Does urbanization mean bigger governments?☆

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Abstract

This paper introduces urbanization as an important driver of government size. Using panel data of 175 countries from 1960-2010, urbanization is closely linked to a larger public sector, especially related to education, health care, and social issues. Various robustness checks confirm this finding. Analyzing state-level public spending in Colombia and Germany confirms our hypothesis on the subnational level. On the microeconomic level, people in urban areas acknowledge more responsibility of governments and are more in favor of redistribution. This finding can help explain the evolution of government size, but also predict present and future needs of urbanizing areas.

Keywords: Government Size, Population Concentration, Urbanization

JEL codes: H10, H50, H75, R50

"What I like about cities is that everything is king size, the beauty and the ugliness."
Joseph Brodsky (1940 – 1996), Russian poet and essayist.

☆We thank Susana Berrio Montoya for valuable research assistance. We are also grateful to seminar participants at the University of Padova, Binghamton University, the Colombian Central Bank (Banco de la República, Medellín), Universidad EAFIT, and Florida International University for their valuable comments and suggestions. All remaining errors are our own.

1. Introduction

The world population has more than doubled since 1960 with increasingly more people living in urban areas. Today, one out of two people lives in cities, compared to 37 percent in 1975, and urbanization is predicted to continue (see the World Urbanization Prospects by the United Nations and Dugger, 2007). At the same time, government spending of the average country has been rising consistently, from 11.7 percent of GDP in 1960 to 16.5 percent in 2009.[1] The following pages argue for an intimate connection between urbanization and the shape of the public sector, independent of the influence from potentially confounding factors and endogeneity concerns.

Understanding a potential link between urbanization and government spending can prove useful for several reasons, beyond the obvious implications for the public economics literature. First, the needs of newly urbanizing areas could be anticipated better, facilitating the implementation of appropriate policies. Second, government spending has been shown to carry consequences for economic growth (e.g., see Barro, 2001, Bergh and Henrekson, 2011, Jetter et al., 2013, or Jetter, 2014). Thus, understanding how the public sector is shaped allows us to mitigate potentially detrimental growth consequences.

This paper documents that urbanization systematically relates to increased public expenditure. We show this in three distinct settings. First, we analyze panel data of 175 countries from 1960 to 2010 and find an increase in the urban population (migration from rural areas) by 10 percent to be associated with an increase in government spending by 3.2 percent on average. These findings emerge for employing five year averages, which provides our benchmark regression structure, as well as annual data or ten year averages. Further, these results are derived when including two-way fixed effects and the conventional control variables. Although strict causality remains notoriously difficult to

[1]Numbers are derived from a balanced data set on national government spending (World Bank).

isolate in cross-country settings, our results do not seem to be driven by Wagner's Law or other, potentially confounding determinants of government size. In fact, a three-stage-least-squares framework, simultaneously estimating government size and income levels, confirms our hypothesis.

Further insights reveal an interesting heterogeneity across regions. A positive urbanization-government spending link emerges in all regional estimations with the exception of Latin America. Here, we observe urbanization to be associated with *smaller* governments. Although speculative at this point, one potential explanation relates to the fact that the informal sector tends to be large in Latin America (see Schneider et al., 2011) and a number of tasks related to the provision of traditional public goods may be carried out by informal or private organizations, absent from official statistics. For instance, security concerns are usually addressed by the government (i.e., police forces), but in South American cities private or informal companies many times provide such services.[2]

Regarding potential channels of the general urbanization-government size link, public spending on education (elasticity of 0.5) and health care ($0.3 - 0.4$) rises with urbanization, but not the military budget. Using more detailed data from the OECD, we confirm that public spending on health care rises considerably with increased urbanization. Further, urbanization in the OECD is associated with a marked increase in social expenditure by the government with an estimated elasticity of 1.4.

Second, we gather data from two sub-national environments to study public spending in a more homogeneous environment. Specifically, we analyze data on the regional level from an emerging economy (Colombia) and an established European nation (Germany).

[2]As another example, public spending on education in Latin America is substantially lower than in the rest of the world: On average, only 3.9 percent of GDP are spent on education, as opposed to 4.6 percent in Africa and 4.3 percent in other non-OECD nations. The same is true for public spending on the military and health care, where the average Latin American country spends 1.8 and 3.6 percent of its GDP, respectively. The associated shares for the rest of the world are 2.8 and 3.7 percent.

These state-level studies reveal the same relationship, as urbanization is consistently related to increased public spending on sub-national levels.

Third and final, we test our hypothesis using individual level data, going beyond macroeconomic aggregates. Using data from over 39,000 individuals in 40 countries (World Values Survey database, wave 6), we analyze responses to two questions: (*i*) whether one sees government as responsible to provide for everyone and (*ii*) whether it is desirable to tax the rich and subsidize the poor. The size of one's town emerges as a robust positive predictor of people's attitudes towards the involvement of government, even after controlling for a variety of personal characteristics (demographics, income and education levels, country fixed effects). Although it is difficult to isolate strict causality from our analysis, the combined results from both macroeconomic and microeconomic data suggest increasing urbanization to be systematically associated with bigger governments.

The paper proceeds with a review of the corresponding literature, along with our intuition of why urbanization may be closely related to government spending. Section 3 describes our cross-country macroeconomic analysis and section 4 focuses on regional spending within Colombia and Germany. Section 5 is dedicated to evidence from individual level data and section 6 concludes.

2. Background

Although a sizable literature has focused on the determinants of government size, urbanization has not been explicitly proposed as a potential driver to our knowledge. In fact, Shelton (2007) provides a comprehensive overview of government size determinants, yet the word "urban" is not mentioned once. Alesina and Wacziarg (1998) are perhaps closest in spirit, demonstrating how bigger overall populations may enjoy *lower* government consumption per capita. With consumption of pure public goods being non-rival, per capita costs decrease when spread out over more people.

2.1. Urbanization and Government Spending

In reality, of course, we observe vast differences between urban and rural settings and lifestyles. Being surrounded by more people in a densely populated area, the opportunity for interaction increases, in professional as well as in private settings. Thus, the average urban citizen interacts with more people, yet faces more anonymity. In fact, somebody living in an urban apartment building may cross paths with her in-house neighbors every day without ever knowing their names. Daily interactions are bound to be more formal, as opposed to the traditional small town that is oftentimes characterized by "everybody knows everybody."

In practice, urban-rural differences in transportation (e.g., metros and airports), environmental issues, or health care concerns (diseases can spread quickly in cities) have been well documented.[3] Further, the degree and awareness of income and education differences are substantially raised in cities, where the poorest and the richest intersect more frequently. Behrens and Robert-Nicoud (2014) provide a comprehensive discussion about higher inequality in cities. For example, Manhattan exhibits a Gini coefficient of 0.6 (Glaeser et al., 2009) – only 5 countries in the world are marked by a higher Gini, according to the World Bank.

Urban-rural differences in preferences consistently manifest themselves in elections and we wish to briefly mention two examples from the US and Germany. In 2012, 49 of the 50 most dense US counties voted Obama, but 49 of the 50 least dense counties voted Romney (see Florida and Johnson, 2012). As Democrats generally favor stronger government involvement in various issues, such as health care, education, redistribution, or environmental aspects, there seems to be a strong urban-rural divide in political pref-

[3] Henderson (2005) notes that cities require enormous public infrastructure investments in terms of health, safety, transportation, and environmental issues. Poumanyvong and Kaneko (2010) discuss pollution in cities.

erences. Germany exhibits a similar pattern. As of 2012, nine of the ten biggest cities are governed by mayors associated with the center-left Social Democratic Party or the Green Party, both known to favor extended government involvement in numerous topics. The national government, on the other hand, is led by a coalition of the conservative Christian Democratic Party and the Free Democratic Party (both traditionally marked by free-market ideas).

2.2. Previous Findings and Obstacles

Although neglected in its own right, urbanization has been incorporated as a control variable in several studies that predict government spending. For instance, Rodrik (1998) analyzes the link between trade openness and government size, incidentally producing a *negative* correlation between urbanization and government size – the opposite of our hypothesis. On the other hand, Alesina and Wacziarg (1998) find a positive and statistically meaningful relationship. However, these analyses suffer from two persistent problems common to macroeconomic studies.

First, data limitation at the time usually allowed for pure cross-country regressions only, thereby not permitting to control for unobservable country-specific heterogeneity. Since then, the importance of using panel data and incorporating country fixed effects has been highlighted in a variety of macroeconomic relationships.[4]

Second, a persistent problem inherent to cross-country analyses relates to endogeneity concerns. In particular, income levels have been highlighted as the strongest predictor of government size – a hypothesis that has become known as Wagner's Law (Peacock and Scott, 2000; Afonso and Furceri, 2010). Similarly, urbanization and income levels have been linked (Bairoch, 1991; Bertinelli and Black, 2004) and some historical analyses even

[4]For instance, the link between trade openness and government size (Ram, 2009), growth determinants (Islam, 1995; Rodrik and Wacziarg, 2005), and the determinants of democracy (Acemoglu et al., 2008) vary significantly when unobservable heterogeneity across countries is controlled for.

use urbanization rates as a proxy for income levels (Nunn and Qian, 2011; Voigtländer and Voth, 2013). Thus, results from conventional regression analyses regressing government size on urbanization may well be subject to endogeneity concerns. Our study provides several robustness checks to alleviate such concerns.

3. Country-Level Analysis

Our baseline sample analyzes government spending on the country level, averaging all variables over five year periods for 175 countries from 1960 to 2010. Overall, this provides us with ten periods: 1960-1964, 1965-1969, and so on. (Note that the last period consists of six years from 2005-2010.) Recent studies of determinants of government spending have focused on averaging macroeconomic variables over five or ten years, as the public sector may at times be slower to adjust its spending (e.g., see Shelton, 2007, Ram, 2009, or Jetter and Parmeter, 2015). In addition, averaging over five years can minimize potential problems related to measurement error, business cycles, and exogenous shocks. Throughout the rest of the paper, five year averages will then be used as the benchmark, although our findings are consistent when focusing on annual data or ten year averages. The corresponding results are available in the online appendix.

We first describe our methodology and the data used, before discussing empirical findings. We then move to several robustness checks, explicitly targeting endogeneity concerns. Finally, we consider regional differences and turn to potential channels, analyzing public spending on education, health care, the military, and social issues.

3.1. Methodology for Cross-Country Estimations

Our baseline strategy uses a conventional regression approach, estimating total government consumption of country i in period t by

$$Ln(Gov't\ spending)_{it} = \alpha_0 + \alpha_1 Ln(Urban\ pop)_{it} + \alpha_2 \boldsymbol{X}_{it} + \gamma_i + \lambda_t + \epsilon_{it}, \qquad (1)$$

where $Ln(Gov't\ spending)$ and $Ln(Urban\ pop)$ stand for total government consumption in 2000 US$ and total urban population. $\boldsymbol{X}_{it}$ incorporates the conventional control variables produced by the corresponding literature, including population size, income levels, the share of trade in GDP, life expectancy, the share of the population over 65 years of age and under 15, and the Polity IV index measuring the degree of democratization. Shelton (2007) provides an excellent intuition on why these variables may influence government size.

Notice that including total population size is important to isolate the effect from a pure urbanization process, where rural citizens move to the city. γ_i and λ_t capture country and time specific heterogeneity. These unobserved effects are particularly important, given vast differences in terms of culture, history, geography, and other unique national aspects of every individual country around the world. We follow the corresponding literature in applying the natural logarithm to all variables, except the Polity IV index. In addition, using the natural logarithm facilitates direct interpretation of the estimated coefficients as elasticities.

3.2. International Data

All variables employed in the cross-country analysis come from traditional sources of macroeconomic data, in particular the World Bank Development Indicators, the Polity IV index, the Penn World Tables (version 8.0), and the OECD database. Summary statistics with their respective sources and calculations are referred to the online appendix. As the main dependent variable, we use the benchmark indicator for government spending, namely final general government consumption expenditure (in constant 2000 US$). One common caveat of this variable relates to the fact that regional and local government spending is not included, which could introduce measurement error. However, there are several ways to address this issue.

First, most of our above described effects should go through the national arm of public spending as opposed to a regional district, such as infrastructure concerns, the extent of universal health care or redistributional policies. Second, the distinction between regional and national government spending should matter mostly in rich and populous countries (of which there are few), since smaller and poorer countries cannot allow for several layers of public administration, simply owed to their size and the required setup costs for public institutions. Third, only 17 countries in our sample are federal republics – a state form that allows for stronger decentralization of government decisions. Our results are robust to excluding all federal republics, but also to analyzing federal republics only. Fourth, if we expect that local government structures prevail over time within a country, the inclusion of country fixed effects would alleviate our concerns about measuring public spending on the national level only. Fifth and final, we also provide evidence from analyzing public spending on the regional level within two sizeable nations over time (Colombia and Germany).

Regarding our main independent variable, the World Bank measures the urban population as the number of people living in urban areas, as defined by national statistical offices.[5] We use total urban population as opposed to the urbanization rate, given that the urbanization rate is missing for many countries in the database, even though urban population is not. Further, the use of the absolute measure or the relative measure will provide exactly the same coefficient estimate in a linear model.

As extensions to our baseline estimates, we also consider specific components of government size in the light of urbanization. Specifically, we use public spending on education, health care, and the military to see whether our suggested effect from urbanization can

[5]Although there could be differences across countries and time in the interpretation of an urban area, fixed effects should be able to control for this variation. Also see page 287 in Henderson and Wang (2007) for a discussion on urbanization thresholds.

also be found across different sections of government spending. Finally, we access the OECD database for detailed information of public spending on health care and social issues.

3.3. Main Empirical Findings from Cross Country Analyses

Table 1 displays our main regression results, where control variables are added subsequently. The coefficient on the urban population is statistically significant on the one percent level across all specifications. Notice that as soon as two-way fixed effects are incorporated the coefficient drops markedly to a magnitude of 0.27. This indicates that unobservable country- and time-specific characteristics can be important in driving both government size and urbanization simultaneously. In the most complete estimation, a 10 percent increase in the urban population size is associated with a 3.3 percent increase of government spending.

Further insights from Table 1 confirm that richer citizens demand more services from their governments. However, this merely confirms that public goods are normal goods, as we are using the total value of government spending. Openness to trade is suggested to reduce government spending, which is interesting, given the literature surrounding Rodrik (1998), who uses cross-country data, and Ram (2009), who uses panel data. Our sample contains more countries, more control variables, and a longer time frame. In this context, Jetter and Parmeter (2015) show that the link between trade openness and government size can change across different data sets, timeframes, or sample countries. Finally, a larger share of the elderly population is suggested to increase government spending and the same holds true for the fraction of people under 15, consistent with findings from Shelton (2007). In the remainder of the paper, we will focus on the coefficient associated with the urban population, not displaying the respective coefficients of control variables. However, all respective results are generally in line with the conclusions derived in Table

Table 1: Main regression results, estimating the natural logarithm of total government spending. All variables constitute five year averages.

Dependent variable: Ln(Government size)						
	(1)	(2)	(3)	(4)	(5)	(6)
Ln(Urban pop)	0.996***	1.005***	0.993***	0.278***	0.233***	0.330***
	(0.023)	(0.032)	(0.024)	(0.045)	(0.089)	(0.089)
Ln(Pop size)					-0.337**	-0.392***
					(0.151)	(0.149)
Ln(GDP)					0.840***	0.797***
					(0.047)	(0.053)
Ln(Trade openness)					-0.102**	-0.064
					(0.042)	(0.043)
Ln(Life expectancy)					-0.135	-0.186
					(0.218)	(0.221)
Ln(% of people over 65)						0.349***
						(0.102)
Ln(% of people under 15)						0.242*
						(0.143)
Polity IV						0.003
						(0.003)
Country fixed effects		yes		yes	yes	yes
Time fixed effects			yes	yes	yes	yes
N	1,053	1,053	1,053	1,053	1,036	943
# of countries	175	175	175	175	174	152
# of 5-year periods	10	10	10	10	10	10
R^2	0.635	0.980	0.637	0.988	0.993	0.993

Notes: Robust standard errors are displayed in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

1.

3.4. Robustness Checks

Table 2 presents results from several robustness checks. Column (1) replicates our baseline model using only countries for which information on government spending and the urban population is available from 1960 until 2010. This estimation is intended to check whether countries with less data availability are driving our results. This check also relates to possible measurement errors, as most countries with complete information from 1960 to 2010 are the countries where data reliability is potentially better and more consistent. The derived coefficient related to urbanization retains its statistical power with its magnitude even increasing by approximately 32 percent to 0.435.

Columns (2) through (7) incorporate additional control variables that could potentially confound the role of urbanization. (These variables are absent from the baseline estimations because of limited data availability.) Specifically, we consider whether the role of natural resources and employment shares across sectors are confounding the suggested link between urbanization and the size of the public sector.[6] To better investigate the role of income inequality, we access data provided by UNU-WIDER (2015) and Solt (2016), allowing us to identify potential effects from the Gini coefficient, both before and after redistributional policies are taken into account. Here again, the coefficient associated with urbanization remains a meaningful predictor of government size, both in terms of statistical and economic relevance. Notice that including employment shares and the Gini index at the same time in column (7) further reduces the number of observations to only 46 percent of our original sample (434 of 943 observations). Nevertheless, urbanization remains powerful, both in terms of statistical and economic relevance.

[6]We thank an anonymous referee for pointing this out. For example, see Michaels et al. (2012) and Gollin et al. (2015) for the connection between the roles of sector shares and natural resources in explaining urbanization.

Table 2: Extensions, estimating the natural logarithm of total government spending. All variables constitute five year averages.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ln(Urban pop)	0.435***	0.482***	0.218**	0.325***	0.438***	0.421***	0.194**	0.257***	0.336***	0.254***
	(0.075)	(0.100)	(0.104)	(0.115)	(0.137)	(0.137)	(0.096)	(0.076)	(0.114)	(0.097)
Natural resource rents (% of GDP)		0.002								
		(0.002)								
% employment in agriculture			0.003				0.002			
			(0.006)				(0.006)			
% employment in industry			-0.006				-0.006			
			(0.006)				(0.005)			
% employment in services			0.005				0.006			
			(0.005)				(0.005)			
Gini index (WIID)				0.001			0.003			
				(0.001)			(0.003)			
Gini (post-tax & post-transfer)					-0.005*					
					(0.003)					
Gini (pre-tax & pre transfer)						-0.003				
						(0.002)				
Control variables[a]	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Country & time fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
N	516	814	494	693	700	700	434	909	501	457
# of countries	55	151	128	135	143	143	116	151	153	149
# of 5-year periods	10	8	6	10	10	10	6	10	5	5
R^2	0.994	0.994	0.997	0.995	0.996	0.996	0.998	0.994	0.995	0.996

Notes: Robust standard errors are displayed in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Column (1): using a balanced sample for government size and urbanization from 1960 to 2010. Column (8): five year average of government size only (t until $t + 4$), control variables are taken at time t. Column (9): 10-year averages of all variables. Column (10): 10-year average of government size only (t until $t + 9$), control variables are taken at time t. [a]Includes Ln(Pop size), Ln(GDP), Ln(Trade openness), Ln(Life expectancy), Ln(% people over 65), Ln(% people under 15), and the Polity IV index.

Finally, columns (8) through (10) display several estimations aimed at containing potential endogeneity problems. Column (8) uses five year averages of the dependent variable (year t until $t + 4$), but initial values (at time t) for all explanatory variables. This approach attempts to eliminate a potential reverse causality problem: Government size itself could affect some of its determining factors, such as urbanization or income. If governments provide more services, especially in cities, moving to an urban area might become more attractive for the rural population. Even though specification (8) in Table 2 does not completely resolve the reverse causality problem, it provides a useful robustness check as future values of government size are less likely to affect urbanization today. Columns (9) and (10) consider ten year averages, first for all variables (Ram, 2009, also employs ten year averages) and then only for government size. These specifications allow us to further control for measurement error and short-run fluctuations (similar to averaging over five years), but also for the reverse causality problem mentioned above.

The estimations displayed in columns (8) through (10) confirm the positive and statistically meaningful relationship between urbanization and government spending. In terms of magnitude, specifications (8) through (10) produce coefficient estimates in the range of 0.26 – 0.34, closely in line with our initial results from Table 1. The following section will tackle the potential endogeneity problem of income levels, which remains inherent to estimations of public spending.

3.5. The Endogeneity of Income Levels

In general, macroeconomic aggregates are rarely free of endogeneity claims. In the present setting, the role of income levels is particularly relevant. Urbanization has long been associated with higher incomes (Bairoch, 1991; Bertinelli and Black, 2004) and richer countries may enjoy bigger governments, as suggested by Wagner's Law (Afonso and Furceri, 2010; Peacock and Scott, 2000). Thus, in our main specification income

levels may constitute an omitted variable (columns 1 through 4 of Table 1) or an outcome variable in itself and therefore introduce a "bad control" (columns 5 and 6 of Table 1; see Angrist and Pischke, 2008).

One solution towards addressing the potentially underlying endogeneity of income levels is to construct a system estimating government size and income levels simultaneously. While constructing valid instruments remains a notoriously difficult task (Bazzi and Clemens, 2013), we follow the generic solution and use lagged values of the dependent variables as our main instruments.[7] Specifically, we re-estimate equation 1 as

$$Ln(Gov't\ spending)_{it} = \beta_0 + \beta_1 Ln(Gov't\ spending)_{i,t-1} + \beta_2 Ln(Urban\ pop)_{it} + \beta_3 \boldsymbol{X}_{it} + \gamma_i + \lambda_t + \varepsilon_{it}, \quad (2)$$

adding the lagged five year averaged value of government spending (time $t-5$ to $t-1$), associated with β_2. In a system of two equations, we then simultaneously estimate income levels as

$$Ln(GDP)_{it} = \delta_0 + \delta_1 Ln(GDP)_{i,t-1} + \delta_2 Ln(Gov't\ spending)_{it} + \delta_3 \boldsymbol{Z}_{it} + \gamma_i + \lambda_t + \xi_{it}, \quad (3)$$

where Z_{it} includes the determinants of income levels proposed by Levine and Renelt (1992) and Mirestean and Tsangarides (2009). Specifically, this set of control variables incorporates trade openness, life expectancy, the Polity IV index, the population growth rate, the inflation rate, and the capital stock.

Both equations are identified by unique covariates in this system. In equation 2, the lagged value of government spending and the shares of population over the age of 65 and under the age of 15 form part of the control variables, but do not enter equation 3. Estimating income levels, the lagged value of GDP, the population growth rate, the inflation rate, and the capital stock constitute those explanatory variables that do not form part of

[7] Following the literature surrounding Acemoglu et al. (2001) and to be consistent with our baseline estimations, we choose income levels, as opposed to growth rates.

equation 2. Finally, as omitted variables could affect both equations, the respective error terms may be correlated. Therefore, we incorporate the seemingly unrelated regression equations model (SUR) to extend the 2SLS to a 3SLS approach. Specifically, this 3SLS system endogenizes the role of income levels in determining government spending. If the exclusive variables applied in equation 2 and 3 are valid, then β_2 is able to isolate the relationship between urbanization and government spending, filtering out the link between income levels and urbanization.

Table 3 displays the corresponding results, where we subsequently add control variables. The estimates from the system support our earlier findings. A larger urban population is associated with bigger governments, a result that is statistically significant at the five percent level throughout all 3SLS estimations. The dynamic framework of this 3SLS system allows us to estimate the long run relationship between urbanization and government spending. Using the final regression as a benchmark, the suggested elasticity from using annual observations reaches a value of 0.31 (calculated as $\frac{\beta_{URBAN}}{1-\beta_{GOVT}}$, following Bewley, 1979), a value that is once again remarkably similar to our benchmark results from Table 1 (0.33).

3.6. Differences Across Regions

Following the cross country growth literature (e.g. Masanjala and Papageorgiou, 2008), we also explore parameter heterogeneity on the regional level. Table 4 presents regional estimates for our model. We focus on differences across what might mostly be considered emerging regions – Africa, Asia, and Latin America (LAC) – as well as differences between OECD and non-OECD nations. The corresponding results confirm to the baseline predictions with the exception of Asia and Latin America.

Concerning the results for Asia, averaging over five years produces a coefficient that is not statistically significant on conventional levels. However, a closer look reveals that

Table 3: Results from estimating government size and income levels simultaneously in a 3SLS framework. All variables constitute five year averages.

	(1)	(2)	(3)	(4)
Dependent variable: Ln(Government size)				
Ln(Urban pop)	0.113**	0.117**	0.152***	0.146***
	(0.047)	(0.047)	(0.052)	(0.048)
Ln(Gov't size)$_{t-1}$	0.559***	0.566***	0.571***	0.529***
	(0.020)	(0.021)	(0.023)	(0.023)
Ln(Pop size) & Ln(GDP)	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes
Time fixed effects		yes	yes	yes
Control variables[a]			yes	yes
F-test joint insignificance of IVs	217.82***	211.30***	39.76***	60.67***
Dependent variable: Ln(GDP)				
Ln(Urban pop)	0.209***	0.255***	0.223***	0.074**
	(0.048)	(0.043)	(0.041)	(0.037)
Ln(GDP)$_{t-1}$	1.006***	0.862***	0.768***	0.543***
	(0.040)	(0.034)	(0.032)	(0.031)
Ln(Pop size) & Ln(Gov't size)	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes
Time fixed effects		yes	yes	yes
Control variables[b]				yes
F-test joint insignificance of IVs	347.78***	317.65***	281.80***	156.52***
N	868	868	802	766
# of countries	141	141	130	125
# of 5-year periods	9	9	9	9

Notes: Robust standard errors are displayed in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. [a]Includes Ln(Trade openness), Ln(Life expectancy), Ln(% people over 65), Ln(% people under 15), and the Polity IV index. [b]Includes Ln(Trade openness), Ln(Life expectancy), the Polity IV index, the population growth rate, the inflation rate, and Ln(Capital stock).

Table 4: Regression results by regions, estimating the natural logarithm of total government spending. All variables constitute five year averages.

Dependent variable: Ln(Government size)					
	(1) Africa	(2) Asia	(3) LAC	(4) OECD	(5) Non-OECD
Ln(Urban pop)	0.482***	0.301	-1.504***	0.574**	0.311***
	(0.100)	(0.218)	(0.370)	(0.253)	(0.096)
Control variables[a]	yes	yes	yes	yes	yes
Country & time fixed effects	yes	yes	yes	yes	yes
N	298	180	132	211	732
# of countries	50	35	16	22	130
# of 5-year periods	10	10	10	10	10
R^2	0.979	0.995	0.989	0.994	0.988

Notes: Robust standard errors are displayed in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
[a]Includes Ln(Pop size), Ln(GDP), Ln(Trade openness), Ln(Life expectancy), Ln(% people over 65), Ln(% people under 15), and the Polity IV index.

the magnitude of the coefficient actually remains comparable to our benchmark result (0.3 versus 0.33). However, standard errors more than double, thus lowering statistical precision. In fact, the average Asian country only produces about five observations (180 observations of 35 countries). Naturally, incorporating fixed effects then leaves less statistical variation in these regional subsamples.

The Latin American sample, on the other hand, produces a *negative* and statistically powerful coefficient – the opposite of what we consistently observe in our results so far. This finding is surprising and shows the extraordinary role of the public sector in Latin America – an artifact that has previously been pointed out in related topics. For instance, Dobson and Ramlogan-Dobson (2012) highlight that corruption carries counter-intuitive consequences on inequality in Latin America, explaining this anomaly with the outstanding size of informal sectors. In our context, several areas of public spending, such as security, education, or redistribution, may not be exclusively provided by governments, but also via informal or private agents. Indeed, black markets in Latin American countries average about 44.0 percent of GDP, as opposed to 34.5 percent in the rest of the world (Schneider et al., 2011).

Although speculative at this point, the negative urbanization-government spending link in Latin America may be related to a large informal sector, providing services that are usually offered by governments. Unfortunately, data availability on the shadow economy (e.g., from Schneider et al., 2011) is scarce and does not allow us to run a meaningful regression testing this claim. However, we do observe that public funding of education and health care is systematically lower in the average Latin American country when compared to Africa or other non-OECD nations (see footnote 2 for details).

Further, we find interesting quantitative differences for the urban coefficient between OECD and non-OECD countries. The respective coefficient for non-OECD countries is closely in line with the benchmark finding, but in OECD countries we observe a much

stronger urbanization-government spending link, where magnitudes increase by approximately 72 percent (from 0.33 to 0.57). One potential explanation would suggest the urbanization-public sector link to become stronger as development levels are raised. However, introducing an interaction term between income levels and urbanization does not produce meaningful results (not displayed). Another reason could relate to differences in regime forms, as higher demand for public services may be realized quicker in democratic organizations. But here again, we find no such interaction effects between urbanization and the Polity IV index.

Finally, one possible explanation could be associated with the influence of the informal sector, similar to the hypothesis regarding Latin America. In the average OECD nation, black markets are generally of less importance and the urbanization-government size link may simply emerge much clearer in the analysis. Nevertheless, these explanations are speculative at this point. Overall, we conclude that a strong positive link between urbanization and government spending emerges on a global basis, with the remarkable exception of Latin America.

3.7. Specific Categories of Public Expenditure

To analyze the suggested link between urbanization and government spending in more detail, we now consider potential channels. Specifically, we analyze public expenditure data on education, health care, the military, and social issues. Table 5 presents regression results, estimating public expenditure on these categories. The results from OLS and 3SLS analyses (again estimating government size and income levels simultaneously) suggest public spending on education and health care to be strongly linked to urbanization, whereas military spending is not. Note that the urbanization coefficient is not statistically relevant on conventional levels when considering public spending on health care. But, here again, standard errors are substantially inflated – likely because of a much

smaller sample that preserves less statistical variation to be explained (455 observations, as opposed to 943). In fact, the corresponding magnitude of the relationship remains in line with our main findings (0.315 versus 0.33).

Table 5: Extensions, estimating the natural logarithm of government spending on education, health care, and the military. All variables constitute five year averages.

	OLS			3SLS		
Dependent variable:	Ln(Educ) (1)	Ln(Health) (2)	Ln(Military) (3)	Ln(Educ) (4)	Ln(Health) (5)	Ln(Military) (6)
Ln(Urban pop)	0.510***	0.315	-0.076	0.194*	0.810**	-0.309*
	(0.116)	(0.393)	(0.307)	(0.101)	(0.326)	(0.182)
Ln(Gov't size)$_{t-1}$				0.374***	0.142***	0.293***
				(0.031)	(0.054)	(0.035)
Control variables[a]	yes	yes	yes	yes	yes	yes
Country & time fixed effects	yes	yes	yes	yes	yes	yes
Dependent variable: Ln(GDP)						
Ln(Urban pop)				0.015	0.242	-0.046
				(0.056)	(0.386)	(0.071)
Ln(GDP)$_{t-1}$				0.478***	0.336**	0.151***
				(0.053)	(0.146)	(0.036)
Control variables[b]				yes	yes	yes
Country & time fixed effects				yes	yes	yes
N	753	455	662	544	284	489
# of countries	151	155	151	151	151	151
# of 5-year periods	8	3	5	7	2	4
R^2	0.990	0.993	0.984	0.990	0.995	0.986

Notes: Robust standard errors are displayed in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent variables: Education = Ln(Gov't spending on education); Health = Ln(Gov't spending on health); Military = Ln(Gov't spending on the military). [a]Includes Ln(Pop size), Ln(GDP), Ln(Trade openness), Ln(Life expectancy), Ln(% people over 65), Ln(% people under 15), and the Polity IV index. [b]Includes Ln(Pop size), Ln(Gov't size), Ln(Trade openness), Ln(Life expectancy), the Polity IV index, the population growth rate, the inflation rate, and Ln(Capital stock).

These baseline estimates are consistent with our hypothesis: Living closer to other people might either make one more compassionate to support better public education, health care, and redistribution programs or more concerned about one's own health and security if we think about transmittable diseases and crime. In other words, positive

externalities and spillover effects from increased education and health standards may be larger in urban areas. Military spending, on the other hand, should not be affected by the geographical restrictions of the area one lives in.

To address endogeneity concerns, columns (4) to (6) re-estimate the same sequence of regressions in the familiar 3SLS framework, simultaneously estimating income levels. The corresponding results again produce strong evidence that public spending on education and health care tend to be higher in urban areas. In this more refined estimation, the statistical importance of the respective coefficient regarding health care expenditure is recovered. In addition, it is interesting to see that urbanized countries tend to spend less on national defense, as the coefficient on military spending returns a negative and statistically meaningful coefficient. Overall, incorporating the potential endogeneity of income levels further re-enforces the intimate connection between urbanization and public spending on education and health care issues. The corresponding quantitative results (analyzing the long-run link as in the previous 3SLS results, following Bewley, 1979) are generally in line with our previous estimates.

Finally, we conclude our analysis of country-level data by turning to the OECD database for detailed information about both public spending on health care and social issues. Although the World Bank data also contains health care expenditure of the public sector, it is interesting to check whether our findings are confirmed when using data from the OECD. In addition, following our baseline intuition, we would expect for social expenditures to be positively associated with urbanization. As data availability is severely restricted, we limit this analysis to a basic OLS regression structure of five year averages.

Table 6 displays the results from these regressions, where we include the same set of control variables as above. Notice that within this more homogeneous sample (OECD countries), the positive link between urbanization and public spending on health care

prevails with its magnitude rising substantially in the most complete specification displayed in column (3). This is consistent with our findings from Table 4, indicating a larger elasticity between urbanization and government size in OECD nations.

Table 6: Extensions, estimating the natural logarithm of total government spending on health care and social issues in the OECD. All variables constitute five year averages.

Dependent variable:	Ln(Health Care)			Ln(Social)		
	(1)	(2)	(3)	(4)	(5)	(6)
Ln(Urban pop)	1.515***	1.789***	1.316***	1.636***	2.034***	1.503***
	(0.218)	(0.355)	(0.298)	(0.389)	(0.658)	(0.511)
Country & time fixed effects	yes	yes	yes	yes	yes	yes
Control variables I[a]		yes	yes		yes	yes
Control variables II[b]			yes			yes
N	207	201	188	172	172	160
# of countries	34	34	32	34	34	32
# of 5-year periods	10	10	10	6	6	6
R^2	0.991	0.993	0.994	0.990	0.992	0.994

Notes: Robust standard errors are displayed in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. [a]Includes Ln(Pop size), Ln(GDP), Ln(Trade openness), and Ln(Life expectancy). [b]Includes Ln(% people over 65), Ln(% people under 15), and the Polity IV index.

Turning to the results from estimating public expenditure on social concerns in columns (4) – (6), we also find strong support for the role of urbanization. In fact, comparing the derived coefficients to those from estimating public health care expenditure, magnitudes increase further towards an elasticity of about 1.5. Thus, a rise in the urbanized population by ten percent is estimated to be associated with a 15 percent increase in public expenditure on social items, everything else equal.

Overall, analyzing distinct areas of public spending provides a more detailed insight into *how* urbanization may relate to government size. The strong relevance of education,

health care, and social expenditures is exactly what we would expect after an urbanization process, given the discussed spillover effects and pronounced externalities in cities.

4. State-Level Analysis of Public Spending in Colombia and Germany

In addition to analyzing government spending on the national level, we now move to two distinct subnational samples that allow us to consider public spending on the state level. This step serves two purposes. First, a variety of surrounding aspects that may influence the extent of the public sector are generally more homogeneous within a country, as opposed to across countries. This applies to, for instance, cultural, historical, or institutional characteristics, alleviating concerns over an omitted variable bias. Second, our baseline analysis excludes public expenditure on the local level, but our data on Colombia and Germany is more disaggregated.[8]

The Colombian sample ranges from 1985 – 2007 for 25 regions and we are using current government spending (in millions of pesos) to measure the size of the public sector.[9] We use the amount of people living in the main city of the specific state to proxy for urbanization. Although not equivalent to the general definition of urbanization, it captures the concept, especially given the strong concentration in one city for most Colombian regions.[10] Finally, we control for state-level population, GDP (measured nominally in millions of pesos), and life expectancy. Consistent with our main country-level analysis, we analyze five year averages from 1985-1989, 1990-1994, and 1995-1999, 2000-2004, and then include three years into our final period from 2005-2007.

[8]Data for Colombia is extracted from the DANE website (Departamento Administrativo Nacional de Estadística), whereas data from the German Statistical Office (Statistisches Bundesamt) and Eurostat allow us to analyze the formation of regional government spending in Germany.

[9]Colombia consists of 32 regions, but 8 of them are summarized in the DANE data set to one remaining region. These regions are Amazonas, Arauca, Casanare, Guainia, Guaviare, Putumayo, San Andrés and Providencia, Vaupés, and Vichada.

[10]Ades and Glaeser (1995) provide potential reasons why especially South American societies tend to be focused in few large cities.

In the case of Germany, we analyze data from 1996 – 2010 for 13 out of 16 federal states, missing the city states of Berlin, Bremen, and Hamburg, which by definition display urbanization rates of 100 percent. In this case of a smaller time dimension, we opt for taking three year averages (1996-1998, 1999-2001, 2002-2004, 2005-2007, 2008-2010). The extent of the state-level public sector is measured as total government spending in Euros. The amount of households living in densely-populated areas, defined as areas with at least 500 inhabitants per square kilometer, provides us with a measure for urbanization. For consistency, we also employ the overall amount of households as our variable defining population size. Finally, we control for state level GDP in Euros. The corresponding summary statistics for the Colombian and German data are referred to the online appendix.

Table 7 presents the corresponding results, conforming to the conclusions derived from our cross-country study. In both countries, the coefficient related to the urban populace is positive and statistically significant on the one percent level. Note that the quantitative interpretation of these coefficients differs from the main cross-country analysis, as urbanization is measured differently. In an average Colombian region, an increase of the population residing in the largest city by ten percent relates to an 8.2 percent increase in government spending, independent of overall population size. This elasticity is more than 2.5 times that from our cross-country estimates. In Germany, a rural-urban move of 10 percent of the population suggests an increase of public expenditures by 8.1 percent.

5. Individual Preferences

Our analyses up to now have looked at macroeconomic aggregates of government spending. However, a more direct way of testing our hypothesis would be to see whether urban citizens indeed exhibit different viewpoints regarding the government's role, as opposed to people living in rural neighborhoods. In this section, we analyze the preferences

Table 7: Main regression results, estimating the natural logarithm of total government spending on the state level in Colombia and Germany. Regressions using the Colombian data employ five year averages, whereas regressions using the German data use three year averages.

	Colombia			Germany		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: Ln(Government size)						
Ln(Urban pop)	1.177***	0.893***	0.824**	0.923***	0.598***	0.812***
	(0.123)	(0.217)	(0.369)	(0.027)	(0.192)	(0.192)
Country & time fixed effects		yes	yes		yes	yes
Control variables[a]			yes			yes
N	120	120	120	65	65	65
# of states	24	24	24	13	13	13
# of periods	5	5	5	5	5	5
R^2	0.404	0.994	0.995	0.937	0.996	0.992

Notes: Robust standard errors are displayed in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

[a]Includes Ln(Pop size), Ln(GDP), and Ln(Life expectancy). Data from Germany does not include life expectancy.

of almost 40,000 people, as expressed in the World Values Survey (World Values Survey Association, 2014).

5.1. Methodology and Data for Analyzing Individual-Level Data

Analyzing stated preferences using the WVS has recently found its way into several topics in economics; for example, Nunn and Wantchekon (2011) use the WVS to analyze trust levels within Africa. For our purposes we access two questions in the recent wave 6 of the WVS, labeled as V98 and V131.

V98 relates to the responsibility of providing for people, asking whether "government should take more responsibility to ensure that everyone is provided for [left on scale] vs. people should take more responsibility to provide for themselves [right on scale]." With answers ranging from one to ten, higher numbers indicate a person believes that government should be *less* involved in society. We then use the answer provided by each individual as the dependent variable, labeled as *Responsibility*. To assess whether urbanization is in any way related to the answer provided, our main explanatory variable is taken from the question regarding the size of town the respondent lives in (question V253). Here, potential responses range from 1 to 8 with higher values indicating larger towns.[11] According to our intuition, we want to check whether living in a bigger town is systematically related to seeing the government as more responsible to provide for people.[12]

To isolate the link between urbanization and one's views on government involvement, we control for covariates that may independently affect a person's view on government. These include demographic characteristics (age and age squared, variable V242; number

[11]Possible responses for town size: 1 = Under 2,000; 2: 2,000 – 5,000; 3: 5,000 – 10,000; 4: 10,000 – 20,000; 5: 20,000 – 50,000; 6: 50,000 – 100,000; 7: 100,000 – 500,000: 8: >500,000.

[12]Our methodology follows Nunn and Wantchekon (2011) who estimate responses to questions about trust levels, as provided by the WVS.

of children, V58), education and income levels (V248 and V239), hours worked (V229), and one's job (V230).[13] Summary statistics for all variables are referred to the online appendix. In addition, we are controlling for 40 country fixed effects (variable V2A) and employ the weights recommended by the WVS database for each individual observation.[14] However, all derived results are virtually identical when not employing weights.

The second question we analyze asks whether the following is a characteristic of democracy: "Governments tax the rich and subsidize the poor." Here as well, possible answers range from one to ten, where bigger numbers indicate more agreement to the given statement. Thus, a person responding with a higher number would value redistribution organized by a public entity as an essential component of democracy. We label this variable *Redistribution* and in the corresponding regression analysis control for the same set of covariates as in the first question. Following our main intuition, we would expect urban citizens to show stronger preference for redistribution, everything else equal.

5.2. Empirical Findings from Individual-Level Analysis

Table 8 displays the corresponding results. Columns (1) – (5) consider responses regarding government's responsibility, whereas (6) – (10) analyze preferences regarding redistribution. The first three columns for each dependent variable subsequently add control variables, whereas the final two columns, respectively, distinguish between respondents residing in OECD versus non-OECD countries.

First, respondents from bigger cities tend to see the responsibility for people located

[13]Possible answers to one's job are categorized as government or public institution, private business or industry, private non-profit organization, and autonomous/informal sector. We incorporate dummy variables for each category.

[14]The 40 countries are Algeria, Armenia, Australia, Azerbaijan, Belarus, Chile, China, Colombia, Cyprus, East Germany, Ecuador, Estonia, Ghana, Iraq, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Lebanon, Libya, Malaysia, Mexico, Netherlands, New Zealand, Nigeria, Peru, Philippines, Poland, Romania, Russia, Rwanda, Slovenia, Sweden, Taiwan, Tunisia, Ukraine, Uruguay, Uzbekistan, West Germany, Yemen, and Zimbabwe.

Table 8: Results from OLS regressions estimating survey responses regarding the responsibility to provide (columns 1 – 5, lower values indicate more government responsibility) and the importance of redistribution in democracies (columns 6 — 10, higher values indicate more importance). The dependent variables range from 1 to 10.

Dependent variable:	Responsibility (mean = 4.4)					Redistribution (mean = 6.2)				
	(1)	(2)	(3)	(4) OECD	(5) non-OECD	(6)	(7)	(8)	(9) OECD	(10) non-OECD
Town size	-0.025*** (0.007)	-0.024*** (0.007)	-0.025*** (0.007)	-0.023* (0.013)	-0.026*** (0.008)	0.013* (0.007)	0.014** (0.007)	0.014** (0.007)	0.027** (0.013)	0.008 (0.008)
Country FE, education & income levels	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Hours worked & job FE		yes	yes	yes	yes		yes	yes	yes	yes
Age (linear & squared), marriage status & kids			yes	yes	yes			yes	yes	yes
N	39,275	39,275	39,275	9,693	29,582	39,275	39,275	39,275	9,693	29,582
# of countries	40	40	40	10	30	40	40	40	10	30
R^2	0.122	0.124	0.124	0.122	0.118	0.089	0.090	0.090	0.087	0.093

Notes: Robust standard errors are displayed in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Possible responses for town size: 1 = Under 2,000; 2: 2,000 – 5,000; 3: 5,000 – 10,000; 4: 10,000 – 20,000; 5: 20,000 – 50,000; 6: 50,000 – 100,000; 7: 100,000 – 500,000: 8: >500,000. Fixed effects for hours worked include dummies for full time, part time, self employed, retired, housewife, students, and unemployed. Fixed effects for jobs include dummies for government/public institution, private business or industry, private non-profit organization, and autonomous/informal sector.

within the public sector's hands, whereas people from smaller towns are more inclined to put the responsibility for one's life in the hand of the individual. Notice that the estimated coefficient remains remarkably stable around -0.025, even after the inclusion of all our control variables. Thus, moving up one standard deviation in terms of town size (2.4 index points) indicates a change in preferences about the responsibility for people by about -0.06 index points. Although the magnitude of this link appears small, this quantitative relationship is about similar in size to the importance of education levels and higher than the role of age and the number of kids (not displayed). Further, we find no meaningful difference between the responses by citizens in OECD nations versus non-OECD countries. Although the level of statistical importance decreases to ten percent for the OECD sample, the coefficient only decreases marginally in terms of magnitude from -0.025 to -0.023. The loss in statistical precision here appears to come from higher standard errors (in fact, doubling), potentially owed to a smaller sample size, as the OECD subsample only represents about one fourth of the entire sample.

Second, what about preferences regarding redistribution being an important aspect of democracy (columns 6 – 10)? As predicted, we note a positive coefficient on the variable town size, indicating that people from bigger cities are more likely to favor a system that taxes the rich and subsidizes the poor. This confirms exactly what our hypothesis predicts: Living in a more crowded town is associated with different preferences for the structure of society, in this case related to a system of transfers. Notice that, here again, the coefficient associated with town size remains stable with an elasticity of around 0.014, even after the inclusion of additional control variables.

However, an interesting difference emerges when splitting the sample by OECD membership. The effect doubles for OECD countries, but nearly disappears for non-OECD countries. Quite possibly, this distinction relates to Wagner's Law, as poorer nations usually have other things to worry about first before redistribution becomes a priority.

Nevertheless, given large inequalities within poorer nations, this result is somewhat surprising, especially since preferences for government responsibility (columns 4 and 5) do not differ between OECD and non-OECD countries. Another potential explanation may be found in the question's reference to "democracy": The average OECD country returns a Polity coefficient of 9.6 in the year 2010, whereas the average non-OECD nation only reaches a score of 2.9 on this scale. Thus, the workings of and the experience with democracy may simply be more present for citizens of OECD countries.

Finally, it is important to highlight one shortcoming of this analysis on the individual level. WVS data does not allow us to conclude how long a person has been living in her town. Thus, it is theoretically possible that people favoring more government involvement select to live in urban areas.[15]

6. Conclusions

This paper proposes urbanization to systematically increase government size. We analyze three settings to test this hypothesis: A cross-country panel data set of 175 countries from 1960 – 2010, regional data from two federal republics (Colombia and Germany), and individuals' preferences for the role of government.

First, our macroeconomic analysis points to a sizeable and robust relationship between urbanization and government spending. Incorporating a comprehensive set of control variables, country- and time-fixed effects, a 10 percent increase in the number of urban citizens is associated with a 3.3 percent rise in government spending. This finding is robust to the timeframe of the analysis (annual, five-year, or ten-year averages), the inclusion of the conventional control variables, employing lagged values, and simultaneously estimating income levels in a 3SLS framework. Thus, although we cannot completely resolve

[15] We thank an anonymous referee for pointing this out.

the persistent endogeneity problem in these types of analyses, we find strong evidence for causality running from urbanization to increased government spending. These findings are globally robust with the exception of Latin America, where the coefficient turns *negative*. One potential explanation, although speculative at this point, relates to the large informal sector in Latin America which may provide services that are not captured in official statistics related to security, education, or redistribution. Regarding potential channels, public expenditure on education, health care, and social issues is generally raised in urban areas worldwide.

Second, analyzing state-level data from Colombia and Germany generates the same positive link between urbanization and government spending. As surrounding characteristics, such as cultural, historical, and institutional factors, are more homogeneous within a specific country, these results further strengthen our hypothesis of urbanization being strongly linked to the extent of the public sector.

Third and final, we consider individual preferences. With information for over 39,000 individuals across 40 countries, we find that people living in more populated cities systematically show stronger preferences for the government's role in terms of responsibility for people and redistribution. These results hold up to the inclusion of a variety of potentially confounding factors (demographics, education, income, hours worked, job and country fixed effects).

In summary, urbanization implies bigger governments, particularly regarding education, health care, and social expenditure. These findings not only explain past changes in government size, but also predict future relationships. Given the United Nation's prediction of a steady increase in worldwide urbanization from 50 percent to about 57 percent within the next 12 years, the magnitude of our results are considerable and suggest a worldwide increase in government spending by 2.8 – 4.2 percent, ceteris paribus.

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