The Impact of Ethnic Diversity in Bureaucracies: Evidence from the Nigerian Civil Service

By IMRAN RASUL AND DANIEL ROGGER*

We document the correlation between the workplace diversity of bureaucracies and public services delivered. We do so in the context of the Federal Civil Service in Nigeria, the most important government bureaucracy operating in a highly ethnically fractionalized society in which ethnicity is a salient form of identity [Eifert *et al.* 2010].

An established literature documents the potentially beneficial impacts of workplace diversity on organizational performance. Theoretically, diversity can positively impact organizations if it matches workers with a variety of abilities, experiences, enhances creativity or problem solving capacities. Lazear [1999] and Hong and Page [2001], among others, develop models along these lines to make precise when workplace diversity beneficially impacts organizational performance. Shore *et al.* [2009] overview the evidence, much of which stems from private sector firms in high income settings, and considers diversity along age-race-gender lines. We provide novel evidence extending the empirical literature along all three margins: in the context of Nigeria, we document the relationship between public service delivery and the ethnic diversity of civil service organizations.[1]

[1]In Kenyan private sector settings, Hjort [2014] and Macchiavello and Morjaria [2014] show ethnic divisions impact productivity due to worker discrimination.

The impact of bureaucratic diversity on public service delivery in this context is not obvious. While the management literature suggests it might have positive impacts if it helps bureaucrats solve problems etc., an established macroeconomic literature documents a negative correlation between *societal* diversity and economy-wide outcomes. Beginning with Easterly and Levine [1997], a body of cross-jurisdiction evidence has suggested that more ethnically diverse societies have lower growth, choose worse policies and are more likely to experience conflict [Alesina and La Ferrara 2005]. Our analysis begins to shed light on whether the positive channels through which diversity operates, as stressed in the management literature (e.g. increased skill complementary of workers in the production function), dominate the negative channels through which diversity might operate, as stressed in the macro literature (e.g. divisions in preferences, free-riding on other groups' contributions, ineffective social sanctions etc.).

Understanding the role of diversity in government bureaucracies is important because, as the state capacity literature has emphasized, the effective functioning of government bureaucracy matters for poverty, inequality, and economic growth [Besley and Persson 2010]. In earlier work, Rasul and Rogger [2014] (henceforth RR), we documented how the management practices bureaucrats operate under correlate to public service delivery. We build on that analysis to examine the relevance of a key feature of Nigerian society: that is it highly ethnically fractionalized.

I. Data and Results

To study the link between public service delivery and ethnic diversity, we merge data

on the outputs of government bureaucracies with a survey to bureaucrats. Both data sources are described in RR and here we just recap the core details.

On outputs, we use project level data for 4700 projects implemented by 63 organizations in the Nigerian civil service, including government ministries and other federal agencies. We exploit data coded from the OPEN initiative in Nigeria, that traced, by project, the use and impact of 10% of *all* federal Government social sector expenditures approved in 2006/7. Monitoring teams visited project sites 18 months after they were approved and recorded whether the project had started, and its stage of completion. Our outcome variable is a *continuous* zero to one measure of project completion rates. Projects are of 11 types, including construction (boreholes, buildings etc.) and non-construction types (procurement, training etc.).

We measure the ethnic diversity of bureaucrats through a survey fielded to a representative sample of 4100 civil servants, corresponding to 13% of all bureaucrats in the 63 organizations we study. Civil servants were asked to name their ethnicity directly. Such self-reports have the advantage of measuring the identity most salient to the individual. However, such direct elicitations do not necessarily conform to a common dictionary. To convert responses to comparable ethnolinguistic groupings, we proceed in two steps. We first utilize Otite [1990]'s comprehensive assessment of Nigeria's ethnic groups, that outlines 374 unique ethnicities. In our data we are able to match bureaucrat responses to 128 ethnic groups from Otite [1990]'s list. Second, to determine how ethnic groups relate to each other, we use Blench [2012] to build an ethnolinguistic tree: Appendix Figure A1 represents the constructed family tree. Each individual's ethnicity can thus be defined at three tiers: 3 families (Niger-Congo, Afro-Asiatic, Nilo-Saharan), 17 sub-families and 51 sub-sub-families.

Table 1 describes how bureaucrats in the Nigerian civil service are distributed across families, sub-families, and sub-sub-families of ethnicities according to this ethnolin-

guistic tree. A substantial fraction of civil servants are from the Niger-Congo family of ethnicities, but are then split across 38 sub-families. Following the ethnic diversity literature, for each tier of ethnicity, we construct a standard measure of ethnolinguistic fractionalization in organization n, ELF_n, (one minus the Herfindahl index of ethnicities). This is interpreted as the probability that two randomly selected bureaucrats have different ethnicities, and so a higher ELF_n measure implies a more diverse organization. We do so for each organization using these three tiers, as well as based on Otite [1990]'s list. As shown at the foot of Table 1, the average fractionalization of organizations is .19 if we use the highest tier of family ethnic groupings, .38 using the sub-family definition, .60 using the sub-sub-family definition, and .65 using Otite [1990]'s most disaggregated list.

Two points are of note. First, these latter two indices are very close in magnitude to Posner [2004]'s ELF measure for Nigeria (.66) that is based only on 'politically relevant' ethnic groups. Second, the Nigerian bureaucracy appears far less diverse than the population, even using the most disaggregated ethnic groupings. For Nigeria as a whole, the ELF is typically measured to be over .80 [Alesina and La Ferrara 2005].

The management literature stresses any beneficial impacts of *workplace* diversity on organizational performance likely operate through enhanced skill complementarity of workers. To probe this idea a little in our data, we examine whether there are significant differences across bureaucrats of different ethnicities, in their self-reported *experiences* on-the-job, *beliefs* about the job, and own *motivation* to originally join the Nigerian civil service.

On experiences, as part of the survey administered to bureaucrats, individuals were asked, 'think about recent projects and/or programmes you worked on for this organization. In what proportion of the projects have you had to face the following difficult challenges?'. Responses were ordered as Never (1), $1 - 25\%$ (2), through to $75 - 100\%$ (5). We then use an OLS model to regress these responses on bureaucrat

Table 1—Ethnicities of Civil Servants

Family		Sub-family		SSF	Otite
Niger-Congo	3,172	West Benue-Congo	2,477	6	26
		Cross River	189	4	10
		Plateau	147	9	19
		Southern Bantoid	139	4	14
		Atlantic	117	1	1
		Adamawa	58	6	10
		Kainji	27	2	8
		Jukunoid	11	2	3
		Kwa	3	1	1
		Mande	2	1	1
		Ijoid	1	1	1
		Mambiloid	1	1	1
Afro-Asiatic	558	Chadic West A	476	4	18
		Biu-Mandara A	64	5	10
		Chadic West B	13	2	3
		Semitic	5	1	1
Nilo-Saharan	43	Saharan	43	1	1
Number	3		17	51	128
ELF	.19		.38	.60	.65
(sd)	(.19)		(.26)	(.29)	(.28)

Notes: The sample of civil servants described here are those who gave their ethnicity during the Civil Servants Survey, and their self-reported ethnicity could be located within the Otite [1990] categorization of ethnicities. This covers approximately 90% of all civil servants interviewed. The ethnolinguistic family structure relies on the coding of Blench [2012]. We construct measures of ethnolinguistic fractionalization in organization n, for each level of aggregation of ethnicities (by family, sub-family, sub-sub-family and based on Otite [1990]'s disaggregated groupings). This measure is one minus the Herfindahl index of ethnicities, and is interpreted as the probability that two randomly selected bureaucrats have different ethnicities. Hence a higher ethnolinguistic fractionalization measure implies a more diverse organization.

characteristics and a set of ethnicity dummies, as defined at the sub-sub-family level. We then test whether the ethnicity dummies are jointly significant, conditional on these other individual characteristics.[2] We just highlight those areas of experience that significantly differ across ethnicities. For example, bureaucratic reports significantly differ by ethnicity relating to whether officials have been under pressure to divert funds (the p-value on the joint F-test of ethnicity dummies is .01), or to change project specification (p-value .07).

Focusing next on bureaucrat beliefs, and again just highlighting a few areas where there are significant differences, we find that bureaucrats significantly differ by ethnicity on their belief that 'officials should work within a team to achieve duties' (p-value .01), or their belief that it is 'sometimes right to go around the strict rules of government' (p-value .05). Finally, we consider a proxy for civil servant's *intrinsic motivation*: we asked bureaucrats which factor had most influenced them to *originally* enter the civil service. We define those that answered, 'the chance to serve Nigeria' as being intrinsically motivated. Around a third of officials give this answer, and we find this original motivation to join the civil

[2]Individual controls include whether the official is male, whether they are a manager, years of schooling, years in the civil service, and years at the organization.

service to differ significantly across ethnicities (p-value .02).

These dimensions provide suggestive evidence on how ethnic diversity might be beneficial for bureaucratic organizations, implying project completion rates might be higher in more ethnically diverse organizations if such bureaucracies bring together civil servants with divergent experiences, beliefs and motivations.

Our empirical specification has as its unit of observation project i of type j in organization n. We estimate the following OLS specification, where y_{ijn} is the project completion rate and ELF_n is the ethnolinguistic fractionalization in the organization,

$$y_{ijn} = \gamma_1 ELF_n + \beta_1 PC_{ijn} + \beta_2 OC_n + \lambda_j + \epsilon_{ijn}.$$

PC_{ijn} and OC_n include project and organizational characteristics respectively.[3] As many organizations implement project type j, we control for project type fixed effects λ_j. Standard errors are clustered by project type-organization. To ease interpretation, ELF_n is normalized into a z-score so that γ_1 is the effect size of diversity on project completion rates.

Table 2 presents our results and shows ethnic diversity in bureaucracies matters: a one standard deviation increase in the ethnolinguistic fractionalization of bureaucrats is associated with around 9% higher project completion rates. To put this in context, we note the average project completion rate is 46%, and 38% of projects have a zero completion rate. Hence in line with evidence from the management literature based largely on private sector organizations operating in high income economies, here we also find the ethnic diversity of pub-

lic sector organizations is positively correlated with their performance.[4]

II. Discussion

We contribute to the literature on the impact of workplace diversity on organizational performance. We do so in a public sector setting, considering organizations in the Federal Civil Service in Nigeria, a society in which ethnicity is the most salient dimension of diversity. Ethnic diversity in bureaucracies is found to be a force for good: more diverse organizations have significantly higher project completion rates.

The literature linking ethnic fragmentation and macroeconomic outcomes has emphasized poor policy choices are a channel through which ethnic fragmentation lowers economic growth [La Porta *et al.* 1999]. In this paper we have taken as *given* the set of projects the Nigerian bureaucracy is tasked to implement. Our focus has been, given this portfolio of projects, does the ethnic diversity of bureaucrats matter for the *implementation* of public projects. Clearly, future work should study the assignment of projects, and also whether the implementation of projects is impacted by the ethnic fractionalization among the communities being served by the project.

Finally, in contrast to diverse societies, in diverse organizations it might be much harder for certain groups to become segregated from others, and it becomes much easier for groups to be exposed to each other and thus potentially offset biases held against members of other groups. Both channels can be expected to improve performance, all else equal [Alesina and Zhuravskaya 2011]. This suggests it is important to more closely study the processes by which bureaucrats are recruited into service, and the use of specific human resource strategies employed by bureaucracies in diverse societies, say related to assignments to teams and jobs, as well as job rotation, for the effective delivery of public services.[5]

---

[3]PC_{ijn} includes project complexity, log project budget and whether the project is a rehabilitation or not. OC_n includes the log number of staff, log total organization budget, log capital budget, the proportions of officials with a college and postgraduate degree. We also control for three dimensions of management practice in organizations considered in RR: the autonomy/flexibility given to bureaucrats in their daily task management; the provision of incentives/monitoring of bureaucrats; all other practices compiled into a third index. We also include 'noise' controls related to the management interview.

[4]On the extensive margin, we find comparable impacts of diversity on whether a project starts. The main results are robust to using a generalized linear model.

[5]On the executive branch of government, Francois *et*

Table 2—Ethnic Diversity and Project Completion Rates

	(1) Family	(2) Sub-family	(3) Ss-family	(4) Otite
ELF [z-score]	0.09**	0.11***	0.09***	0.09***
	(0.04)	(0.03)	(0.03)	(0.02)
Controls	Project and Organizational			
Fixed Effects	Project Type			
Observations (clusters)	4721 (201)			

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% level. Standard errors in parentheses are clustered by project type within organization. Project type fixed effects relate to whether the primary project classification is a financial, training, advocacy, procurement, research, electrification, borehole, dam, building, canal or road project. Project controls include the budget, whether it is new or rehabilitation project, and a measure of its complexity. Organizational controls include the logs of number of employees, total budget, and capital budget, the share of the workforce with degrees, with postgraduate qualifications, and management practice indices related to autonomy, incentives/monitoring and other practices. Noise controls include interviewer dummies, indicators of the seniority, gender, and tenure of the managers who responded, the day of the week and time the interview was conducted, a dummy for whether the interview was conducted during Ramadan, the interview duration, and an indicator of the reliability of the information as coded by interviewers.

REFERENCES

ALESINA.A AND E.LA FERRARA (2005) "Ethnic Diversity and Economic Performance," *Journal of Economic Literature* 43: 762-800.

ALESINA.A AND E.ZHURAVSKAYA (2011) "Segregation and the Quality of Government in a Cross Section of Countries," *American Economic Review* 101: 1872-911.

BESLEY.T AND T.PERSSON (2010) "State Capacity, Conflict and Development," *Econometrica* 78: 1-34.

BLENCH.R (2012) *An Atlas of Nigerian Languages*, 3rd edition, Kay Williamson Educational Foundation: Cambridge, UK.

EASTERLY.W AND R.LEVINE (1997) "Africa's Growth Tragedy: Policies and Ethnic Divisions," *Quarterly Journal of Economics* 112: 1203-50.

EIFERT.B, E.MIGUEL AND D.N.POSNER (2010) "Political Competition and Ethnic Identification in Africa," *American Journal of Political Science* 54: 494-510.

FRANCOIS.P, I.RAINER AND F.TREBBI (2014) "How is Power Shared in Africa?," *Econometrica*, forthcoming.

HJORT.J (2014) "Ethnic Divisions and Production in Firms," *Quarterly Journal of Economics*, forthcoming.

HONG.L AND S.E.PAGE (2001) "Problem Solving by Heterogeneous Agents," *Journal of Economic Theory* 97: 123-63.

LAZEAR.E.P (1999) "Globalisation and the Market for Team-Mates," *Economic Journal* 109: C15-40.

MACCHIAVELLO.R AND A.MORJARIA (2014) "The Value of Relationships: Evidence from a Supply Shock to Kenyan Rose Exports," *American Economic Review*, forthcoming.

OTITE.O (1990) *Ethnic Pluralism and Ethnicity in Nigeria*, Ibadan: Shaneson C.I. Ltd.

POSNER.D.N (2004) "Measuring Ethnic Fractionalization in Africa," *American Journal of Political Science* 48: 849-63.

RASUL.I AND D.ROGGER (2014) Management of Bureaucrats and Public Service Delivery: Evidence from the Nigerian Civil Service, mimeo, UCL.

SHORE.L, B.CHUNG-HERRERA, M.DEAN, K.EHRHART, D.JUNG, A.RANDEL AND G.SINGH (2009) "Diversity in Organizations: Where Are We Now and Where Are We Going?," *Human Resource Management Review* 19: 117-33.

al. [2014] show political cabinet appointments are often made to be inclusive of many ethnicities.

Figure A1: Nigeria's Ethno-linguistic Family Tree [Blench 2012]