CONDITIONAL GRANTS TO IMPROVE PUBLIC HEALTH:

EVALUATING THE HEALTH IMPACTS OF THE NIGERIAN CONDITIONAL GRANTS SCHEME

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ABSTRACT

In 2007 the Nigerian federal government began implementing a conditional grants scheme that has made funds available to state governments to pursue the Millennium Development Goals, with a special focus on projects addressing the key health-related goals of reducing child mortality rates and the prevalence of disease, and improving maternal care. Has the program been effective in improving public health outcomes? To evaluate the impact of the program we have examined evidence on health outcomes gathered in two large-scale surveys of Nigerian households conducted in 2006 and 2009. Our preliminary findings indicate that the initial CGS program, administered by state governments, has not had large positive effects on health outcomes in Nigeria. By some measures, health outcomes actually appear to have changed for the worse in LGAs participating in the program.

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I. INTRODUCTION

In 2007 the Nigerian federal government initiated a Conditional Grants Scheme (CGS) that made funds available to state governments to pursue the Millennium Development Goals (MDGs), placing a particular emphasis on projects aimed at lowering infant mortality, improving maternal care, and reducing the prevalence of epidemic diseases. Between 2007 and 2010 the Nigerian CGS funded the construction and rehabilitation of nearly 3,000 primary healthcare centers, the training of over 6,000 healthcare workers, and the provision of 1.5 million insecticide treated bed nets. Overall, according to government reports, the CGS directly impacted over 20 million Nigerians in some of the neediest communities in the country.

The Nigerian CGS is different from other large-scale conditional grant programs in several respects. It is directed explicitly at pursuing the MDGs, in compliance with Nigeria's commitments to international creditors as part of the debt relief agreement negotiated in 2005 – the savings from relieved debt service are the nominal source of funds for the program. Perhaps most importantly, however, unlike other major conditional grant schemes, the CGS does not distribute government funds directly to individual citizens or households. The CGS allocates federal funding to sub-national state governments within Nigeria who have applied for grants for specific types of projects consistent with the mission of pursuing the MDGs. Those state governments subsequently direct spending of CGS funds in specific local government areas (LGAs) within their own borders. In the targeted LGAs, the grant money is allocated to support LGA efforts at a number of project sites (e.g., health facilities) where improvements can impact individual citizens. The attenuated chain of accountability between the Nigerian federal government and the Nigerian citizens who are the targeted beneficiaries of the CGS projects may create performance problems via agency slack at various levels.

How effective has the Nigerian CGS been in improving the health outcomes of citizens? To provide a preliminary evaluation of the impact of the CGS we have examined evidence on health outcomes gathered in two large-scale surveys of Nigerian households conducted in 2006 and 2009. Our (still preliminary) findings indicate that the initial CGS, administered by state governments, has not had large positive effects on health outcomes in Nigeria. By some measures, health outcomes actually appear to have changed for the worse in LGAs participating in the program.

II. Background on the Nigerian Conditional Grants Scheme

In 2005 the Nigerian federal government reached an agreement on sovereign debt relief with the Paris Club of lenders. As part of the agreement, the government committed to use the savings from the reduced debt service burden (roughly, one billion US dollars annually) to pursue the MDGs, and created a "virtual poverty fund" administered by a new Office of the Senior Special Assistant to the President (OSSAP) on the MDGs. OSSAP has disbursed around $750 million annually from this fund since 2006. Approximately $150 million per year was allocated from the fund to the Conditional Grant Scheme between 2007 and 2009.

The CGS, as designed and implemented by OSSAP, provides financial grants to Nigeria's state governments for specific projects addressing the MDGs, with a particular emphasis on the three health-related goals of lowering infant mortality, improving maternal care, and reducing the prevalence of epidemic diseases. Around 98 percent of the CGS funds allocated between 2007 and 2009 went to support projects that built or improved health centers, distributed insecticide-treated bed nets, improved maternal health care, or provided clean water and sanitation. State governments are invited to submit project proposals that assess needs among Local Government Areas and to identify particular LGAs for project spending. State

governments must provide co-financing for these, matching the CGS grants with funds from their own budgets. The CGS also requires that state governments comply with a variety of rules stipulating how applications are made, how funds disbursed and accounted for, and how contracts are awarded, and imposing auditing and reporting requirements.

II. Previous Research on Government Grant Programs and Health Initiatives

Evaluations of large-scale government grant programs are difficult because such programs typically affect a wide variety of related outcomes through multiple channels. Overall, the majority of health-related grant programs evaluated independently by scholars in recent years have been found to be successful in improving at least some health outcomes; in a minority of cases the research has suggested that the programs in question failed to achieve their goals. We provide a brief review of this previous, related research below.

A word about methodology is appropriate at the outset as the findings from such evaluations can be highly contingent upon the methodology employed (Lalonde 1986; Glazerman et al. 2003; Duflo et al. 2008; Clemens and Demombynes 2010). Randomized controlled trials are increasingly regarded as best practice for program evaluations as they eliminate the selection bias effects that derive from the fact that program participants are typically quite different from nonparticipants in unobserved ways that influence outcomes. Randomized controlled trials can be difficult to implement, however, and most evaluations of large-scale government grant programs and health initiatives in recent years have relied upon alternative methodologies, including differences-in-differences, instrumental variables, and matching techniques. Below we note the methodological approaches and findings of pertinent programs.

In a recent review of studies of conditional cash transfer programs – including *PROGRESA* in Mexico, *Red de Proteccion Social* in Nicaragua, *Familias en Accion* in Colombia, *Programa de Asignacion Familial* in Honduras, *Bolsa Alimentacao* in Brazil, and a pilot program in Malawi – Lagarde et al. (2007) conclude that such programs are generally effective in improving the uptake of preventive healthcare services and often also in improving health outcomes. Mexico's PROGRESA is perhaps the best known conditional grant program aimed at improving health outcomes. Introduced in 1997, the program included 2.6 million households by 2000. It offers cash transfers to families who comply with requirements designed to improve child health, education, and nutrition (e.g., rules mandating that pregnant and lactating mothers and young children must attend health clinics for education, supplements, and care). Making use of a randomized component in *PROGRESA*[1], Gertler and Boyce (2001) find that the program significantly improved the health of children and adults in participating households between 1998 and 2001. Children experienced less illness and anemia and grew taller, adults suffered fewer bedridden and difficult days, and uptake of preventive care at public health clinics increased.[2] These positive results from the randomized trial are consistent with findings from studies that used regression discontinuity and matching designs to evaluate PROGRESA (see Buddlemeyer and Skofias 2003; Diaz and Handa 2006).

Several related grant programs have been evaluated in similar fashion and with similar results. The *Bono de Desarrollo Humana* program, established in Ecuador in 2003, provides cash transfers for rural mothers to improve the health of their children. Paxson and Schady (2007) make use of the randomized allocation of treatment across parishes to evaluate the impact of the

[1] Around 500 of 50,000 program villages were randomly assigned to treatment and control groups in 1998 with treatment villages receiving treatment immediately and control villages only after 2000. Pre- and post- treatment surveys of village households were conducted.

[2] Follow up studies, using the same randomized trial design, reach similar findings: see Rivera et al. (2004) and Behrman and Hoddinott (2005).

program, finding that, despite the absence of strict conditionality requirements, children of participating mothers showed clear physical, cognitive, nutritive, and socio-emotional improvements. The *Atención a Crisis* program in Nicaragua, initiated in 2005, is another conditional cash transfer program aimed at improving child nutrition and preventive health care. Like *PROGRESA*, the program included a randomized component that was used by Macours, Schady, and Vakis (2008) to evaluate its effects. They found that the program had strong positive impacts, in particular on the cognitive development of the youngest children.

Other types of government health initiatives have also been evaluated in positive fashion in recent research. The Philippines government created an ambitious early childhood development program in the late 1990s, for instance, providing funding to local governments to provide health services. Armecin et al. (2006) use regression analysis with matching to examine program impacts and report substantial improvements in cognitive, social, motor, and language development among participating children. Mensa, Oppong, and Schmidt (2009) use a similar approach to evaluate the Ghanaian National Health Insurance scheme, introduced in 2004. They find that the scheme increased the likelihood that pregnant women received prenatal care, delivered at a hospital with trained professionals, and had fewer complications. Admassie et al. (2009) find generally positive, though slightly more mixed, results when evaluating Ethiopia's health services extension program: they report that the program significantly increased the rate of vaccinations and bed net usage, but had limited effects on prenatal and postnatal care and diarrhea and cough diseases among children.

The Brazilian *Programa Salud Familiar*, providing basic health care and preventative services to targeted households and communities since 1994, is another prominent success story. Using differences-in-differences estimation, Rocha and Soares (2009) find that the program

reduced mortality throughout the age distribution, particularly among young participants and in the poorest areas, and was a highly cost-effective way to improve health outcomes. Zambia's national anti-malaria program, launched in 2003, is another notable success, and has been described as a "model in sub-Saharan Africa" (Ashraf, Fink, and Weil 2010). Using fixed effects and instrumental variables regressions, the authors find that bed nets distributed by the program were robustly correlated with health improvements. Kenya's innovative program for distributing free anti-malaria drugs in partnership with a nongovernmental organization, and with participation from small village shops, is also highly regarded. Using differences-in-differences estimation, Oduor, Kamau, and Mathenge (2009) find that the program, begun in 2005, has been associated with significant declines in malaria morbidity, and they recommend its replication in other countries.

While this array of positive findings is impressive, other studies suggest that some large-scale government health interventions in developing countries have been far less effective. In one notable study, Wagstaff et al. (2007) find that China's rural voluntary health insurance program, launched in 2003, achieved mixed results. They employ a differences-in-differences approach with matching and report that while the cost of deliveries fell and outpatient and inpatient utilization of health services increased, there were no improvements in terms of out-of-pocket patient expenses and inpatient hospitalization periods, and there was a great deal of heterogeneity across implementing counties and income groups in terms of the effects.

Similar mixed or negligible impacts have been found in evaluations of several large-scale health initiatives in recent years. Linnemayr and Alderman (2008) examine the impacts of Senegal's Nutrition Enhancement Program, launched in 2002 with a component providing for randomized allocation into treatment. The authors find that the program had unimpressive effects

in terms of weight-for-age measures of participating children. Diaz and Jaramillo (2009) evaluate the effects of Peru's *PARSalud* program after it was re-oriented towards improving maternal care in 2002. Using differences-in-differences, they find that, while the program reduced postpartum hemorrhage rates, especially in rural areas, it had unimpressive effects on the overall quality of maternal care.

Overall, the findings from the majority of recent studies – whether using randomized controlled trials or alternative types of differences-in-differences, instrumental variables, or matching techniques – indicate that many prominent government health initiatives and grant programs have significantly improved health outcomes in developing countries. But in several cases the findings suggest caution, and it is clear that more research is needed to investigate the key determinants of program success. Why were child nutrition programs successful in Mexico, Ecuador, Nicaragua, and the Philippines, but unsuccessful in Senegal? Why was a health insurance initiative highly successful in Ghana but a similar program produced only mixed effects in China? What are the consequences of administering such programs centrally or at state or local levels, or via partnership with nongovernmental organizations? Answering these questions requires moving into the fields of institutional design and organizational behavior, and is beyond our scope here. Below we discuss our findings from a preliminary evaluation of the Nigerian CGS. The existing research on similar types of programs implemented elsewhere suggests that we should proceed with cautiously optimistic expectations about effects to date.

III. Research Design

A. Data

Data on the location and implementation of CGS-funded projects were drawn from monthly

reports submitted by state governments to the Nigerian Federal Government's Office of the Senior Special Assistant to the President on the Millennium Development Goals (OSSAP). Using all the reports available in OSSAP archives, we compiled a list of CGS-funded projects that were implemented between 2006 and 2009, a window defined by the two large-scale household surveys from which we have data on health outcomes (see below). We identified 37 unique projects initiated and completed in this period and classified these according to OSSAP categories: primary health center construction, renovation, and supply; clean water initiatives; sanitation projects; insecticide-treated bed net provision; maternal and child health projects; and other. Category 1 projects included the construction or improvement of health clinics, as well as the provision of medical equipment and the strengthening of laboratory services. Category 2 projects included the installation of hand pump, motorized, and solar powered boreholes, and other clean water schemes. Category 3 projects included the construction of ventilated improved pit latrines. There was one project in Category 4 involving the distribution of insecticide-treated bed nets at 36 locations in the Federal Capital Territory. Category 5 projects involved the renovation and upgrading of maternal and child health care services within primary health clinics or within freestanding maternity clinics; one example was the installation of solar panels and improved lighting in a maternity clinic. Category 6 included other projects that did not fall into the above categories, such as solar power model village schemes and the procurement of vehicles. Projects from the different categories were typically implemented in a number of states, LGAs, and sub-LGA sites. Table 1 shows the distribution of projects in the sample across these categories.

Table 1: Distribution of Completed CGS Projects by Category (Millions Naira)

Project category	States affected	LGAs affected	No. installations	Mean spending per installation	Total spending in category
Primary health clinics	6	117	587	4.3	2561.5
Water initiatives	11	156	1457	6.2	9168.6
Sanitation initiatives	4	45	429	1.1	476.4
Bed net provision	1	6	36	53.8	1939.1
Maternal/child projects	3	38	416	8.3	3485.7
Other projects	2	15	31	33.8	1047.9

Note: This table reports raw data for all CGS projects in all states. Project observations are later dropped in Jigawa state and Taraba state due to reasons discussed in the text.

In the sample, projects were completed in 14 of the 37 Nigerian states: Adamawa, Bauchi, Cross River, Edo, Ekiti, the Federal Capital Territory, Jigawa, Kaduna, Kano, Katsina, Lagos, Nasarawa, Ondo, and Taraba. Across these states, projects were completed in 273 of the 774 LGAs in Nigeria. However, some LGA names in the reports submitted by the state governments did not match LGA names provided in the survey data we used to measure health outcomes (see below), leading us to exclude the states of Jigawa and Taraba from the analysis to prevent coding errors and reducing our treated LGA count to 166. For the core analysis of the impact of the CGS program that follows, we classify these 166 LGAs as the "treatment" group and compare them with LGAs that did not participate in the projects (the "control" group). Excluded from this paper but available upon request, we also conduct an analysis in which we define treatment and control groups separately for each project category, which allows us to examine whether certain types of projects are more or less effective in improving health outcomes.

We draw data on health outcomes for the evaluation from two large household surveys conducted in Nigeria in 2006 and 2009. Pre-treatment data on health are drawn from the 2006

Core Welfare Indicator Questionnaire (CWIQ) survey. The survey was designed to collect core data on households in a relatively efficient manner using a short questionnaire, in order to allow for regular monitoring of economic and social trends to inform poverty alleviation programs and policy decisions. The questionnaire addressed health, education, employment, household assets and amenities, and a variety of related issues. The CWIQ survey covered all the Nigerian states, including the Federal Capital Territory, and all 774 LGAs.[3] In each LGA, a sample of 10 Census Enumeration Areas (EAs) was selected for the survey, and then within each of those EAs 10 households were selected. Overall, the survey was administered to 77,062 households (approximately 100 per LGA).

Post-treatment data on health outcomes are drawn from the 2009 Harmonized Nigeria Living Standards Survey (HNLSS). The survey is "harmonized" in the sense that it combines questions from two previous surveys, the 2006 CWIQ and the 2003 Nigeria Living Standards Survey (NLSS). The HNLSS thus addresses the same topics covered in the CWIQ survey, but includes a far greater number of questions and collects more detailed information. The survey is comprised of two questionnaires: Part A covers key health issues, including vaccination uptake, prenatal care and maternal health, and illness and diseases, while Part B covers issues such as income and consumption. Like the 2006 CWIQ, the 2009 HNLSS was conducted in all 774 LGAs in Nigeria and employed a similar two-stage sample design, with 10 EAs first selected in each LGA, then 10 households selected in each of the surveyed EAs.[4] The survey ultimately gathered data for 73,329 households (an average of approximately 95 per LGA).

The CWIQ and HNLSS provide comparable measures of the following four health outcomes

[3] Prior to the 2006 survey the National Bureau of Statistics (NBS) conducted six rounds of the CWIQ survey. These previous rounds, implemented between 1999 and 2004, covered only 13 states across the six geopolitical zones in Nigeria.

[4] Part B of the HNLSS utilized the same sampling method, however, with fewer (five) households surveyed per EA, generating data on approximately 50 households per LGA.

at the household level: Problems satisfying healthcare needs[5], sickness and/or injury[6], malaria affliction[7], uptake of public health facilities.[8] Descriptive statistics for the outcome variables, pooled over both groups and time periods, are provided in table 1 below:

Table 1: Outcome Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
satisfaction	102893	2.45	1.23	1	5
sick	135597	0.28	0.45	0	1
malaria	135597	0.14	0.35	0	1
public	135597	0.14	0.34	0	1

We were constrained in that the CWIQ included only a small number of the health-related questions that are also included in the HNLSS. The NLSS, the other half of the precursor to the HNLSS, contained many of the health-related questions consistent between survey rounds but this dataset unfortunately lacks an LGA identifier. Therefore we focused on core issues where CWIQ and HNLSS survey questions overlapped sufficiently to allow comparison.[9] Overall about

[5] The measure is generated by the following question included in both the CWIQ and HNLSS: "How often in the last 12 months did your household have problems satisfying healthcare needs?" Responses are in the form of a five-point scale from never (1) to always (5).

[6] The CWIQ asks, "Was [NAME] sick or injured in the last 4 weeks?" The HNLSS asks, in the last two weeks, "Was [NAME] sick or injured?" Responses in both cases include yes and no. From the responses we calculate a binary measure that is one if at least one household member was recently sick or injured.

[7] The measure is generated by slightly different questions in the CWIQ and HNLSS due to changes to the survey between rounds. The HNLSS greatly expanded the number of questions concerning malaria, providing more data but changing some of the basic questions. The CWIQ asks, "If sick or injured in the last four weeks, what sort of sickness/injury did [NAME] suffer?" Respondents can select any number of 10 categories, one of which is fever/malaria. The HNLSS asks, if sick or injured in the last two weeks, or if visited a traditional healer or patent medicine vendor or visited a health center in the last two weeks, "What type of illness did [NAME] suffer most?" Respondents can select one of 21 options, one of which is malaria. From the responses we calculate a binary measure that is 1 if at least one household member recently suffered from malaria and zero otherwise.

[8] The CWIQ asks, if one consulted a health provider or traditional healer for any reason in the last four weeks, "Which main health provider did [NAME] see in the last four weeks?" Eight responses are possible. Two are coded as public, including public dispensary/hospital, community health center. The HNLSS asks two questions, if in the last two weeks "Has [NAME] consulted a health practitioner or dentist or traditional healer or Patent Medicine Vendor or visited a health centre," and if so, "Is this a public or private establishment?" Eleven responses are possible, three of which are coded as public: federal government, state government, and local government. For each household, where applicable, we code a binary indicator that is 1 if at least one household member recently consulted a health provider or healer who went to a public establishment.

[9] The other potential sources of data on health outcomes in Nigeria are the Demographic and Health Surveys (DHS), conducted in 1990, 1999, 2003, and 2008. Unfortunately the DHS do not include LGA-level identifiers. Mapping

22 % of household are coded as treated. Almost exactly 50 % of the data is from the post-period as expected.

The key time-varying household level covariates measured in both the CWIQ and HNLSS surveys, and incorporated in our analysis, include: Average household literacy[10], location of household in urban area, self assessed poverty[11], and presence of an employed adult in the household. Table 2 provides household level descriptive statistics for the health outcomes and covariates.

Table 2: Covariates

Variable	Obs	Mean	Std. Dev.	Min	Max
poverty	104949	0.23	0.42	0	1
literate	135325	1.00	0.68	0	2
urban	135597	0.26	0.44	0	1
employment	135597	0.91	0.29	0	1

B. RESULTS

To evaluate the impact of the CGS program we conduct differences-in-differences analysis, comparing changes in measured health outcomes between 2006 and 2009 for households in treatment and control LGAs. Table 3 below show the mean outcomes and changes between the pre- and the post period (2006 and 2009 respectively) for the treatment and control group. Three findings are worth emphasizing in this table. First, these basic findings suggest that the treated and control group had very similar average outcomes in the pre-period which suggest that the

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DHS clusters to LGAs using GIS software may be feasible for the recent DHS data and this is something we intend to pursue as a follow-up to the analysis we report in this paper.

[10] The CWIQ asks, "Can [NAME] read and write in English?" The HNLSS asks two questions, "Can [NAME] read a simple letter in English" and "Can [NAME] write a simple letter in English?" We compute average literacy among members of a household.

[11] The measure is generated by comparable CWIQ and HNLSS questions. The CWIQ asks, "Do you consider your household to be poor?" Responses include yes and no. The HNLSS asks, "What is your household's financial situation?" Responses include very poor and poor (recoded as poor), and moderate, fairly rich, and rich (recoded as not poor).

two groups are roughly comparable with respect to these variables. Second, the problems in satisfying health care needs increases in both treatment and controls LGAs, while the fraction of sick changes only marginally, the fraction of households with malaria drops, but the uptake of public health facilities decreases.[12]. Third, apart from this overall trend, the differences-in-differences estimates suggest that households in treated LGAs experienced slightly larger increases in the problems with health care needs, the proportion of sick, but a larger drop in the incidence of malaria, and a small decrease in the update of public health facilities. This suggests that the GGS program had fairly mixed effect in improving the health outcomes.

Table 3: Average Outcomes for Treated and Control Households

Outcomes:	satisfaction	sick	malaria	public
Control LGAs (CGS=0)				
Pre	2.36	0.28	0.16	0.16
Post	2.50	0.28	0.12	0.10
Delta	0.15	0.01	-0.05	-0.06
Treated LGAs (CGS=1)				
Pre	2.30	0.28	0.18	0.18
Post	2.53	0.29	0.12	0.13
Delta	0.23	0.01	-0.06	-0.05
Difference-in-Differences	0.09	0.00	-0.02	0.01
As % of Sample Average	3.6%	1.1%	-11.0%	6.8%

How significant are these results? We run differences-in-differences (DID) regressions for each health outcomes. Standard errors are clustered at the LGA level. The regressions take the following form:

$$Y = \alpha + \beta_1 PostPeriod + \beta_2 CGS + \beta_3 (CGS * PostPeriod) + X\theta + \varepsilon$$

[12] Note that some of these general trends should be taken with a grain of salt given the difference in the question wordings for the two surveys

Y is the outcome variable (healthcare satisfaction, sickness and/or injury rates, malaria, or public health uptake). CGS is a binary variable for the presence of a CGS project in the LGA in which the household resides. *PostPeriod* is a binary variable for treatment status, such that the coefficient on the interaction term, β_3, identifies the DID estimate. *X* represents a basket of controls drawn from the above lists. Regressions are run at the household level and standard errors are clustered at the LGA level.

Table 4 show the DID estimates from these regression without covariates. The point estimates of the treatment effects are not significant at conventional levels for all four outcomes. The most precise estimate is the for the drop .016 drop in the malaria outcome, about a 11% drop over the sample average, but even for this outcome the estimates are rather imprecise with a p-value of 0.18.

Table 4: Difference-in-Differences Regressions

Model	(1)	(2)	(3)	(4)
Outcome:	satisfaction	sick	malaria	public
CGS	-0.060	0.004	0.015	0.015
	(0.062)	(0.012)	(0.009)	(0.009)
PostPeriod	0.146	0.006	-0.047	-0.061
	(0.041)	(0.008)	(0.005)	(0.005)
CGSxPostPeriod	0.089	0.003	-0.016	0.009
	(0.069)	(0.017)	(0.012)	(0.011)
Constant	2.358	0.277	0.162	0.162
	(0.040)	(0.006)	(0.004)	(0.004)
No of Households	102893	135597	135597	135597
No of LGAs	697	697	697	697
R-squared	0.005	0.000	0.005	0.008

Table 5 replicated the models while including our set of time-varying covariates into the regression and the results are very similar to the uncontrolled difference-in-differences estimates. The magnitudes of the point estimates are very similar. The only meaningful difference is that

the .11 increase in the problems with satisfying health care needs, about a 5 % decrease compared to the sample average, is now weakly significant (p-value <.09). Taken together these preliminary results suggest that the GS program did not improve the measured health outcomes, if anything, households in treated LGAs experienced a decrease in the satisfaction as a result of the CGS program.

Table 5: Difference-in-Differences Regressions with Covariates

Model	(5)	(6)	(7)	(8)
Outcome	satisfaction	sick	malaria	public
CGS	-0.080	0.004	0.018	0.019
	(0.059)	(0.016)	(0.011)	(0.011)
PostPeriod	0.448	0.078	-0.027	-0.062
	(0.052)	(0.014)	(0.010)	(0.010)
CGSxPostPeriod	0.116	0.003	-0.018	0.008
	(0.069)	(0.020)	(0.014)	(0.013)
urban	-0.353	-0.043	0.000	-0.009
	(0.031)	(0.008)	(0.006)	(0.005)
literate	0.026	-0.015	0.003	0.022
	(0.028)	(0.008)	(0.005)	(0.005)
employment	-0.105	-0.061	0.004	-0.004
	(0.030)	(0.010)	(0.006)	(0.005)
poverty	0.486	0.067	0.030	0.030
	(0.044)	(0.010)	(0.007)	(0.007)
Constant	2.214	0.298	0.134	0.135
	(0.053)	(0.014)	(0.009)	(0.009)
No of Households	101943	104760	104760	104760
No of LGAs	697	697	697	697
R-squared	0.036	0.006	0.005	0.009

The critical identifying assumption for DID analysis is that there are no time-varying confounds that are not accounted for in the analysis that differentiate treatment and control groups and explain different trends in outcomes. The best way to help justify this assumption is by examining data on pre-treatment trends in health outcomes and key covariates for LGAs in the treatment and control groups. Unfortunately, to date we have not been able to access data

from earlier versions of the CWIQ survey to perform this analysis. We hope to rectify this shortcoming soon.

V. DISCUSSION

To evaluate the impact of the Nigerian CGS program on health outcomes we have examined evidence on a range of household level health outcomes in 166 treated and 635 untreated LGAs. Previous studies of large-scale health interventions have shown that for various reasons, such programs can be less effective than planned. Our findings indicate that the initial CGS program, administered by state governments, has not had large positive effects on health outcomes in Nigeria. By some measures, health outcomes actually appear to have changed for the worse in LGAs participating in the program.

As noted above, the critical identifying assumption for DID analysis is that there are no unaccounted for time-varying confounds that may differentiate treatment and control groups and help to generate different trends in outcomes. There are at least two plausible sources of selection bias that may undermine this assumption. First, it is possible that the state governments allocating these projects among LGAs did so by selecting LGAs in which improvements in health outcomes were taking place more slowly (or deterioration in outcomes was happening more quickly) relative to outcomes in other LGAs in the states. If the LGAs that were selected into the CGS program were actually the ones in which health outcomes were trending badly, when compared with outcomes elsewhere, the results from our DID tests would be biased toward finding small or negative program impacts due to this form of selection bias.

A second, related possibility is that, when picking LGAs for the projects, the state governments targeted locations that were not being targeted by health-related interventions sponsored by international and non-governmental organizations (e.g., the World Health

Organization). It is also plausible that, subsequent to the launch of the CGS projects, other organizations running health campaigns in Nigeria chose to steer their own interventions to LGAs that were not participating in the CGS projects. In either case, one would expect that health outcomes in the control LGAs in our analysis would be affected by these alternative health interventions. The implication would be that the results from the DID analysis would not be estimates of the impact of the CGS program for LGAs not otherwise assisted, but instead would be comparing the performance of the CGS program versus (at least in part) the performance of other health interventions administered by different actors. We have begun to address this issue by gathering additional data on other interventions occurring concurrent with the CGS program. We also intend to identify trends with older CWIQ surveys.

In light of these preliminary findings, it is perhaps plausible that the program could generate zero or negative impacts if corruption was a pervasive problem and funds were not used for the intended purposes. Perhaps funding could have worsened corruption and drove out "good" actors and other organizations. Another potential explanation for these effects is delayed impact. National Assembly oversight feedback and monitoring and evaluation reports indicated that the State track experienced limitations in the service delivery chain, restricting access to essential services.

In July 2011, the federal government launched a new CGS "track" that will allow LGAs to apply directly for CGS funding. This may be beneficial insofar as it reduces the number of hands funds must pass through between the federal government and the citizen. An initial set of 113 LGAs were selected to participate in this new program, based upon a needs assessment, with expansion to include more LGAs anticipated in the future. The LGA governments will make applications for grants for specific projects, in a manner similar to state governments in the

original state “track,” and must also supply matching funds and comply with a similar set of conditions and reporting requirements. It will be vital for the expanded program to focus on good governance and mechanisms designed to ensure that the money is spent on the projects. More research is warranted on these topics, particularly on the determinants of the success of similar programs, on the differential effectiveness of separate program components, and on cost effectiveness.

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