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Social versus conservative democracies and homicide rates

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Abstract

Purpose – The purpose of this paper is to critique recent findings that democratic practices are positively related to homicide rates.

Design/methodology/approach – Economic rational choice model supported by empirical evidence.

Findings – It was found that higher homicide rates are only characteristic of democracies that fail to respond to the median voter's call for equitable social development.

Originality/value – The paper makes an original distinction between conservative and social democracies, operationalizes this distinction theoretically and empirically, and shows that higher homicide rates are a phenomenon of conservative, not social, democracies.

Keywords Murder, Democracy, Income distribution, Political economics, Crime, Social economics

Paper type Research paper

1. Introduction

In his background paper to the 2011 World Bank Development Report Fearon (2011) notes, as others have earlier, that income inequality is a determinant of homicide rates (Blau and Blau, 1982; Braithwaite and Braithwaite, 1980; Neumayer, 2003; LaFree and Tseloni, 2006; Hall and McLean, 2009; Wilkinson and Pickett, 2009). He further notes that democracies tend to have higher homicide rates than autocratic countries. These observations are indeed puzzling.

Economic theory predicts that democracies should have less income inequality than authoritarian regimes. In democratic countries, the poorer majority can presumably vote for policies that tax the richer minority to limit the degree of income inequality; thus one would expect both less income inequality and lower homicide rates in more democratic countries, not the other way around. Of course, this simple view of democracy is not always realized in the face of the complexities of real world politics. In reality, democracies around the world differ from each other in many significant ways. Since democracies are not homogeneous entities, it may be promising to explore
whether different types of democracies generate different homicide rates. This is the objective of this study.

Although many studies point to income inequality as a robust explanatory variable for homicide rates across societies, the nexus between income inequality and the characteristics of democracies is more difficult to establish. This study uses the widely applied "polity score" from the Center for Systemic Peace to characterize democracies. The polity score classifies procedural characteristics of regimes on a spectrum from autocracy to democracy on a scale ranging from 210 to þ10. This study gives particular attention to regimes with an average polity score greater than five between 1960 and 2008. All regimes within this range are considered established democracies.

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By regressing the polity score of established democracies on country-level Gini coefficients, we show that established democracies with higher polity scores do in fact have, on average, lower income inequality. Mirroring a classification suggested by Hsu (2008), we then use a residual analysis to identify countries with positive and negative residuals as conservative and social democracies, respectively. Using these residuals, an index is created that reflects the degree to which each democracy can be classified as a more conservative democracy on the one hand, or a more social democracy on the other. Empirical results using this index as an explanatory variable suggest that higher homicide rates are characteristic of conservative, but not of social, democracies. These findings allow for the conclusion that it is not more fully institutionalized democratic procedures and civil freedoms that correlate with higher homicide rates, but rather the failure of some democracies to translate democratic procedures, institutions and freedoms into equitable social development.

The remainder of this paper is organized as follows. Section 2 provides a brief review of the large literature on the determinants of homicide rates. In Section 3, a simple rational choice economic model is presented in which democracies that are unable to provide equitable social development produce higher homicide rates. The presentation and discussion of the empirical results follow in Section 4. The paper concludes with a summary of the main findings.

2. Literature review

The criminology literature explains homicide rates with demographic, socio-economic, and political factors. One of the first researched variables was age. Neison (1846) and Goring's (1913) work on England and Wales were probably the first comprehensive studies in this regard. Their studies found that most murderers belonged to the age group between 16 and 25. More recently, Pampel and Gartner (1995) provide a comprehensive literature review of the age-homicide nexus, giving special emphasis to the interaction between age and several socio-economic variables.

Urbanization is another factor that receives particular attention. Lodhi and Tilly (1973) study the crime rates of early nineteenth century France. The authors find no evidence that urbanization produces more tension and crime. Jalil and Iqbal (2010), however, argue that urbanization has increased crime rates in Pakistan. Theoretical arguments can be made in either direction. Urbanization is associated with more poverty and points to a direct effect between urbanization and crime rates. The counter argument is that urbanization brings about development and jobs. Generalizations in this area are therefore difficult to make.

The literature further discusses inequality as an explanatory factor. Perhaps one of the most thoughtful studies of the relationship between homicide rates and inequality is that of Braithwaite and Braithwaite (1980). The authors find, using cross-sectional regression analysis, that homicide rates and several inequality measures are strongly correlated. They also find that the legacy of social democratic parties is related to homicide rates, "although the correlation was not as strong as with income inequality" (p. 52). This finding suggests that the analysis of the interaction between regime characteristics and inequality, as carried out in this study, may offer new insights.

In another study, Blau and Blau (1982), find that alleged racial and geographical patterns of violence in the USA become insignificant once one controls for economic inequality. Also using US data, Brush (2007) finds that levels of inequality and

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homicide rates are positively associated. Surprisingly, however, the same regressions on differences generate negative results. Referencing Levitt (2004), Brush (2007) suggests that this is most likely due to unmeasured time-specific effects like more policing, rising incarceration rates, declining crack consumption, and legalizing abortion that were absorbed by the coefficient on income inequality.

Political characteristics are often behind demographic and socioeconomic factors. Neumayer (2003) reports evidence for good governance to reduce violent crime. Pridemore and Kim (2006) explain the increase in homicide rates in Russia during the transformation process by applying Durkheim's (1893) anomie theory and linking it to a highly significant index of negative socioeconomic change. Closely related, Lafree and Tseloni (2006, p. 30) find that countries in transition to free markets experience an increase in homicide rates, and they note that, "a growing number of regional studies are consistent with the idea that democratization has been associated with rapidly increasing violent crime rates." They also find that homicide rates have increased for many democracies in the second half of the twentieth century. The impact of democracy on various crime severities is examined by Lin (2007), who finds that less severe crimes are more common in democracies and more severe crimes, like homicides, less common; a finding at odds with the findings of Fearon (2011) and LaFree and Tseloni (2006). Finally, Hall and McLean (2009) look at structural characteristics of democracies in a study more closely related to the analysis presented in this paper. They argue that US neoliberalism is more prone to the spread of violence than Western Europe's social democracies, and they state that it:

> [. . .] seems quite likely that over 90 per cent of US homicides in known circumstances can be associated in one way or another with economic motivations and/or situations and locales defined principally by their disadvantaged positions in the socio-economic structure (Hall and McLean, 2009, p. 315).

3. A simple rational choice model of homicide and economic gain

The widespread empirical evidence that homicide rates and income inequality are positively correlated suggests that there might be some validity to Hall and McLean (2009) conjecture. The model assumes a median voter framework where the median voter is decisive and so determines government policy (Downs, 1957; Persson and Tabellini, 2002). In the model, homicide rates are higher as the "voice" of the median voter is less successful in ameliorating excessive inequality.

The model assumes two stages. In stage one, the median voter chooses the tax-transfer policy assuming that all citizens are non-criminal members of society. Once the tax-transfer system is determined, each citizen chooses between remaining in civil society and exiting into the homicide class. This means that citizens choosing to exit into the homicide class implicitly increase the available funds for redistribution to the remaining members of the society. While this might suggest a continuous need for re-optimization by the median voter, the marginal effects on the transfer amount can be assumed to be infinitesimal given actual sizes of criminal classes relative to total populations and are ignored for the purpose of this paper.

Consider an individual who needs to make a choice between joining the "homicide class" (i.e. becoming a murderer, for example, by joining a gang) and exiting civil society, or remaining a peaceful democratic citizen. A murderer anticipates an economic reward, R, by joining the homicide class, or equally by committing a murder.

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Based on conditions (1) and (2), a citizen will choose to become a murderer if:

$$pR - (1 - p)S > (1 - t^*)y + t^* - \frac{t^{*2}}{2v} \qquad (3)$$

The left hand side of inequality (equation (3)) is the net gain from joining the homicide class, the right hand side (RHS) is the net benefit from being a member of civil society. The left hand side of equation (3) is straightforward to interpret: an increase in the likelihood of escaping punishment will increase homicide rates, a higher expected sentence decreases it.

The individual for whom equation (3) holds with equality, is the marginal citizen who is indifferent between joining the homicide class and remaining in civil society. In Figure 1, this individual is identified at point PS^*, which defines, respectively, the population shares of the homicide class and civil society. Figure 1 shows a typical pre- and post-tax income distributions.

The tax authority will implement the median voter's optimum tax rate, determined by maximizing equation (2) with respect to t. The optimum proportional tax rate t^* applied to all citizens will then be:

$$t^* = v(1 - y_m) \qquad (4)$$

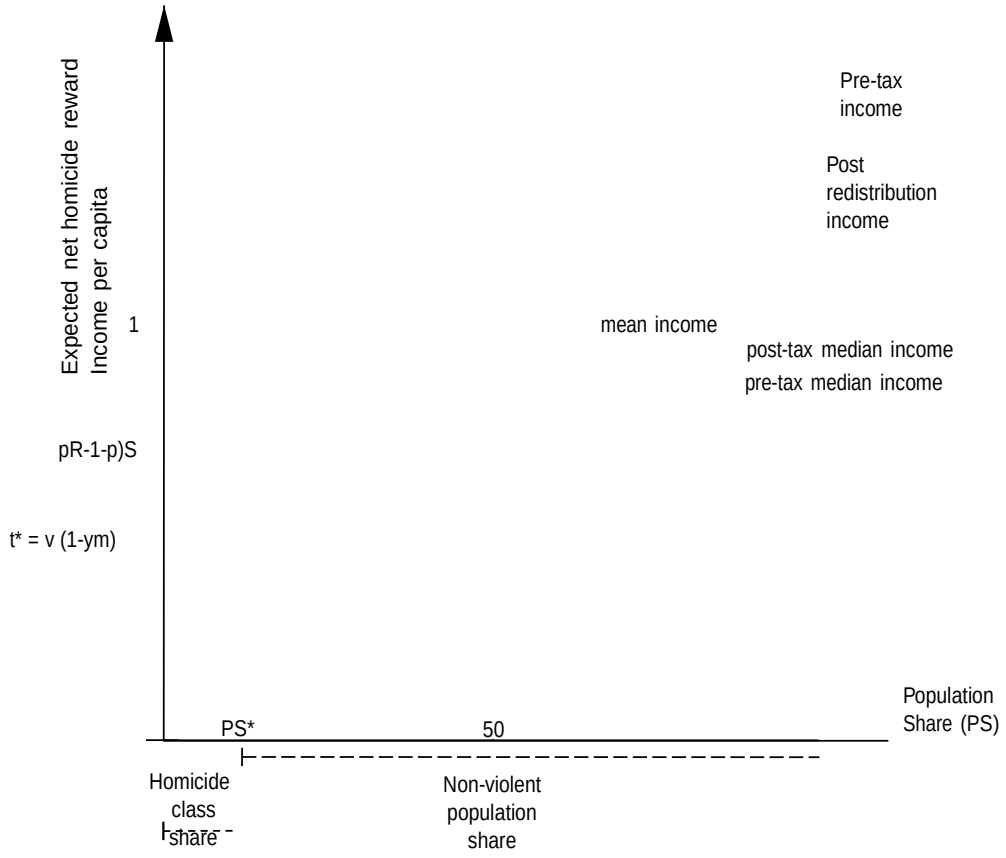

Figure 1.
Determination of size of homicide class

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where y_m is the median income. Because the median income is smaller than 1 (the mean income) and v is at most 1, the tax rate is defined between 0 and 1. Equation (4) captures the intuition that tax rates will be high when democratic voice is high and/or when inequality is high. As alluded to above, the poorer majority is able to tax the rich in order to redistribute income. The utility of a typical member of civil society will be maximized when v ¼ 1, in which case $t^* ¼ 1 2 y_m$.

The derivative of the rhs of equation (3) with respect to the optimum tax rate and separately with respect to voice, shows that an increase of either factor increases the net benefit from redistribution for citizens with incomes less than the median income. The share of the population joining the homicide class decreases accordingly.

Specifically, taking the derivative on the rhs with respect to t^* and using equation (3) gives the following result:

$$\frac{drhs}{dt^*} ¼ 2y þ y_m ¼ \begin{cases} - 0 & \text{if } y_m - y \\ 0 & \text{if } y_m ¼ y \\ , 0 & \text{if } y_m , y \end{cases} \quad (5)$$

Hence, the net benefit from increasing the redistributive tax is positive (negative) for people with incomes lower (greater) than the median income. This result can also be seen from equation (4), which shows that as the spread between the average income, which is 1, and the median income grows (falls), the optimum tax rate increases (decreases).

Similarly, a marginal increase in voice generates the partial derivative:

$$\frac{drhs}{dv} ¼ \delta \frac{1 2 y_m}{2} \text{þ½} \frac{1 2 2y þ y_m}{2} ¼ \begin{cases} - 0 & \text{if } y , \frac{1 þ y_m}{2} \\ 0 & \text{if } y ¼ \frac{1 þ y_m}{2} \\ , 0 & \text{if } y - \frac{1 þ y_m}{2} \end{cases} \quad (6)$$

Condition (6) implies that more voice, as expected, delivers a net gain to the poor. But since y_m is smaller than 1, more voice does not benefit all citizens with incomes less than the average income. The lower is the median income, and therefore the higher is the inequality, the lower is the income threshold below which an increase in voice increases the net utility from redistribution. In other words, this implies the interesting result that in higher inequality countries, a marginal increase in voice benefits fewer people, which in turn suggests that a greater share of the population resorts to redistribution activities outside the political process such as criminal behavior.

4. Empirical analysis

Data and methodology

The above model captures the idea that democracies with lower responsiveness to the voice of the median voter are likely to have a weaker "social contract," which contributes to higher levels of economic inequality and higher homicide rates.

To determine whether or not the empirical evidence supports this notion, data was collected across countries for per capita GDP, income inequality, polity, tax revenue, median age, conflict history, and type of democracy. Countries were identified as democracies, according to Hsu's (2008) classification. She defines democracies as such when they hold "fair, multiparty elections." Building upon a classification proposed by

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Esping-Andersen (1990), she further labels democracies as conservative if "status differentials are preserved" or "modest social-insurance plans dominate" and as social democracies when "universal social rights are expanded" (Hsu, 2008, pp. 8-10).

Only those democracies with available data for all variables were included, which left the final dataset with 89 countries. Unless otherwise noted, all variables are 2000-2008 averages. The country observations can be placed into the following geographic areas: Sub-Saharan Africa (SSA), Middle East and North Africa (MENA), South Asia (SA), East Asia and the Pacific (EAP), Central and Eastern Europe (CEE), Latin America and the Caribbean (LAC), and Western Europe and North America (WENA). The Appendix contains a more detailed data description and the complete data set. Table I shows the number of observations by region as well as regional averages for the variables. It is apparent that there are significant regional differences. Among the variables, the percentage of social democracy per region is particularly interesting. The table reveals that social democracies fall exclusively into the WENA cluster. (In fact, what is not revealed is that all North American countries are classified by Hsu as conservative democracies, thus making social democracies in principle only a Western European phenomenon).

Table I also shows that income inequality, as represented by the Gini index, will likely be a strong predictor of homicide rates. The WENA regional cluster has both the lowest homicide rate and the highest share of social democracies, while the LAC group has both the highest homicide rate and highest share of conservative democracies. This observation foretells the critical result in the empirical analysis to follow.

Fearon (2011, p. 1) says:

> Homicide rates tend to be higher in democracies versus autocracies. This is true both across countries and when we look at the effect of transitions to democracy within countries. This may be a causal effect – it may be that authoritarian states have more aggressive, oppressive, and/or competent police forces than do typical new democracies, making for less crime in general. It could also be a measurement issue – perhaps autocracies are less inclined to report homicides.

Region	SSA	MENA	SA	EAP	CEE	LAC	WENA
GDP per capita	1,855	16,826	2,001	4,570	9,714	7,255	33,316
Tax revenues (percentage of GDP)	15.6	19.0	9.4	14.0	17.3	14.4	19.0
Social democracy percentage[a]	0.0	22.7	1.0	2.9	5.7	8.2	10.0
Conservative democracy percentage[a]	55.6	0.0	0.0	0.0	0.0	0.0	30.8
MEPV total civil violence and war conflict score (sum of 1980-2008		14.3	42.9	71.4	78.9	94.4	69.2

Notes: [a]The sum of the percentages of social and conservative democracy does not add up to one as Hsu considers other regime classifications as well, namely dictatorship, military dictatorship, civil war, one party democracy, communist, Islamic republic, and European colony; SSA – Sub-Saharan Africa, MENA – Middle East and North Africa, SA – South Asia, EAP – East Asia and the Pacific, CEE – Central and Eastern Europe, LAC – Latin America and the Caribbean, and WENA – Western Europe and North America

Table I.
Regional characteristics of dataset (2000-2008 averages, unless indicated otherwise)

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Another conclusion that may be warranted is that it is not democracy that fertilizes the il for so homicides, but the failure of the established social contract to adequately feguard sa against the vagaries of socioeconomic inequities. Hall and McLean (2009) ake this margument in a comparison between the USA and Europe, but argue mostly uristically. The he empirical evidence provided below lends empirically stronger pport to their claims.

su The polity score variable is used by Fearon (2011) and others to measure the degree of mocracy, but the polity score only captures democratic procedures. Democracies with den ilar polity scores can have different established beliefs and traditions with respect to the nature of the social contract. If it is not democratic procedures, but the nature of the cial soc contract reflected in economic inequality measures, which explain differences in sh homicide rates, taking into account income inequality measures across democracies ould eliminate the significance of the coefficient on the polity score variable.

(PT) gr In a first step, the dataset is limited to observations with an average polity score of eater 2015 than 5 between 1960 and 2008. This will presumably assure that all bservations are a "consolidated" democracies that hold "fair, multiparty elections." This May pw approach is used to avoid equating young democracies with established democracies here 18 socio-economic dynamics are less turbulent.

On this restricted sample, the following regression is run:

$$Gini_i|_{Polity2\_5} = b_0 + b_1 Polity_{(1960-2008\ average)_i} + u_i \quad (7)$$

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nd the residuals u_i are stored. The residuals can be interpreted as inequality that is not plained a by the level of procedural democracy.

We then test whether countries with positive (negative) residuals are, on average, University ore likely conservative (social) democracies. This is done by regressing the residuals om equation (7) on Hsu's (2008) classification of countries as social and conservative mocracies n (abbreviated by SD and CD, respectively):

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$$u_i|_{Polity2\_5} = g_0 + g_1 SD_i + g_2 CD_i + 1_i \quad (8)$$

de

he regression results in Table II illustrate that, despite the small sample size, Hsu's 008) social democracy dummy provides some explanation for the negative residuals.

by Although Hsu's (2008) dataset is a valuable motivation for this paper, her T assifications involve a degree of subjectivity. An alternative perspective that rresponds closely to Hsu's (2008) classification, but interacts directly with available equality (2 data, is to classify countries with positive residuals, u_i, in equation (7) as nservative, and those with negative residuals as social democracies. Two democracy

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$V = u_i$	Model 1
co tercept	−6.10 (3.75)
iu cial democracy dummy[a]	−7.54* (4.17)
co	21
^{2}	0.15

Table II. Explaining the residuals with Hsu's (2008) social democracy dummies (equation (8))

Notes: Significant at: *p , 10, **p , 5 and ***p , 1 percent; [a]only Hsu's social democracy dummy as regressed because of perfect multicollinearity; all observations in the sample classify as either cial or conservative democracy (Appendix); SE in parentheses

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type indices are thus computed (one for the $u_i - 0$ and one for the $u_i , 0$), using the following normalization:

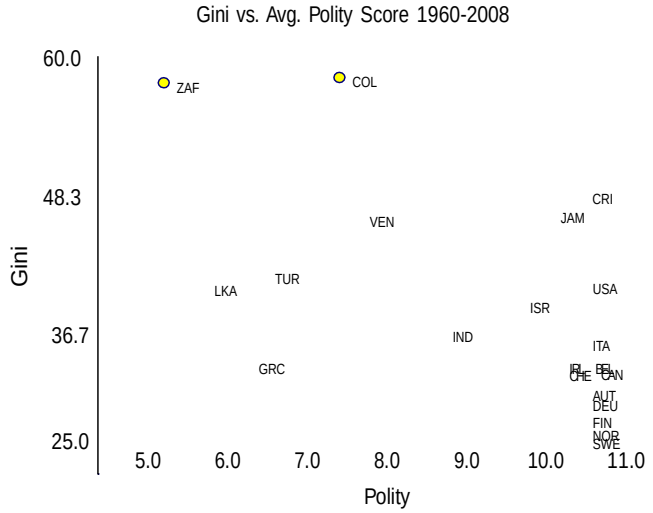
$$\text{Democracy Type} = \frac{|u_i| - |u_{min}|}{|u_{max}| - |u_{min}|} \times 10 \quad \text{with} \quad |u| = \begin{cases} \text{CSDX}, & u_i , 0 \\ \text{CCDX}, & u_i - 0 \end{cases} \qquad (9)$$

The consolidated conservative democracy and the consolidated social democracy index are abbreviated CCDX and CSDX, respectively. Thus, each index ranges from 0 to 10. A higher number suggests a greater inclination toward safeguarding against socioeconomic inequities (social democratic policies) on the one hand, or toward fewer safeguards (conservative democratic policies) on the other. In a final step, the CSDX and the CCDX were added to model specifications similar to those performed by Fearon (2011). In other words, our regression includes in addition to all observations with a polity score between 210 and þ10, which captures procedural democracy characteristics, a variable for consolidated conservative and social democracy as a proxy for substantive democracy. Tables III-V summarize the empirical results.

Table III shows that more democratic countries have, on average, lower levels of income inequality as predicted by economic theory. The scatter plot also shows that mostly Latin American countries can be found above the trend line, specifically Colombia (COL), Venezuela (VEN), Jamaica (JAM), and Costa Rica (CRI), while European countries are generally below it.

Before turning to the discussion of using democracy-classification variables (CCDX and CSDX) in the regressions, a look at the bivariate correlation coefficients of all

DV = Gini	Model	Scatter plot
Constant	67.90*** (10.4)	
Polity	23.36*** (1.15)	
n	21	
R^2	0.31	



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ity score - 5
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Notes: Significant at: *p , 10, **p , 5 and ***p , 1 percent; SE in parentheses

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Table IV.
Correlation matrix

	lnHC	lnyPPP	Polity2	MedAge	Urban	Gini	TaxRev	CivViol	CSDX	CCDX	SSA	MENA	SA	EAP	CEE	LAC	WENA
lnHC	1.00	−0.44	0.05	−0.52	−0.17	0.66	−0.14	0.14	−0.37	0.31	0.32	−0.34	−0.07	0.00	−0.06	0.50	−0.68
lnyPPP	−0.44	1.00	0.38	0.82	0.75	−0.26	0.35	−0.27	0.35	0.13	−0.60	0.12	−0.29	−0.10	0.16	0.07	0.60
Polity2	0.05	0.38	1.00	0.43	0.40	0.03	0.24	−0.04	0.24	0.17	−0.17	−0.40	−0.21	−0.11	0.06	0.28	0.05
MedAge	−0.52	0.82	0.43	1.00	0.56	−0.53	0.28	−0.23	0.38	−0.02	−0.59	−0.07	−0.19	−0.05	0.45	−0.17	0.45
Urban	−0.17	0.75	0.40	0.56	1.00	−0.02	0.18	−0.28	0.11	0.15	−0.45	0.20	−0.45	−0.13	0.07	0.32	0.43
Gini	0.66	−0.26	0.03	−0.53	−0.02	1.00	−0.05	0.06	−0.35	0.30	0.25	−0.07	−0.11	−0.05	−0.39	0.68	−0.41
TaxRev	−0.14	0.35	0.24	0.28	0.18	−0.05	1.00	−0.30	0.20	0.08	−0.02	0.14	−0.29	−0.08	0.11	−0.11	0.26
CivViol	0.14	−0.27	−0.04	−0.23	−0.28	0.06	−0.30	1.00	0.05	0.11	−0.04	−0.04	0.51	0.13	−0.11	−0.07	−0.21
CSDX	−0.37	0.35	0.24	0.38	0.11	−0.35	0.20	0.05	1.00	−0.08	−0.16	−0.09	0.06	−0.09	−0.12	−0.16	0.44
CCDX	0.31	0.13	0.17	−0.02	0.15	0.30	0.08	0.11	−0.08	1.00	−0.04	−0.04	−0.08	−0.08	−0.14	0.33	−0.04
SSA	0.32	−0.60	−0.17	−0.59	−0.45	0.25	−0.02	−0.04	−0.16	−0.04	1.00	−0.15	−0.15	−0.15	−0.26	−0.25	-0.27
MENA	−0.34	0.12	−0.40	−0.07	0.20	−0.07	0.14	−0.04	−0.09	−0.04	−0.15	1.00	−0.09	−0.09	−0.15	−0.15	0.54
SA	−0.07	−0.29	−0.21	−0.19	−0.45	−0.11	−0.29	0.51	0.06	−0.08	−0.15	−0.09	1.00	−0.09	−0.15	−0.15	−0.16
EAP	0.00	−0.10	−0.11	−0.05	−0.13	−0.05	−0.08	0.13	−0.09	−0.08	−0.15	−0.09	−0.09	1.00	−0.15	−0.15	−0.16
CEE	−0.06	0.16	0.06	0.45	0.07	−0.39	0.11	−0.11	−0.12	−0.14	−0.26	−0.15	−0.15	−0.15	1.00	−0.26	−0.28
LAC	0.50	0.07	0.28	−0.17	0.32	0.68	−0.11	−0.07	−0.16	0.33	−0.25	−0.15	−0.15	−0.15	−0.26	1.00	−0.27
WENA	−0.68	0.60	0.05	0.45	0.43	−0.41	0.26	−0.21	0.44	−0.04	−0.27	0.54	−0.16	−0.16	−0.28	−0.27	1.00

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DV ¼ lnHC	Model I (Fearon specif. Table III, model I)	Model II	Model III	Model IV
Constant	2 9.190*	2 5.414	2 6.316	1.923
	(4.757)	(4.484)	(4.350)	(4.844)
lnyPPP	3.064***	2.137**	2.438**	0.023
	(1.118)	(1.059)	(1.037)	(1.155)
lnyPPP2	2 0.209***	2 0.153**	2 0.159***	2 0.002
	(0.065)	(0.062)	(0.060)	(0.068)
Polity2	0.055***	0.050***	0.059***	0.001
	(0.020)	(0.019)	(0.019)	(0.020)
Gini				
CSDX		2 0.116*	2 0.070	2 0.013
		(0.063)	(0.064)	(0.058)
		***	0.156***	0.109**
(PT)		(0.055)	(0.055)	(0.047)
MedAge			2 0.061***	2 0.049*
2015			(0.021)	(0.026)
May				
18			(0.007)	(0.007)
CivViol			2 0.001	0.005
			(0.004)	(0.004)
09:37 TaxRev			2 0.003	0.013
At			(0.016)	(0.014)
WENA				2 0.622
				(0.596)
LAC				1.194**
University				(0.494)
CEE				0.642
State				(0.428)
EAP				0.385
				(0.442)
Ke MENA				2 0.529
nne				(0.533)
SSA				0.790*
saw				(0.413)
by Adj. R^2	0.30	0.41	0.46	0.64

Notes: Significant at: *p , 10, **p , 5 and ***p , 1 percent; n ¼ 89; SE in parentheses

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variables used in the subsequent analysis may be useful. Table IV shows the strong direct correlation between homicide rates and income inequality (r ¼ 0.66). It also reveals the correlations between homicide rates and CSDX and CCDX (r ¼ 2 0.37 and r ¼ 0.31). Among the regional fixed effects, Latin America and the Caribbean (LAC, r ¼ 0.50) and Western Europe and North America (WENA, r ¼ 2 0.68) are prominent. Looking at the control variables, the high negative correlation between median age and homicide rates (r ¼ 2 0.52) is noteworthy. Table IV also alerts us to possible multicollinearity problems. For example, GDP per capita is particularly strongly correlated with median age (r ¼ 0.82) and urbanization (r ¼ 0.75). Lastly, as expected, the CSDX index is fairly highly correlated with the Western Europe and North America dummy (r ¼ 0.44) while the CCDX index is correlated with the Latin America and Caribbean dummy (r ¼ 0.33).

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Table V presents initial regression results. Our econometric objective is to start with Fearon's (2011) specification and then test the robustness of our key variables, which are the consolidated social and conservative democracy, by moving from specific to more general models. Model I is Fearon's simplest specification, using per capita income and polity as independent variables. Model I reveals the unexpected positive sign for polity. In model II, the CSDX and CCDX indices were added, both of which are significant and carry the expected sign. The polity variable is still significant with a positive sign in this specification. Model III adds socioeconomic control variables. The CSDX variable is now no longer significant, but still carries the expected sign. The loss of significance is likely attributed to multicollinearity. Median age and CSDX have a correlation coefficient of r ¼ 0.38. Both polity and CCDX remain significant with the expected sign. Model IV additionally includes regional dummies. In model IV, the polity variable is no longer significant while CCDX still is. Despite expected multicollinearity with CCDX, the Latin America and Caribbean dummy is also significant with the expected positive sign.

Similar to Fearon (2011), models V-VIII in Table VI reproduce specifications I to IV with the Gini coefficient included in each model. The Gini variable is significant with a positive sign in all models. The addition of the Gini coefficient in model V leaves polity significant and positive. As opposed to model II, however, the addition of Gini to model VI renders CSDX insignificant, although the expected sign prevails. This is likely attributable to multicollinearity between Gini and CSDX. The significance and sign of polity and CCDX is not affected by Gini. Polity and CCDX are also significant in model VII while the control variable median age is no longer significant. Lastly, the only significant variables in model VIII are Gini, CCDX, and again median age (which may be a spurious result given the fact that it is not significant in model VII).

Fearon's (2011) finding of a positive relationship between the polity score and homicide rates is, at first sight, remarkable. However, the results here show that it is possible to eliminate polity's significance after incorporating the nature of democracy and controlling for socioeconomic variables and regional fixed effects. The most robust variables for explaining homicide rates are inequality and the CCDX index. For a democracy with relatively high income inequality, CCDX is a measure of the distance between its actual and its expected level of income inequality. To the extent that the polity variable, which is a measure of the level of democracy, has had explanatory power in empirical studies of homicide rates, it is likely the result of a failure to sufficiently take into account the differences in income inequality across otherwise seemingly similar democracies.

The CSDX variable performed weakly, but this is most likely the result of multicollinearity. The problem of multicollinearity is in fact omnipresent in this empirical analysis. Future research may therefore focus on a better understanding of the structural interaction among the right hand side variables. Despite these technical concerns, the results lend support to the conclusion that it is not democracy that leads to more homicides, but rather the failure of some democracies to provide for equitable social development. Ultimately, the consolidated conservative democracy index is highly robust and significant in explaining homicide rates.

5. Conclusions

The relationship between democracy and higher homicide rates reported by Fearon (2011) is puzzling. To resolve this puzzle, the main argument of this paper

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DV ¼ lnHC	Model V (Fearon specif., Table III, model II)	Model VI	Model VII	Model VIII	
Constant	23.901	22.654	22.834	3.613	
	(4.032)	(3.975)	(4.189)	(4.826)	
				20.658	
	(0.985)	(0.967)	(1.064)	(1.183)	
lnyPPP2	20.077	20.068	20.077	0.033	
	(0.058)	(0.057)	(0.061)	(0.069)	
	**	0.036**	0.036	0.001	
	(0.017)	(0.017)	(0.019)*	(0.020)	
Gini	0.071***	0.060***	0.055***	0.036	
	(0.011)	(0.012)	(0.016)	(0.018)*	
CSDX		20.055	20.043	0.014	
		(0.056)	(0.060)	(0.059)	
		**	0.121**	0.109**	
		(0.051)	(0.053)	(0.046)	
MedAge			20.008	20.044**	
			(0.025)	(0.026)	
			(0.007)	(0.007)	
			(0.004)	(0.004)	
TaxRev			20.003	0.009	
			(0.015)	(0.014)	
WENA				20.477	
				(0.589)	
LAC				0.755	
				(0.532)	
CEE				0.806*	
				(0.456)	
EAP				0.389	
				(0.419)	
MENA				20.628	
				(0.525)	
SSA				0.489	
				(0.432)	
Adj. R^2	0.52	0.55	0.53	0.65	

Notes: Significant at: *p , 10, **p , 5 and ***p , 1 percent; n ¼ 89; SE in parentheses

Table VI. Homicides and kind of democracy

is that a more differentiated look at democracy is necessary. We propose that it is not the level of procedural democracy itself that is important, which is what the polity IV score emphasizes, but rather the more substantive variable that reflects the extent to which democratic policies serve as a means for equitable social development.

We discuss this idea with a simple rational-behavior theoretical model and from an empirical perspective. The model suggests a transmission mechanism from less voice to less redistribution, which in turn increases a poor citizen's propensity to seek economic gain through violence. Empirically, we capture this idea by distinguishing between established democracies with low and high inequality. We label these two democracy forms as social and conservative democracies, respectively. The empirical results suggest that higher homicide rates are statistically significantly limited to conservative

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Upon joining the homicide class, this reward is hidden from tax authorities and constitutes the only source of potential income for the murderer. The alternative to gaining income from becoming a murderer is to generate income in civil society, including participation in the democratically established income redistribution process; for example, by participating in a progressive income tax or a redistributive social pension system. The model assumes that no individual can derive income from participating in both the homicide class and the non-criminal civil society activity. Finally, the economic reward for joining the homicide class is small enough to be appealing only to those individuals with initial income smaller than the median income. Thus, from a pure rational choice perspective the model provides only the relatively poor individual with an economic incentive to kill another, but high income individuals have no incentive to commit murder for economic gain.

Let the probability of escaping punishment be p. If the assailant gets caught and convicted, the sentence is S. A murderer's utility function, U_M, can then be written most simply as linear utility function:

$$U_M = pR - (1 - p)S \qquad (1)$$

While this utility function assumes risk neutrality, the incorporation of risk aversion would not change the comparative static results below.

The murderer operates in a democracy that provides him with the utility function U_D if he chooses to remain a member of civil society, specifically:

$$U_D = (1 - t)y + t - \frac{t^2}{2v} \qquad (2)$$

Equation (2), is adopted with slight modification from Boix (2003) and models a democracy in which each citizen pays the proportional tax rate, t, and all tax revenues are equally redistributed across members of civil society. This implies that other tax and spending obligations of government are held constant in the background. In particular, tax changes do not lead to changes in spending on criminal justice system, thus the probability of escaping punishment, p, is exogenous in the model.

For simplicity, the average income is set to one, so that each individual gets an amount t as a redistribution grant from the government. The empirical fact that income distributions are always skewed to the right, meaning that $y_{mode} < y_{median} < y_{mean}$, is also adopted here. Everyone with an income lower (higher) than y_{mean} will hence be a net receiver (payer) from the redistribution system.

The third term on the right hand side of equation (2) indicates that taxation is associated with distortionary effects, whose size depends positively on the tax rate, t, and on an exogenous democracy indicator v, which is not included in Boix (2003) utility function. The democracy indicator, v, is defined for $0 < v \leq 1$ and can be interpreted as the median voter's "voice" in the democratic process. If v is 1, the median voter's preferences are exactly implemented by the democratically elected representatives, and the distortionary effect of taxation is equal to 1 half of the square of the tax rate. The distortionary effect increases as v goes towards zero, implying a weaker governmental responsiveness to the median voter. In practice, factors like corruption, political mistrust, and capital flight contribute to low voice. The presence of low democratic voice creates anti-government sentiments, spawning more socially costly articulation mechanisms such as popular protests, strikes or riots, which also make government (including the tax administration system) less efficient.

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democracies, which are democracies in which income inequality is relatively high. These conservative democracies that fail to create an equitable socioeconomic system have a greater likelihood for violence than social democracies and authoritarian regimes.

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Appendix 1

Variable	Transformation	Abbreviation	Source
Log homicide rate per 100,000 population	Average of available data for the 2000-2008 period, natural log	lnHC	World Bank (n.d.), this dataset only covers countries from Sub-Sahara Africa, Latin America and the Caribbean, East Asia and the Pacific, South Asia, Central and Eastern Europe (transitional economies), and the Middle East and North Africa. Data for Western European and North American countries was taken from the World Health Organization's (n.d.)
Log GDP per capita, PPP ($2,005)	Average of available data for the 2000-2008 period, natural log	lnyPPP	World Bank Development Indicator Database (2011)
Square of log GDP	GDP PPP squared	lnyPPP2	
Tax revenue as a percentage of GDP	Average of available data for the 2000-2008 period	TaxRev	
Urban population (percentage of total)		Urban	
Gini index		Gini	
Polity2 score	Average of available data for the 2000-2008 period	Polity	Marshall et al. (n.d.)
Dummy for social and conservative democracy	Social democracy (SD) when all observations between 2000 and 2005 were labeled as such. Similar for conservative democracy (CD)	SD and CD	Hsu (n.d.)
Median age	In 2009	MedAge	United Nations (n.d.)
Civil total score	Sum of all civil and ethnic political violence and war scores between 1981 and 2008	Civtot	Center for Systemic Peace (n.d.)

Table AI.
Variables and sources

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Table AII.
Dataset

Country	Code	Region	Homicide	yPPP	Polity	MedAge	Urban	SD (Hsu)	CD (Hsu)	Gini	TaxRev	C	ivViol	CSDX	CCDX
Albania	ALB	CEE	5.7	5,928.2	7.4	29.7	44.2	0	1	31.7	16.82		2	0.00	0.00
Armenia	ARM	CEE	2.6	3,793.6	5.0	31.8	64.4	0	1	33.36	14.94		0	0.00	0.00
Azerbaijan	AZE	CEE	2.5	4,560.3	27.0	28.2	51.5	0	0	35.11	16.74		21	0.00	0.00
Bosnia and Herz.	BIH	CEE	2.1	6,052.6	0.0	38.9	45.3	0	1	33.34	20.9		24	0.00	0.00
Bulgaria	BGR	CEE	3.1	9,352.9	8.9	41.5	70.0	0	1	36.3	20.16		0	0.00	0.00
Croatia	HRV	CEE	3.2	14,784.8	8.4	41.3	56.4	0	1	31.28	20.76		12	0.00	0.00
Estonia	EST	CEE	9.5	15,321.9	9.0	39.5	69.4	0	0	36.5	15.98		0	0.00	0.00
Hungary	HUN	CEE	2.4	16,098.4	10.0	39.7	66.0	0	1	28.46	21.28		0	0.00	0.00
Kazakhstan	KAZ	CEE	13.4	8,067.4	25.6	29.3	57.0	0	0	32.75	12.88		0	0.00	0.00
Kyrgyz Republic	KGZ	CEE	8.1	1,717.9	20.2	24.8	35.8	0	0	32.68	14.26		0	0.00	0.00
Latvia	LVA	CEE	8.4	12,202.4	8.0	39.9	68.1	0	1	35.92	14.54		0	0.00	0.00
Lithuania	LTU	CEE	9.5	13,339.3	10.0	39.4	66.8	0	1	33.99	16.73		0	0.00	0.00
Macedonia	MKD	CEE	3.5	7,587.0	8.3	35.7	64.9	0	1	39.83	19.78		0	0.00	0.00
Moldova	MDA	CEE	7.9	2,191.9	7.9	35.0	43.1	0	1	36.81	16.65		7	0.00	0.00
Poland	POL	CEE	1.9	13,587.6	9.8	37.9	61.5	0	1	33.79	17.04		0	0.00	0.00
Russia	RUS	CEE	21.6	11,347.2	5.6	37.9	73.1	0	1	39.75	14.85		44	0.00	0.00
Slovenia	SVN	CEE	1.6	22,994.7	10.0	41.4	49.7	0	1	30.15	20.28		0	0.00	0.00
Turkey	TUR	CEE	3.8	10,389.7	7.0	28.0	66.7	0	1	41.71	19		35	2.41	0.00
Ukraine	UKR	CEE	8.4	5,240.4	6.3	39.4	67.6	0	1	28	15.04		0	0.00	0.00
China	CHN	EAP	1.9	3,937.4	27.0	33.8	39.5	0	0	41.53	8.69		19	0.00	0.00
Indonesia	IDN	EAP	4.0	3,136.1	7.1	27.9	46.8	0	1	38.5	12.29		45	0.00	0.00
Lao PDR	LAO	EAP	5.6	1,604.1	27.0	20.4	26.4	0	0	34.69	11.24		2	0.00	0.00
Malaysia	MYS	EAP	3.9	11,439.0	3.3	26.0	66.4	0	1	37.91	15.57		0	0.00	0.00
Mongolia	MNG	EAP	12.6	2,525.4	10.0	25.9	56.8	0	1	34.13	20.65		0	0.00	0.00
Philippines	PHL	EAP	8.9	2,861.1	8.0	23.0	61.8	0	1	44.87	13.37		90	0.00	0.00
Thailand	THA	EAP	7.3	6,485.9	5.8	32.8	32.1	0	1	42.52	16.32		6	0.00	0.00
Argentina	ARG	LAC	7.1	10,669.0	8.0	30.2	91.1	0	1	50.66	12.18		0	0.00	0.00
Bolivia	BOL	LAC	16.2	3,607.3	8.3	21.7	63.7	0	1	58.56	15.19		0	0.00	0.00
Brazil	BRA	LAC	25.8	8,463.6	8.0	28.6	83.5	0	1	56.96	15.84		0	0.00	0.00

(continued)

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Country	Code	Region	Homicide	yPPP	Polity	MedAge	Urban	SD (Hsu)	CD (Hsu)	Gini	TaxRev	CivViol	CSDX	CCDX
Chile	CHL	LAC	5.0	11,771.0	9.3	31.8	87.2	0	1	54.09	18.2	0	0.00	0.00
Colombia	COL	LAC	52.5	7,230.4	7.0	26.5	73.3	0	1	58.27	11.66	76	0.00	10.00
Costa Rica	CRI	LAC	7.3	8,953.4	10.0	27.8	61.2	0	1	48.49	15.81	0	0.00	9.10
Dominican Rep.	DOM	LAC	15.4	6,263.9	8.0	24.8	65.8	0	1	50.86	14.62	0	0.00	0.00
El Salvador	SLV	LAC	44.3	5,642.2	7.0	23.7	59.5	0	1	50.05	12.38	18	0.00	0.00
Guatemala	GTM	LAC	36.0	4,101.9	8.0	18.7	46.8	0	1	54.67	11.38	35	0.00	0.00
Honduras	HND	LAC	42.6	3,197.2	7.0	20.7	46.1	0	1	55.89	15.06	1	0.00	0.00
Jamaica	JAM	LAC	46.8	6,920.7	9.0	26.1	52.5	0	1	46.93	25.74	0	0.00	7.39
Mexico	MEX	LAC	21.0	12,525.7	8.0	27.2	76.0	0	1	49.49	11.66	10	0.00	0.00
Nicaragua	NIC	LAC	12.0	2,284.4	8.2	21.7	55.7	0	1	51.32	15.86	3	0.00	0.00
Panama	PAN	LAC	11.0	9,198.5	9.0	27.1	69.7	0	1	55.87	9.73	0	0.00	0.00
Paraguay	PRY	LAC	16.2	3,927.3	7.7	22.8	57.8	0	1	54.27	11.22	0	0.00	0.00
Peru	PER	LAC	7.4	6,280.8	8.6	25.3	71.0	0	0	51.94	13.58	24	0.00	0.00
Uruguay	URY	LAC	5.1	9,686.3	10.0	33.5	91.8	0	1	45.43	17.03	0	0.00	0.00
Venezuela	VEN	LAC	39.0	9,865.7	5.8	25.8	91.7	0	1	46.44	12.67	0	0.00	2.81
Egypt	EGY	MENA	0.6	4,342.2	24.7	23.6	42.6	0	0	32.45	14.45	8	0.00	0.00
Iran	IRN	MENA	3.1	9,040.0	22.0	26.3	66.4	0	0	38.28	6.69	16	0.00	0.00
Israel	ISR	MENA	3.9	23,442.2	10.0	29.5	91.6	0	1	39.2	27.31	38	0.00	1.75
Jordan	JOR	MENA	2.4	4,209.5	22.2	22.4	78.3	0	0	38.3	20.37	0	0.00	0.00
Morocco	MAR	MENA	0.6	3,427.6	26.0	25.8	54.7	0	0	40.76	22.36	0	0.00	0.00
Qatar	QAT	MENA	0.9	67,025.0	210.0	30.1	95.3	0	0	41.1	20.74	0	0.00	0.00
Tunisia	TUN	MENA	1.4	6,292.5	23.8	28.6	64.9	0	0	40.81	21.18	0	0.00	0.00
Afghanistan	AFG	SA	3.4	795.5	20.8	16.8	22.6	0	0	29.4	5.6	84	0.00	0.00
Bangladesh	BGD	SA	3.0	1,041.4	3.3	24.1	25.3	0	1	30.87	8.09	6	0.00	0.00
Bhutan	BTN	SA	2.4	3,425.9	27.2	23.8	29.9	0	0	46.74	8.91	6	0.00	0.00
India	IND	SA	3.6	2,205.3	9.0	24.7	28.6	0	1	36.8	9.85	139	1.39	0.00
Nepal	NPL	SA	4.9	949.0	0.7	21.3	15.3	0	0	47.3	9.17	22	0.00	0.00
Pakistan	PAK	SA	5.8	2,110.1	23.3	21.0	34.6	0	0	31.44	10.03	35	0.00	0.00
Sri Lanka	LKA	SA	7.7	3,482.8	5.6	30.3	15.3	0	1	40.66	13.85	99	4.92	0.00
Benin	BEN	SSA	11.4	1,316.8	6.3	18.3	39.7	0	1	38.62	15.98	0	0.00	0.00

(continued)

Table AII.

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Table AII.

Country	Code	Region	Homicide	yPPP	Polity	MedAge	Urban	SD (Hsu)	CD (Hsu)	Gini	TaxRev	CivViol	CSDX	CCDX
Burkina Faso	BFA	SSA	3.4	1,006.8	−0.3	16.7	18.0	0	0	39.6	11.69	0	0.00	0.00
Cape Verde	CPV	SSA	6.5	2,648.6	9.8	20.9	56.6	0	1	50.4	22.97	0	0.00	0.00
Cen. Afr. Rep.	CAF	SSA	26.3	693.0	1.0	19.4	38.0	0	0	43.57	6.21	9	0.00	0.00
Congo, Rep.	COG	SSA	17.5	3,414.2	−4.3	19.4	59.8	0	0	47.32	7.72	12	0.00	0.00
Ghana	GHA	SSA	4.1	1,174.1	6.7	20.4	47.0	0	1	42.76	17.1	1	0.00	0.00
Kenya	KEN	SSA	6.1	1,332.6	5.6	18.3	20.6	0	1	47.68	17.52	9	0.00	0.00
Lesotho	LSO	SSA	25.2	1,209.6	7.3	19.6	22.7	0	1	52.5	47.97	0	0.00	0.00
Liberia	LBR	SSA	24.8	381.0	3.0	18.4	57.3	0	0	38.16	0.27	36	0.00	0.00
Madagascar	MDG	SSA	10.8	893.3	7.0	18.3	28.3	0	1	47.36	10.53	0	0.00	0.00
Nigeria	NGA	SSA	3.6	1,663.4	4.0	18.5	45.5	0	1	42.93	0.2	32	0.00	0.00
Senegal	SEN	SSA	5.0	1,559.5	7.8	17.9	41.4	0	1	40.22	16.12	8	0.00	0.00
Sierra Leone	SLE	SSA	12.8	608.2	4.6	18.3	36.6	0	0	42.52	10.95	33	0.00	0.00
South Africa	ZAF	SSA	45.2	8,443.7	9.0	24.7	58.8	0	1	57.77	26.02	21	0.00	5.76
Swaziland	SWZ	SSA	31.6	4,267.1	−9.0	19.1	24.0	0	0	50.68	25.5	0	0.00	0.00
Togo	TGO	SSA	12.1	778.1	−2.9	19.6	39.2	0	0	34.41	15.13	0	0.00	0.00
Uganda	UGA	SSA	10.6	893.1	−2.7	15.5	12.5	0	0	44.2	11.49	34	0.00	0.00
Zambia	ZMB	SSA	11.6	1,108.7	4.8	16.8	35.0	0	1	46.41	17.28	0	0.00	0.00
Austria	AUT	WENA	0.8	33,342.2	10.0	41.4	66.4	1	0	29.15	20.57	0	3.60	0.00
Belgium	BEL	WENA	1.6	31,807.3	9.6	41.1	97.3	1	0	32.97	26	0	0.78	0.00
Canada	CAN	WENA	1.5	34,347.4	10.0	39.6	80.0	0	1	32.56	13.94	0	0.89	0.00
Finland	FIN	WENA	2.2	30,217.3	10.0	41.8	62.2	0	1	26.88	22.57	0	5.40	0.00
Germany	DEU	WENA	0.7	31,668.1	10.0	43.9	73.4	0	1	28.31	11.4	0	4.27	0.00
Greece	GRC	WENA	0.9	23,923.6	10.0	41.3	60.3	0	1	34.27	20.71	0	10.00	0.00
Ireland	IRL	WENA	0.9	37,009.3	10.0	34.3	60.2	0	1	34.28	24.67	0	0.00	0.00
Italy	ITA	WENA	0.9	28,219.6	10.0	43.0	67.6	0	1	36.03	22.36	0	0.00	1.12
Norway	NOR	WENA	0.9	46,341.8	10.0	38.7	76.9	1	0	25.79	28.11	0	6.27	0.00
Spain	ESP	WENA	1.0	26,943.3	10.0	39.9	76.7	0	1	34.66	13.23	0	0.00	0.00
Sweden	SWE	WENA	1.0	31,884.1	10.0	40.7	84.3	1	0	25	21.93	0	6.90	0.00
Switzerland	CHE	WENA	0.8	35,834.2	10.0	41.6	73.3	0	1	33.68	10.29	0	0.00	0.00
USA	USA	WENA	6.5	41,564.3	10.0	36.5	80.4	0	1	40.81	10.99	0	0.00	4.18

This article has been cited by:

1. Steve Hall. 2014. The socioeconomic function of evil. *The Sociological Review* 62:10.1111/sore.2014.62.issue-s2, 13-31. [CrossRef]

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