) warn, "Lacking internal willingness among elites to implement real change, democracy may flounder, resulting in political instability" (p. 10), which may lower people's health service utilization. The "real change" requires improving governance at all levels, as my analysis suggests. If state leaders are not committed to improving governance and enhancing people's service utilization, much public spending will be lost, as clearly evidenced in the infrastructure construction sector. Problems like absent doctors, insufficient medical supplies, lack of attention, expensive services, long waiting time, and bad working conditions at public clinics can be addressed without much spending if governance is improved in the health sector. Governments need to improve working conditions at the facility level and effectively monitor that the health infrastructure is functional and that the recruited staffs serve in their posts.

Appropriate state interventions are the developmental roles state leaders need to play to achieve developmental outcomes for a large cross section of people in society. For playing out developmental roles, state leaders need appropriate developmental structures—effective institutions and sufficient infrastructure provisioning. "Structures create the potential for

action, playing out roles translates the potential into real effects," as Evans (1995:77) claims. A combination of the developmental structures and developmental roles determines the levels of state capacity in achieving developmental success (Vu 2007). My analysis suggests that playing out developmental roles requires both a committed and effective government and adequate infrastructure provisioning.

My results for fiscal measures of state capacity in terms of state size point to the issue that Dawson (2010) raises. My analysis confirms his claim that nonfiscal measures of state capacity such as the rule of law (and additionally, control of corruption, democratic accountability, and government effectiveness) fare much better when our objective is to analyze the effect of state capacity on developmental outcomes, including better service provisioning and service utilization. States can be small for logistical reasons, as evidenced in Botswana and Rwanda, although Rwanda is an exceptional case where high state infrastructural power among the Hutu majority has been disastrous for the Tutsi minority (Mann 2005). In other cases, smaller states, measured in terms of population size, have a larger share of public consumption in GDP (Ades and Glaeser 1999; Alesina and Wacziarg 1998). This may happen because smaller countries have lower fixed costs in establishing a set of institutions to serve the population and because the costs of certain public goods, such as schools, clinics, roads, parks, libraries, and telecom infrastructures, "grow less than proportionally to the size of the population" (Alesina and Wacziarg 1998:308). However, this mechanism is completely different from the neoliberal claim that any increase in state size through tax revenue collection hampers economic growth and thereby service utilization.

Whereas the fiscal measures of state capacity focus on tax revenue collection and government spending as the main tasks of the state, the nonfiscal, governance-related measures of state capacity require a shift of focus to the expansion of human capabilities, including the enhancement of people's service utilization. By shifting the focus from development centered on economic growth and a free-market economy to human-centered development, states can better serve the people through developmental interventions and committed leadership (Ghobarah, Huth, and Russett 2004; Kaufman and Segura-Ubiergo 2001; Przeworski et al. 2000). However, developmental interventions are not only important at the country level but also much needed at the service utilization level, as this multilevel analysis shows. Whereas most ecological analyses rely on cross-national country-level data and thus miss the internal patterns and sources of variation in the results, this study accounts for those internal patterns and local sources of variation using hierarchical household survey data in a three-stage mixed-effects modeling. Failing to account for the within-country variation, cross-national ecological studies may offer erroneous theoretical insights into the underlying mechanisms through which country-level governance shapes individual-level developmental outcomes. To avoid this, my multilevel analysis illustrates how governance at different levels can affect outcomes and thus recommends that development scholars widen their focus beyond national-level governance and help policy makers identify at which level state interventions are most needed for removing barriers to development.

A final note of caution: although this study finds statistically significant correlations between infrastructure provisioning, governance, and individual-level health service

utilization, the correlations may not suggest any causal relationship. For a causal analysis we need data over a considerable time period. Afrobarometer has the data for 16 countries over the period from 2002 to 2013, but PSU-level geographical information and a few other important variables are missing in the earlier surveys. For this reason, this study uses data from the most recent Afrobarometer surveys available for 34 African countries. Using the insights of this study, future studies may look into the causal mechanisms using appropriate longitudinal data as well as country-specific case studies. ■

AMM QUAMRUZZAMAN is a Course Lecturer of Sociology at McGill University. He is a development sociologist working on governance, gender quotas, democratic deepening, ethics in global health research, conflict and violence, inequality, and development. He has written *The Militia Movement in Bangladesh: Ideology, Motivation, Mobilization, Organization, and Ritual* (Saarbrücken, 2010), *Project Chittagong Hill Tracts: Field Notes* (coauthored with UK Committee for UNICEF/UK, London, 2006), and articles on education policy, female political representation, governance for development, happiness, and violence.

REFERENCES

Abdulraheem, R. S., A. R. Olapipo, and M. O. Amodu. 2012. "Primary Health Care Services in Nigeria: Critical Issues and Strategies for Enhancing the Use by the Rural Communities." *Journal of Public Health and Epidemiology* 4(1):5–13.

Ades, Alberto, and Edward Glaeser. 1999. "Evidence on Growth, Increasing Returns and the Extent of the Market." *Quarterly Journal of Economics* 114(3):1025–45.

Afrobarometer. 2015. "Afrobarometer Round 5 Surveys." Retrieved May 11 (http://www.afrobarometer.org).

Alcázar, Lorena, and Raúl Andrade. 2001. "Induced Demand and Absenteeism in Peruvian Hospitals." Pp. 123–62 in *Diagnosis Corruption: Fraud in Latin America's Public Hospitals*, edited by Rafael DiTella and William Savedoff. Washington, DC: IADB Press.

Alesina, Alberto, and Romain Wacziarg. 1998. "Openness, Country Size and Government." *Journal of Public Economics* 69:305–21.

Alesina, Alberto, and Beatrice Weder. 2002. "Do Corrupt Governments Receive Less Foreign Aid?" *American Economic Review* 92:1126–37.

Asteriou, Dimitrios, and Simon Price. 2005. "Uncertainty, Investment and Economic Growth: Evidence from a Dynamic Panel." *Review of Development Economics* 9(2):277–88.

Balabanova, Dina, Martin McKee, Joceline Pomerleau, Richard Rose, and Christian Haerpfer. 2004. "Health Service Utilization in the Former Soviet Union: Evidence from Eight Countries." *Health Services Research* 39(6, pt. 2):1927–50.

Bates, Robert H. 1981. *Markets and States in Tropical Africa: The Political Basis of Agricultural Policies*. Berkeley: University of California Press.

Baum, Matthew A., and David A. Lake. 2003. "The Political Economy of Growth: Democracy and Human Capital." *American Journal of Political Science* 47(2):333–47.

Bhagwati, Jagdish N. 1982. "Directly Unproductive, Profit-seeking (DUP) Activities." *Journal of Political Economy* 90(5):988–1002.

Bradshaw, York W., and Jie Huang. 1991. "Intensifying Global Dependency: Foreign Debt, Structural Adjustment, and Third World Underdevelopment." *Sociological Quarterly* 32:321–42.

Bradshaw, York W., Rita Noonan, Laura Gash, and Claudia Buchmann Sershen. 1993. "Borrowing against the Future: Children and Third World Indebtedness." *Social Forces* 71(3):629–56.

Bradshaw, York W., and Zwelakhe Tshandu. 1990. "Foreign Capital Penetration, State Intervention, and Development in Sub-Sahara Africa." *International Studies Quarterly* 34:229–51.

Bräutigam, Deborah. 2000. *Aid Dependence and Governance*. Vol. 1. Stockholm: Almqvist and Wiksell International.

Burnside, A. Craig, and David Dollar. 2000. "Aid, Policies and Growth." *American Economic Review* 90(4):847–68.

Chaudhury, Nazmul, and Jeffrey S. Hammer. 2004. "Ghost Doctors: Absenteeism in Rural Bangladeshi Health Facilities." *World Bank Economic Review* 18(3):423–41.

Chaudhury, Nazmul, Jeffrey Hammer, Michael Kremer, Karthik Muralidharan, and F. Halsey Rogers. 2006. "Missing in Action: Teacher and Health Worker Absence in Developing Countries." *Journal of Economic Perspectives* 20(1):91–116.

Colander, David C., ed. 1984. *Neoclassical Political Economy: The Analysis of Rent-seeking and DUP Activities.* Cambridge, MA: Ballinger.

Cooper, Frederick. 2002. *Africa since 1940: The Past of the Present*. Cambridge: Cambridge University Press.

Cornia, Giovanni Andrea, Richard Jolly, and Frances Stewart, eds. 1987. *Adjustment with a Human Face: Protecting the Vulnerable and Promoting Growth*. Oxford: Oxford University Press for UNICEF.

Dal Bó, Ernesto, and Martín A. Rossi. 2007. "Corruption and Inefficiency: Theory and Evidence from Electric Utilities." *Journal of Public Economics* 91(5–6):939–62.

Dawson, Andrew. 2010. "State Capacity and the Political Economy of Child Mortality in Developing Countries Revisited: From Fiscal Sociology towards the Rule of Law." *International Journal of Comparative Sociology* 51:403–22.

Easterly, William, Jozef Ritzen, and Michael Woolcock. 2006. "Social Cohesion, Institutions, and Growth." *Economics and Politics* 18(2):103–20.

Ensor, Tim. 2004. "Informal Payments for Health Care in Transition Economies." *Social Science and Medicine* 58(2):237–46.

Epping-Jordan, JoAnne E., Gauden Galea, Colin Tukuitonga, and Robert Beaglehole. 2005. "Preventing Chronic Diseases: Taking Stepwise Action." *Lancet* 366(9497):1667–71.

Evans, Peter. 1995. *Embedded Autonomy: States and Industrial Transformation*. Princeton, NJ: Princeton University Press.

Evans, Peter. 2010. *The Challenge of 21st Century Development: Building Capability-enhancing States*. New York: United Nations Development Programme.

Evans, Peter. 2011. "Constructing the 21st Century Developmental State." Pp. 37–58 in *Constructing a Democratic Developmental State in South Africa: Potentials and Challenges,* edited by Omano Edigheji. Cape Town: Human Sciences Research Council.

Evans, Peter, Evelyne Huber, and John Stephens. 2014. "The Political Foundations of State Effectiveness." Working Paper 2015-24, Watson Institute for International Studies at Brown University, Providence, RI.

Frey, R. Scott, and Carolyn Field. 2000. "The Determinants of Infant Mortality in the Less Developed Countries: A Cross-national Test of Five Theories." *Social Indicators Research* 52(3):215–34.

Friedman, Milton, and Rose Friedman. 1980. *Free to Choose.* Orlando, FL: Harcourt Brace Jovanovich.

Garcia-Prado, Ariadna, and Mukesh Chawla. 2006. "The Impact of Hospital Management Reforms on Absenteeism in Costa Rica." *Health Policy and Planning* 21(2):91–100.

Gelman, Andrew, and Jennifer Hill. 2007. *Data Analysis Using Regression and Multilevel/Hierarchical Models*. Cambridge,: Cambridge University Press.

Gerring, John, Strom C. Thacker, and Rodrigo Alfaro. 2012. "Democracy and Human Development." *Journal of Politics* 74(1):1–17.

Ghobarah, Hazem Adam, Paul Huth, and Bruce Russett. 2004. "Comparative Public Health: The Political Economy of Human Misery and Well-being." *International Studies Quarterly* 48(1):73–94.

Globalisation Knowledge Network. 2007. *Towards Health-equitable Globalisation: Rights, Regulation and Redistribution*. Final report of the Globalisation Knowledge Network of the Commission on Social Determinants of Health. Geneva: World Health Organization.

Hadenius, Axel, and Jan Teorell. 2007. "Pathways from Authoritarianism." *Journal of Democracy* 18(1): 143–57.

Halleröd, Björn, Bo Rothstein, Adel Daoud, and Shailen Nandy. 2013. "Bad Governance and Poor Children: A Comparative Analysis of Government Efficiency and Severe Child Deprivation in 68 Low- and Middle-income Countries." *World Development* 48:19–31.

Heller, Patrick. 2013. *Challenges and Opportunities: Civil Society in a Globalizing World*. Occasional Paper 2013/06. New York: UNDP Human Development Report Office.

Herbst, Jeffrey. 2000. *States and Power in Africa: Comparative Lessons in Authority and Control*. Princeton, NJ: Princeton University Press.

Hsia, Renee Y., Naboth A. Mbembati, Sarah Macfarlane, and Margaret E. Kruk. 2012. "Access to Emergency and Surgical Care in Sub-Saharan Africa: The Infrastructure Gap." *Health Policy and Planning* 27(3):234–44.

Jaro, Ibrahim Musa, and Abdulhamed Adamu Ibrahim. 2012. "The Accessibility Problems of Primary Health Care to Rural People in Jigawa State, Nigeria." *Global Advanced Research Journal of Social Science* 1(4):72–76.

Kasper, Judith D. 2000. "Health-care Utilization and Barriers to Health Care." Pp. 323–38 in *The Handbook of Social Studies in Health and Medicine*, edited by Gary L. Albrecht, Ray Fitzpatrick, and Susan Scrimshaw. London: Sage Publications.

Kaufman, Robert R., and Alex Segura-Ubiergo. 2001. "Globalization, Domestic Politics, and Social Spending in Latin America: A Time-series Cross-section Analysis, 1973–97." *World Politics* 53(4): 553–87.

Kaufmann, Daniel, and Aart Kraay. 2002. "Growth without Governance." World Bank Policy Research Working Paper 2928, World Bank, Washington, DC.

Kenny, Charles. 2006. *Measuring and Reducing the Impact of Corruption in Infrastructure*. Washington, DC: World Bank Publications.

Kessides, Ioannis N. 2004. *Reforming Infrastructure: Privatization, Regulation, and Competition*. Washington, DC: World Bank and Oxford University Press.

Kirkpatrick, Colin, David Parker, and Y-F. Zhang. 2006. "Foreign Direct Investment in Infrastructure in Developing Countries: Does Regulation Make a Difference?" *Transnational Corporations* 15(1): 143–71.

Kiser, Edgar, and Audrey Sacks. 2009. "Improving Tax Administration in Contemporary African States: Lessons from History." Pp. 183–200 in *The New Fiscal Sociology: Taxation in Comparative and Historical Perspective*, edited by Isaac William Martin, Ajay K. Mehrotra, and Monica Prasad. Cambridge: Cambridge University Press.

Knack, Stephen. 2000. "Aid Dependence and the Quality of Governance." World Bank Working Paper 2396, World Bank, Washington, DC.

Kossler, Reinhart. 2007. "Facing a Fragmented Past: Memory, Culture and Politics in Namibia." *Journal of Southern African Studies* 33(2):361–82.

Krueger, Anne O. 1974. "The Political Economy of the Rent-seeking Society." *American Economic Review* 64(3):291–303.

Lena, Hugh F., and Bruce London. 1993. "The Political and Economic Determinants of Health Outcomes: A Cross-national Analysis." *International Journal of Health Services* 23:585–602.

Lewis, Maureen. 2006. "Governance and Corruption in Public Health Care Systems." Working Paper 78, Center for Global Development, Washington, DC.

Lewis, Maureen. 2007. "Informal Payments and the Financing of Health Care in Developing and Transition Countries." *Health Affairs* 26:984–97.

Lipset, Seymour Martin. 1959. "Some Social Requisites of Democracy: Economic Development and Political Legitimacy." *American Political Science Review* 53(1):69–105.

London, Bruce, and Bruce A. Williams. 1990. "National Politics, International Dependency, and Basic Needs Provision: A Cross-national Analysis." *Social Forces* 69:565–84.

Loy, Adam M. Montgomery. 2013. "Diagnostics for Mixed/Hierarchical Linear Models." Graduate Theses and Dissertations Digital Repository (http://lib.dr.iastate.edu/etd/). Paper 13277. Ames, IA: Iowa State University.

Mann, Michael. 1984. "The Autonomous Power of the State: Its Origins, Mechanisms and Results." *European Journal of Sociology* 25(2):185–213.
Mann, Michael. 2005. *The Dark Side of Democracy: Explaining Ethnic Cleansing*. Cambridge, MA: Cambridge University Press.
Mann, Michael. 2008. "Infrastructural Power Revisited." *Studies in Comparative International Development* 43(3):355–65.
Mann, Michael. 2014. "The Infrastructural Powers of Authoritarian States in the 'Arab Spring.'" Unpublished paper.
Moon, Bruce E., and William J. Dixon. 1985. "Politics, the State, and Basic Human Needs: A Cross-national Study." *American Journal of Political Science* 29(4):661–94.
Moore, Mick. 1995. "Promoting Good Government by Supporting Institutional Development?" *IDS Bulletin* 26(2):89–96.
Navia, Patricio, and Thomas D. Zweifel. 2003. "Democracy, Dictatorship, and Infant Mortality Rate Revisited." *Journal of Democracy* 14(3):90–103.
O'Donnell, Guillermo A. 2004. "Why the Rule of Law Matters." *Journal of Democracy* 15(4):32–46.
Olson, Mancur. 1982. *The Rise and Decline of Nations*. New Haven, CT: Yale University Press.
Powell-Jackson, Timothy, Sanjay Basu, Dina Balabanova, Martin McKee, and David Stuckler. 2011. "Democracy and Growth in Divided Societies: A Health-inequality Trap?" *Social Science and Medicine* 73:33–41.
Przeworski, Adam, Michael E. Alvarez, José Antonio Cheibub, and Fernando Limongi. 2000. *Democracy and Development*. Cambridge: Cambridge University Press.
Rajkumar, Andrew Sunil, and Vinaya Swaroop. 2008. "Public Spending and Outcomes: Does Governance Matter?" *Journal of Development Economics* 86(1):96–111.
Rauch, James E., and Peter B. Evans. 2000. "Bureaucratic Structure and Bureaucratic Performance in Less Developed Countries." *Journal of Public Economics* 75(1):49–71.
Rodrik, Dani. 1999. "Where Did All the Growth Go? External Shocks, Social Conflict, and Growth Collapses." *Journal of Economic Growth* 4:358–412.
Rodrik, Dani, Arvind Subramanian, and Francesco Trebbi. 2004. "Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development." *Journal of Economic Growth* 9(2):131–65.
Ross, Michael. 2006. "Is Democracy Good for the Poor?" *American Journal of Political Science* 50(4): 860–74.
Sacks, Audrey, and Margaret Levi. 2010. "Measuring Government Performance and Its Consequences for Social Welfare in Sub-Saharan African Countries." *Social Forces* 88(5):2325–51.
Scott, James C. 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven, CT: Yale University Press.
Sen, Amartya. 1983. "Development: Which Way Now?" *Economic Journal* 93:745–62.
Sen, Amartya. 1999. *Development as Freedom*. Oxford: Oxford University Press.
Shandra, John M., Jenna Nobles, Bruce London, and John B. Williamson. 2004. "Dependency, Democracy, and Infant Mortality: A Quantitative Cross-national Analysis of Less Developed Countries." *Social Science and Medicine* 59:321–33.
Shen, Ce, and John B. Williamson. 1997. "Child Mortality, Women's Status, Economic Dependency and State Strength: A Cross-national Study of Less Developed Countries." *Social Forces* 76(2):667–94.
Shen, Ce, and John B. Williamson. 2001. "Accounting for Cross-national Differences in Infant Mortality Decline (1965–1991) among Less Developed Countries: Effects of Women's Status, Economic Dependency, and State Strength." *Social Indicators Research* 53(3):257–88.
Snijders, Tom, and Roel Bosker. 1999. *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling*. London: Sage Publications.
Sohail, M., and Sue Cavill. 2008. "Accountability to Prevent Corruption in Construction Projects." *Journal of Construction Engineering and Management* 134(9):729–38.

Srinivasan, Thirukodikaval N. 1985. "Neoclassical Political Economy: The State and Economic Development." *Politics and Society* 17(2):115–62.
Svensson, Jakob. 2000. "Foreign Aid and Rent-seeking." *Journal of International Economics* 51(2):437–61.
Teorell, Jan, et al. 2015. "The Quality of Government Standard Dataset." Version Jan15. University of Gothenburg: Quality of Government Institute. Retrieved March 7, 2015 (http://www.qog.pol.gu.se).
Transparency International. 2011. *Bribe Papers Index 2011*. Washington, DC: Transparency International.
Vanhanen, Tatu. 2014. Measures of Democracy, 1810–2012 [computer file]. FSD1289, version 6.0 (January 31, 2014). Tatu Vanhanen and Krister Lundell [data collection]. Tampere: Finnish Social Science Data Archive.
Vu, Tuong. 2007. "State Formation and the Origins of Developmental States in South Korea and Indonesia." *Studies in Comparative International Development* 41(4):27–56.
World Bank. 1981. *Accelerated Development in Sub-Saharan Africa: An Agenda for Action*. Washington, DC: World Bank.
World Bank. 1984. *Towards Sustained Development in Sub-Saharan Africa*. Washington, DC: World Bank.
World Bank. 1994. *World Development Report 1994: Infrastructure for Development*. Washington, DC: World Bank Publications.
World Bank. 2015. *World Development Indicators database*. Retrieved January 15 (http://data.worldbank.org/indicator/).
World Health Organization. 2006. *Measuring Transparency in Medicines Registration, Selection and Procurement: Four Country Assessment Studies*. Geneva: World Health Organization.
Wullert, Katherine E., and John B. Williamson. 2016. "Democracy, Hybrid Regimes, and Infant Mortality: A Cross-national Analysis of Sub-Saharan African Nations." *Social Science Quarterly*. DOI: 10.1111/ssqu.12240.

NOTE

The author thanks two anonymous reviewers and Matthew Lange for their insightful comments on previous versions of the paper. The author acknowledges funding from the Canadian Institutes of Health Research Operating Grant "Examining the Impact of Social Policies on Health Equity" (ROH-115209), through the Institute for Health and Social Policy (IHSP) at McGill University. The funding source had no involvement in the design of the study or the analysis and interpretation of the data.

1. Infrastructure variables are excluded from the models because the problems were encountered only when there was a health clinic present in the locality and because other infrastructures were not directly relevant to the problems associated with health clinics.