Replication Notes *for*

"DOES DECENTRALIZATION IMPROVE PERCEPTIONS OF ACCOUNTABILITY? ATTITUDINAL EVIDENCE FROM IN COLOMBIA"

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This file is intended to supplement the article titled "Does decentralization improve perceptions of accountability? Attitudinal Evidence from Colombia" forthcoming in The American Journal of Political Science.

DATA FOR MULTI-LEVEL MODEL

The article titled "Does decentralization improve perceptions of accountability? Attitudinal Evidence from Colombia" tested the effect of decentralization in Colombia on perceptions of accountability using a multi-level model that nests individual survey responses in department-level decentralization data. Three datasets are provided for replication of the model presented in the article, labeled "Level 1," "Level 2," and "Level 2 Robustness." All datasets are available for download as tab delimited files.

Level 1 Data

The Level 1 dataset includes the individual-level survey responses taken from the Latin American Public Opinion Project (LAPOP) Political Culture of Democracy surveys of Colombia, combined for the years 2004 and 2006. Eight variables are included in the Level 1 dataset: accountability, optimistic/skeptical vs. cynical toward government, subnational political participation, political knowledge, income, age, education, year 2004. The survey instruments used to measure the variable and their respective coding schemes are summarized in Table 1, page 2. See the online Supporting Information for more details.

Level 2 Data

The Level 2 dataset includes variables measuring three types of decentralization: administrative, fiscal, and political. The administrative decentralization variable measures the administrative autonomy of the departments and is labeled "admin" in the dataset. The fiscal decentralization variable is measured by departmental own source revenue and is labeled "revenue" in the dataset. The political decentralization variable is a measure of electoral competition, calculated as margin of victory in governor's races; it is labeled "mov" in the dataset. See the online Supporting Information for a detailed discussion of these measures.

TABLE 1: LEVEL 1 DATA

	Variable Label	Survey Question	Coding
Accountability	account	The average of three responses: "In your opinion, your Departmental government… • consults citizens before making decisions." • makes public its plans and decisions." • shares information openly and in a timely manner."	1 = "never" 2 = "almost never " 3 = "some of the time" 4 = "almost always" 5 = "always"
Optimistic/ skeptical vs. cynical towards government	opt	Evaluation of three responses: • "In your experience, corruption of *public officials*..." • "In your experience, corruption of *municipal officials*..." • "In your experience, corruption of *departmental officials..*" "…is widespread, somewhat widespread, little widespread, not widespread."	0 = "somewhat widespread" or "widespread" for all three 1 = all other combination of responses
Subnational political participation	partc	Additive index of participation in three activities: • "Have you attended a meeting called by the mayor in the last 12 months?" • "Have your participated in some meeting to discuss or plan the budget or the annual plan of your municipality?" • "Have you solicited help or presented a petition to some municipal office, official, or councilman in the last 12 months?"	1 = participated in one of three 2 = participated in two of three 3 = participated in all three
Political knowledge	polknow	Additive index of correct responses to: • "How many departments does Colombia have?" • "How long does the Colombian president's term last?"	0 = no correct answers 1 = one correct answer 2 = two correct answers
Income	inc	Family monthly income, including external remittances and the income of all adults and children that work (reported in pesos)	0 = none 1 = less than $90,000 2 = $91,000 - $180,000 3 = $181,000 - $360,000 4 = $361,000 - $720,000 5 = $721,000 - $1,000,000 6 = $1,000,000.01 - $1,500,000 7 = $1,500,000.01 - $2,000,000 8 = $2,000,000.01 - $3,000,000 9 = $3,000,000.01 - $4,000,000 10 = $4,000,000.01 and greater
Age	age	Respondent age in years	In years
Education	ed	Respondent's years of education	In years
Year 2004	yr_2004	Dummy variable for the year 2004	0 = year 2006 1 = year 2004

Note: Source for all Level 1 variables is the AmericasBarometer by the Latin American Public Opinion Project (LAPOP), Political Culture of Democracy: Colombia, 2004 & 2006 surveys.

Administrative Decentralization

The data for administrative decentralization were taken from a 2007 survey of departmental officials provided by Departamento Administrativo Nacional de Estadística (National Administrative Department of Statistics) of Colombia. The measure is an average of five components, ranked for each department on a 1 – 5 scale where 1 = very low, 2 = low, 3 = medium, 4 = high, and 5 = very high. The five components included in the administrative autonomy rating average are:

1.) *Credibility in Rules* - The level of application of legal procedures in the administration of establishment personnel, of meritocratic criteria for the contracting of goods and services and linkage of contract employees to the territorial entity.

2.) *Resource Credibility* - Sufficiency and ownership of human, physical and budgetary resources in the territorial entity.

3.) *Management for Results* – Implementation of management tools to achieve departmental government objectives and goals.

4.) *Management of Public Territories* – Obstacles that exist in the management of the departmental public territory.

5.) *Labor Welfare* – Well-being (or satisfaction) of the bureaucrat with regards to the recognition of her work in the departmental government and work incentives that the department offers.

Administrative Decentralization – Robustness Measures

In addition to the measure of administrative decentralization provided in the Level 2 dataset, the dataset labeled "Level 2 Robustness" includes five variables that report the average of administrative autonomy systematically excluding each of the five components. This dataset was used to analyze the sensitivity of the measure of administrative autonomy since it is an average of multiple components. The robustness analysis is discussed in the online Supporting Information and reported in Table SI.7. The variables in the Level 2 Robustness dataset include:

- *worules*: administrative autonomy rating without Credibility in Rules
- *wores*: administrative autonomy rating without Resource Credibility
- *womgmt*: administrative autonomy rating without Management for Results
- *wopub*: administrative autonomy rating without Management of Public Territories
- *wolab*: administrative autonomy rating average without Labor Welfare

Fiscal Decentralization

The second decentralization variable, fiscal decentralization, is measured as departmental government own source revenue, calculated by subtracting transfers and royalties provided by the national government from total departmental income and then dividing this number by total department income. The final measure is the average of these percentages for the 2002 to 2006 period.

The fiscal decentralization variable is labeled "revenue" in the Level 2 dataset. Information for this measure was obtained from departmental finance records downloaded from the Departamento Nacional de Planeación (The National Planning Department) of Colombia, Ejecuciones Presupuestales de los Departamentos 2000-2010 (Nuevo) from: https://www.dnp.gov.co/Programas/DesarrolloTerritorial/FinanzasP%C3%BAblicasTerritoriales/EjecucionesPresupuestales.aspx

Political Decentralization

Political decentralization is measured as the margin of victory in governor's races, averaged for the years 1997, 2000, and 2003. Margin of victory is calculated as the difference between the winning party's vote share and second place party's vote share. Data for this measure was collected from departmental voting records obtained by Consejo Nacional Electoral (The National Electoral Organization) of Colombia, available at the CNE website (http://www.cne.gov.co/CNE/) . In the Level 2 dataset, this variable is labeled "mov".

Department Identification Data

All of the datasets provided contain a variable identifying the department corresponding to each case, labeled "deptid." There are 32 Colombian departments, but only 24 are included in the datasets due to the limitations of the data taken from the LAPOP Political Culture of Democracy surveys. The departments included in the datasets and their identification codes are listed in Table 2, shown below.

TABLE 2: DEPARTMENT GOVERNMENT IDENTIFICATION CODES

Department	Code	Department	Code
Antioquia	5	Meta	50
Atlántico	8	Nariño	52
Bolívar	13	Norte de Santander	54
Boyaca	15	Casanare	85
Caldas	17	Putumayo	86
Caquetá	18	Quindio	63
Cauca	19	Risaralda	66
Cesar	20	Santander	68
Córdoba	23	Sucre	70
Cundinamarca	25	Tolima	73
Huila	41	Valle	76
Magdalena	47	Vaupés	97

Note: Departmental codes adopted from the AmericasBarometer by the Latin American Public Opinion Project (LAPOP), Political Culture of Democracy: Colombia, 2004 and 2006 surveys.

DATA ANALYSIS METHOD

A multi-level model was estimated in the article because it was expected that individual perceptions of accountability are influenced by departmental decentralization. Hence, the model nested individual-level observations (Level 1 data of LAPOP Political Culture of Democracy survey responses) in groups of information for the Colombian departments (Level 2 data of decentralization – administrative, fiscal, and political). Because the authors expected that decentralization shifts the baseline assessment of government accountability with more administratively, fiscally, or politically decentralized departments having higher baselines of accountability, a random intercept model (restricted maximum likelihood) was estimated. There were no strong theoretical reasons to support using a varying slopes model as none of the three forms of decentralization were expected to change the way in which the individual-level factors (subnational participation, optimism v. cynicism, and political information) affect perceptions of accountability. Additionally, the model was estimated separately for each Level 2 variable – administrative decentralization, fiscal decentralization, and political decentralization. This conservative approach was chosen because of the small number of Level 2 units; recall that using the LAPOP surveys reduced the number of departments from 32 to 24 – all of which are listed above in Table 2.

HLM6

The statistical software HLM6 was used to estimate the model for each Level 2 variable separately. The results of these models are reported in Table 1 of the article. Additional information, including the number of observations by department, is provided in the online Supporting Information.

MDM File

HLM6 requires the creation of a Multivariate Data Matrix (MDM) file when estimating a hierarchical linear model. In creating this file, the following options were chosen:

- *Nesting of input data*: persons within groups
- *Level-1 Specification*: assign "deptid" as ID/select remaining variables to include in MDM
- *Missing Data?*: Yes / *Delete missing data when*: running analyses
- *Level-2 Specification*: assign "deptid" as ID/select remaining variables to include in MDM

The resultant MDM file contained eight Level 1 variables, ranging from 2009 – 2508 observations. Missing observations are deleted when running the analysis. The three Level 2 variables – administrative, fiscal, and political decentralization – included 24 observations each. See the online Supporting Information for descriptive statistics of these variables; however, note that the Level 1 variable statistics are reported post-estimation and may vary somewhat from the descriptives produced by the MDM file.

Model Specifications

In estimating each multi-level model in HLM6, the Level 1 variables optimistic/skeptical vs. cynical about government and the year 2004 were not centered; all other Level 1 variables, including subnational political participation, political knowledge, income, age, and education were centered around their grand means. The Level 2 variables were not centered. Table 3 summarizes these models.

TABLE 3: MULTI-LEVEL MODELS ESTIMATED IN HLM6

Level-1 Model

Accountability = β_0 + β_1(optimistic) + β_2(***subnational participation***) + β_3(***political knowledge***) + β_4(***income***) + β_5(***age***) + β_6(***education***) + β_7(year 2004) + r

Level-2 Model

Administrative Decentralization: $\beta_0 = \gamma_{00} + \gamma_{01}$(administrative rating) + μ_0

Fiscal Decentralization: $\beta_0 = \gamma_{00} + \gamma_{01}$(own source revenue) + μ_0

Political Decentralization: $\beta_0 = \gamma_{00} + \gamma_{01}$(margin of victory) + μ_0

Notes: Bold italic denotes grand mean centering. For the analyses in the article, the Level 1 model was paired with each Level 2 model.

In setting up the estimation of the model, the dependent variable, accountability, was assigned as "Normal (Continuous)" under outcome options. This is reasonable given that it includes a total of thirteen categories as a result of averaging three survey responses. Beyond the variable centering, no other adjustments were made to the model.

Final Estimation

The estimation of the model reduced the number of Level 1 observations to 1748. The final estimations of fixed effects (with robust standard errors) were used in the article, reported in Table 1. The coefficients, standard errors, and p-values were reported as well as the variance components and their accompanying standard deviations.

Robustness Analysis

Additionally, the robustness analysis of administrative autonomy is discussed in the online Supporting Information and reported in Table SI.7. This analysis was estimated using the same set-up as the primary analysis detailed above. The only change is to the Level 2 variable using data from the "Level 2 Robustness" file. For the robustness check, the model was estimated using the average of the administrative autonomy systematically excluding one component. Therefore, a total of five models were produced where the Level 2 effects are estimated using the administrative autonomy rating average *without* 1.) Credibility in Rules, 2.) Resource Credibility, 3.) Management for Results, 4.) Management of Public Territories, and 5.) Labor Welfare. The results of these models are presented in the online Supporting Information, Table SI.7.

ADDITIONAL INFORMATION

For additional information about the data, variables, and analyses contained in the article, "Does decentralization improve perceptions of accountability? Attitudinal Evidence from Colombia," please see the online Supporting Information. This supplementary file discusses in detail the measurement of accountability and decentralization. Additionally, it specifies the individual-level factors related to accountability and presents a series of robustness analyses. The Supporting Information also includes the following tables:

- Table SI.1: *Descriptive Statistics*
- Table SI.2: *Decentralization Measures Across the 32 Colombian Departments*
- Table SI.3: *Administrative Autonomy Disaggregated into Five Components by Department*
- Table SI.4: *Number of Observations by Department Included in Regression Analysis*
- Table SI.5: *Predictors of Departmental Accountability Estimated with all Level 2 Variables in a Single Model*
- Table SI.6: *Regression Results with Accountability Disaggregated into Three Components*
- Table SI.7: *The Effect of the Five Components of Administrative Decentralization on Accountability*

For any questions or concerns about the article's data or analyses that are not addressed by these notes or the online Supporting Information, please contact the lead author, Maria Escobar-Lemmon, Texas A&M University, at: escobar@polisci.tamu.edu.

REFERENCES

The AmericasBarometer by the Latin American Public Opinion Project (LAPOP), www.LapopSurveys.org.
Political Culture of Democracy: Colombia, 2004 and 2006 surveys.