Is cultural diversity a curse or a boon for institutional quality?*

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September 11, 2019

Abstract

We examine the effect of diversity of values within a country on the institutional quality. We develop a tractable and straightforward measure of diversity in human values using World Value Surveys. We find that cultural diversity in human values promotes efficient institutions.

Keywords: cultural diversity, institutions, values
JEL: O11, P51, O57, O43

* We are grateful to seminar participants at Glasgow University and conference participants at PET 2018 (Hue, Vietnam), EEFS 2019 (Genova, Italy), STOREP 2019 (Siena, Italy), and Tokyo Summer 2019 Conference on Economics of Institutions and Organizations for helpful comments.

I. Introduction

Although diversity is typically desirable for economic outcomes, there is now a growing consensus that ethnicity, religion, and language diversity negatively impact economic growth (Easterly and Levine 1997; Collier 2001; Alesina and La Ferrara 2005; Montalvo and Reynal-Querol 2005; Alesina et al. 2016) and human development outcomes (Gerring et al. 2015). Yet, despite this widespread evidence of cultural diversity shaping economic development, the possible explanations for this influence have not been fully explored. Specifically, existing studies have focused primarily on cultural diversity to reflect visible 'external traits' such as ethnicity, religion and language adversely eroding institutional quality and economic performance.

While the above explanation is plausible and empirically supported, the goal of this paper is to develop and test an alternative, though complementary, explanation to account for another aspect of cultural diversity that capture diversity in norms, values and preferences (i.e., invisible internal traits). The significance of the distinction between external and internal traits becomes apparent in the following stark comparison between Argentina and Tanzania. Argentina is religiously, ethnically, and linguistically homogeneous, but from the aspect of human values, it is highly fragmented. Tanzania, on the other hand, is heterogeneous from the aspects of ethnicity, religion, and language, but appears quite homogeneous in human values.[1]

We develop a tractable and straightforward measure of diversity in human values, which we call 'value fractionalization', using World Value Surveys. Unlike Desmet et al. (2017), we select responses not to all, but only to ten items created using crucial questions from the survey following the approach of Inglehart and Baker (2000). Since there are no pre-determined groupings for human values in contrast to ethnicity, language, and religion, we first create groups called 'value types'. Individuals are classified into the same value type if they made similar responses to the survey

[1] See Table A1 in Online Appendix for full details.

questions in the WVS. Then value fractionalization is calculated from the population shares of the value types within a country.

We then investigate the link between diversity in human values and institutional quality. People support political parties based on their values so that diversity in human values may affect institutional quality through the election. That is, value fractionalization has an impact on the quality of institutions. We find a positive association between value fractionalization and institutional quality, but since better institutions may facilitate heterogeneous values, causality relationship requires more attention. To address this problem, we report models in which value fractionalization is treated as endogenous. As neighbouring countries tend to have similar values because of people who immigrated or people who share a common history, we use neighbours' value fractionalization as an instrument for value fractionalization. Our analysis establishes a positive causal impact of value fractionalization on institutional quality.[2] As a potential explanation, the presence of different values in society may improve flexibility in institutions and the tolerance for different values may lead to more efficient institutions. In other words, addressing diversity in values may promote the quality of institutions.

We perform several robustness checks. For instance, our core result is robust to the inclusion of variables such as legal origin dummies, ethnic fractionalization, language fractionalization, and religious fractionalization. Further, the use of different measures of institutions does not change our main result.

Research to date has not yet determined the mechanism behind a positive correlation between diversity in values and institutions (Desmet et al., 2017). Given the importance of institutional quality in economic performance (Acemoglu et al.,

[2] The underlying assumption behind our IV strategy is that diversity in human values of neighboring countries does not have direct impact on institutional quality of the home country. People in neighboring countries do not have voting rights so that institutional quality is not affected by values of neighboring countries.

2001; Rodrik et al., 2004; Acemoglu et al., 2014), our study suggests that diversity in human values may have an impact on economic performance via institutional quality.

We organise the remainder of this paper as follows. Section 2 presents the theoretical motivation. Section 3 describes value fractionalization and defines all the key variables. In section 4, we present the link between diversity in human values and the quality of institutions. Section 5 investigates the robustness of our main results, and section 6 provides the concluding remarks.

II. Theoretical motivation

The following simple model illustrates why diversity in invisible traits may have a positive effect on institutions' development in contrast to the traditional characteristics of diversity.

Let us consider an intermediary (a lawyer, a government representative or a middle man) is meeting two business people randomly selected from the population. A potential total gain from the deal, if it goes through between these two individuals, is B>0. There are two possibilities for the intermediary: (a) to completely legalize the deal between these two individuals making an explicit and a very detailed contract – that will reduce the total gain to by a factor of c, $0 < c < 1$; or (b) to rely on the chance that a rather informal understanding between these two individuals will not get broken later ruining the deal. The probability of the deal going through is higher if individuals are of the same cultural type. Therefore, in case (a) the total gain would be *cB*, while in case (b) it is either $p_H B$ for the individuals of the same type or $p_L B$ for the individuals of different types, where $0 < p_L < p_H < 1$. It is immediate that a visibility of the type difference would be a crucial factor.

When difference in types is not hidden then all what is required for the intermediary is to compare the numbers p_L and c or p_H and c to decide on the best course of action. How society is diversified with respect to the types plays no role in the analysis in this case. But when the types are hidden, the intermediary need to consider

the probability that two randomly selected individuals in the society are from different groups. This probability is a familiar fractionalization index:

$$Fractionalization \equiv 1 - \sum_{i=1}^{n} s_i^2$$

where the population shares of the cultural groups in society are denoted as $s_1, s, .. , s_n$ and n is the number of cultural groups. This index takes values from 0 to 1 and it is maximized when every individual in a society belongs to the different cultural group. The intermediary need to compare *cB* from case (a) with the total gain in case (b) equal to $(Fractionalization) * p_L B + (1 - Fractionalization) * p_H B$, which can be rewritten as $p_L B + (1 - Fractionalization) * (p_H - p_L)B$.

It follows that, if the difference between the cultural types is substantial (so $(p_H - p_L)$ is not close to zero), then the higher factorization of the society reduces

the total profit in case (b) and therefore makes a full legalization of case (a) more attractive.

Since the full legalization would have a positive effect on the development of institutions (measured, e.g. through Rule of Law index), we therefore might be able to demonstrate a positive effect of hidden cultural diversity on the institutions.

We would argue that traditional characteristics of cultural diversity (ethnic, religious and linguistic) are rather visible at the levels of a substantial difference. Therefore, to capture properly the proposed positive effect of cultural diversity on the institutions, we need to concentrate on the hidden (or invisible) traits. In the next section we present our way to approach it.

III. Value fractionalization

A. Measuring value fractionalization

In this section, we discuss the procedure to calculate our index of value fractionalization. Following the literature on cultural diversity (e.g. Easterly and Levine, 1997; Fearon, 2003; Alesina and La Ferrara, 2005; Desmet et al., 2017), our value fractionalization index measures the probability that two randomly selected

individuals in a society are from different cultural groups and is defined as in the previous section.

We then use WVS to construct cultural groups based on values.

WVS provides a cross-cultural measure of peoples' values, and many researchers have used the survey data in the past. The survey asks many aspects of human concerns such as attitude toward politics, economy, religion and family. The way of creating value fractionalization index is the following. We first select some survey questions which are important dimensions of human values. Then we classified individuals into the same group who made similar responses. We call this group 'value type'. Finally, we derive value fractionalization index from the population shares of the value types in a country. We follow Inglehart and Baker (2000) and Inglehart and Welzel (2005) to find essential questions from WVS.[3]

We use the third round to the sixth round of the WVS data. The information was collected between 1994 and 2014: Wave 3 (1994-1998), Wave 4 (1999-2004), Wave 5 (2005-2009) and Wave 6 (2010-2014).[4] The sample sizes differ between cultural groups.. In contrast to ethnicity, language, and religion, there are no pre-determined groupings for human values. We use k-means cluster analysis to classify respondents into three groups[5]. By this grouping method, individuals in the same group (value type) share common characteristics.[6] Cluster analysis provides the population shares

[3] Using the essential questions, the following ten items are created: importance of god, autonomy index, disapproval of abortion, national pride, respect for authority, materialist index, feeling of unhappiness, disapproval of homosexuality, abstain from signing petition, and distrusting people. See Online Appendix A2 for full details.

[4] We excluded Wave 1 and Wave 2 because they include too few developing countries.

[5] We use three groups because it is easy to interpret each value type and the main result does not change with the number of groups (e.g., value fractionalization based on three groups and four groups are highly correlated).

[6] Individuals classified as value type 1, compared with other value types, tend to abstain from petition and disapprove abortion. Many individuals in Jordan and Libya are classified as value type 1. Value type 2 mainly consists of people who do not show greater respect for authority and people who trust others more in comparison to other value types. The respondents in Sweden and Norway tend to have this value type. Individuals classified as value type 3 have a

of the value types in a society so that we can calculate the value fractionalization index. Individuals in a society with a low-value fractionalization score tend to share common values.

B. Data

Our primary measure of institutions is the rule of law index for 2014 from the Worldwide Governance Indicators (WGI) constructed by the World Bank. This measure is used in Rodrik et al. (2004) and Acemoglu et al. (2014). According to Rodrick et al. (2004, pp. 138), the advantage of using the rule of law as an index of institutional quality is that it is available for many countries, and this index "captures more elements that go toward determining institutional quality." Further, Acemoglu et al. (2014, pp. 885) use the rule of law index because this measure provides "the most up-to-date measure of broad institutions." The rule of law index "capturing perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence" (Kaufmann et al. 2011, pp. 223). This measure ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance. GDP per capita in 2014 is our measure of current economic performance as reported in Penn World Table 9.0.

IV. Value fractionalization and institutional quality

Desmet et al. (2017) show a positive correlation between cultural fractionalization and institutions such as democracy. We also observe a similar result using our measure. Table 1 demonstrates that diversity in human values is positively and significantly related to log GDP per capita and that countries with a higher fractionalization in human values exhibit a better institutional quality. This paper

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tendency to approve homosexuality and show greater national pride. USA and Canada have many value type 3 individuals.

investigates the impact of diverse values within a country on the quality of institutions because people living in the country determines their institutional quality via election. Heterogeneity in human values may produce better decisions through a broader range of perspectives. Therefore, heterogeneity in human values may positively affect institutions. Managing diversity in human values promotes institutional flexibility, which in turn, enhances institutional quality.

Table 1 - Correlation Results for Value and Cultural Fractionalizations

	Value fractionalization	Cultural fractionalization
Cultural fractionalization	0.67***	-
Log GDP per capita in 2014	0.64***	0.28**
Rule of law in 2014	0.53***	0.36***

Notes: * p<0.1, ** p<0.05, *** p<0.01.
Sources: Value fractionalization; Authors' calculation. Cultural fractionalization; Desmet et al. (2017). Log GDP per capita; Penn world table. Rule of law; WGI.

In Table 2, we examine the link between diversity in human values and institutions. We regress value fractionalization (columns 1-4) and cultural fractionalization (columns 5-8) on the rule of law, a proxy for institutions. In columns (3), (4), (7) and (8) we include British and French colonial dummies since colonial experience plays a vital role in institutions. In all regressions, we consistently found significant positive effects of diversity in human values on the quality of government. We further check the robustness of this result by following La Porta et al. (1999) and replacing colonial dummies with German, French, Scandinavian and Socialist legal origin dummies in table 5. Again the evidence suggests that managing diversity in human values promotes institutional quality.

Table 2 – Diversity in Human Values and Rule of Law, OLS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: Rule of law in 2014							
Value fractionalization	2.94***	2.87***	3.17***	3.05***				
	(0.51)	(0.57)	(0.55)	(0.58)				
Cultural fractionalization					9.91***	10.49***	9.52***	10.91***
					(3.07)	(2.96)	(3.15)	(3.06)
Sub-Saharan Africa		-0.09		-0.19		-0.85**		-0.93**
		(0.31)		(0.31)		(0.33)		(0.35)
British colony			0.46**	0.49**			0.13	0.35
			(0.23)	(0.24)			(0.26)	(0.26)
French colony			-0.22	-0.20			-0.57	-0.20
			(0.33)	(0.34)			(0.45)	(0.46)
R-squared	0.28	0.28	0.33	0.33	0.13	0.21	0.16	0.24
Number of observations	84	84	84	84	70	70	70	70

Notes: Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01.
Sources: Value fractionalization; Authors' calculation. Cultural fractionalization; Desmet et al. (2017); Rule of law; WGI.

Diversity in human values may affect institutions positively. It may, however, be also the case that more flexible institutions may promote more diverse values within the country. To address the endogeneity, we follow Alesina and Zhuravskaya (2011) and develop IV regression with neighbours' value fractionalization as an instrument for value fractionalization. The central idea is that neighbouring countries tend to have similar values because of people who immigrated or people who share a common history [7]. Therefore, value fractionalization is affected by value fractionalization of neighbouring countries. It is plausible that neighbours' diversity in human values has no direct impact on institutional quality because neighbours do not have a voting right[8]. In Table 3 columns (1)-(3), a country is called a neighbour if it shares a common land border. In columns (4)-(6), we add countries that coastlines are less than 150 miles apart. We find that the F-statistics for the first stage regressions are sufficiently high to rule out the concern that our instrument suffers from the presence of a weak instrument. In column (1), the coefficient of value fractionalization is larger than that of the corresponding OLS estimate reported in column (1) of table 2. This indicates that OLS regressions likely to underestimate the true impact of value fractionalization on institutions because of measurement error. Overall, the results in Table 3 show a positive causal effect of value fractionalization on institutions. The robustness checks of the results are performed in the next section.

[7] Although cultural proximity is important when we consider proximity in values, cultural map by Inglehart and Welzel (2010, pp554) indicates that geographic proximity has a connection with proximity in values.

[8] See Table 4 for no direct effect of neighbors' value fractionalization on institutions in home country. No effect of neighbors' institutions on institutions in home country is demonstrated in Alesina and Zhuravskaya (2011).

Table 3 – Effects of Value Fractionalization on the Rule of Law, IV

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Two-stage least squares; Dependent variable is Rule of law in 2014						
Instrument	Mean neighbors value fractionalization			Mean neighbors value fractionalization (coast)		
Value fractionalization	3.55***	4.58***	4.04***	4.31***	5.77***	5.18***
	(0.96)	(1.38)	(1.26)	(1.05)	(1.62)	(1.54)
British colony		0.66*			0.85**	
		(0.35)			(0.39)	
French colony		0.15			0.20	
		(0.44)			(0.46)	
Sub-Saharan Africa			0.28			0.49
			(0.41)			(0.51)
Panel B: First stage for Value fractionalization						
Mean neighbors value fractionalization	0.72***	0.63***	0.68***			
	(0.12)	(0.15)	(0.15)			
Mean neighbours value fractionalization (coast)				0.74***	0.60***	0.65***
				(0.13)	(0.15)	(0.16)
British colony		-0.07			-0.09*	
		(0.05)			(0.05)	
French colony		-0.03			-0.07	
		(0.07)			(0.06)	
Sub-Saharan Africa			-0.03			-0.07
			(0.07)			(0.07)
R-squared	0.35	0.37	0.35	0.30	0.33	0.31
F statistics	36.20	18.75	21.85	31.53	15.39	16.42
Number of observations	70	70	70	77	77	77

Notes: Mean neighbours value fractionalization is used as an instrument for value fractionalization. Panel A reports the two stage-least squares estimates with the rule of law in 2014 as the dependent variable. In columns (1)-(3), value fractionalization is instrumented using mean neighbours value fractionalization. In columns (4)-(6), value fractionalization is instrumented using Mean neighbors value fractionalization (coast). Panel B reports the corresponding first stage. Mean neighbours value fractionalization is calculated using countries that are directly bordering. In mean neighbours value fractionalization (coast), we consider countries that are not only directly bordering but also coastlines are less than 150 miles apart. Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01. *Source:* Rule of law; WGI.

V. Robustness

A. The exclusion restriction

The exclusion restriction requires that value fractionalization of neighbouring countries has no direct impact on the Rule of the law of the home country, other than its effect through value fractionalization of the home country. In table 4, mean neighbours value fractionalization is included as an exogenous variable. We find that the coefficient of neighbours value fractionalization is statistically insignificant. Overall, the table shows that the effect of neighbours value fractionalization on the quality of institutions seems to work through the impact of diversity of values in the home country. This supports that neighbours value fractionalization is a valid instrument.

Table 4 - Impact of Value Fractionalization of Neighboring Countries on Rule of Law in the Home Country, OLS

	(1)	(2)
Dependent variable is Rule of law		
Value fractionalization	1.85***	1.87***
	(0.69)	(0.69)
Mean neighbors value fractionalization	1.23	1.49
	(0.85)	(0.96)
Sub-Saharan Africa		0.21
		(0.37)
R-squared	0.24	0.25
Number of observations	70	70

Notes: Direct effect of value fractionalization of neighbouring countries on rule of law in the home country; Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01.

Sources: Value fractionalization and mean neighbours value fractionalization; Authors' calculation.

B. Additional controls and different samples

Robustness of our result relies on the assumption that the link between value fractionalization and the quality of institutions is not driven by omitted variables. As

discussed in La porta et al. (1999), legal origin plays an important role in the quality of government. We add legal origin dummies in tables 5 and 6. We find that the effect of value fractionalization on the Rule of law is unchanged after controlling for these dummies.

Further, to see if the lack of data affects our main result or not, Table A3 in Online Appendix uses countries that have data for more than or equal to half of the neighbors. Again, we find a significant effect of value fractionalization on the quality of institutions.

In all cases, the results are similar to those in table 2, and the coefficient of value fractionalization is always significantly different from zero. In summary, the results show a robust effect of value fractionalization on the quality of institutions.

Table 5 – Robustness to Additional Controls for Table 2, OLS

	(1)	(2)	(3)	(4)
Dependent variable: Rule of law in 2014				
Value fractionalization	3.07***	2.82***		
	(0.51)	(0.54)		
Cultural fractionalization			6.97**	7.60***
			(2.70)	(2.52)
Sub-Saharan Africa		-0.36		-0.94***
		(0.27)		(0.29)
Socialist legal origin	-0.93***	-1.00***	-0.42	-0.72***
	(0.24)	(0.24)	(0.26)	(0.26)
German legal origin	0.43	0.37	0.96**	0.66
	(0.38)	(0.38)	(0.41)	(0.39)
French legal origin	-0.53**	-0.61***	-0.55**	-0.71***
	(0.20)	(0.21)	(0.25)	(0.24)
Scandinavian legal origin	1.19**	1.11	1.48***	1.18**
	(0.45)	(0.46)	(0.51)	(0.48)
R-squared	0.53	0.54	0.40	0.49
Number of obs.	84	84	70	70

Notes: The dependent variable is Rule of Law in 2014; Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01.

Sources: Value fractionalization; Authors' calculation. Cultural fractionalization; Desmet et al. (2017); Rule of law; WGI. Legal origin is the legal origin of the company law or commercial code of each country; La Porta et al. (1999)

Table 6- Robustness to Additional Controls for Table 3, IV

	(1)	(2)	(3)
Panel A: Two-stage least squares; Dependent variable is Rule of law in 2014			
Value fractionalization	5.20***	7.42***	5.29***
	(1.50)	(2.26)	(1.78)
Socialist legal origin	-1.20***	-1.71***	-1.01***
	(0.41)	(0.53)	(0.41)
German legal origin	0.50	-0.58	0.56
	(0.71)	(0.74)	(0.97)
French legal origin	-0.36	-0.42	-0.17
	(0.26)	(0.31)	(0.39)
Scandinavian legal origin	0.98*	0.54	1.14*
	(0.57)	(0.72)	(0.60)
Panel B: First stage for Value fractionalization			
Mean neighbors value fractionalization	0.52***		
	(0.14)		
Mean neighbors value fractionalization (coast)		0.47***	
		(0.16)	
Mean neighbors value fractionalization (restricted)			0.58***
			(0.17)
Socialist legal origin	0.10*	0.10*	0.02
	(0.05)	(0.06)	(0.06)
German legal origin	0.14	0.15*	0.09
	(0.12)	(0.08)	(0.15)
French legal origin	-0.02	-0.02	-0.06
	(0.05)	(0.05)	(0.06)
Scandinavian legal origin	0.07	0.07	-0.00
	(0.10)	(0.10)	(0.10)
R-squared	0.41	0.37	0.38
F statistics	13.06	8.61	11.61
Number of observations	70	77	48

Notes: Panel A reports the two stage-least squares estimates with the rule of law in 2014 as the dependent variable and value fractionalization is instrumented using mean neighbors value fractionalization. Mean neighbors value fractionalization is calculated using countries that are directly bordering. In Mean neighbors value fractionalization (coast), we consider countries that are not only directly bordering but also coastlines are less than 150 miles apart. In Mean neighbors value fractionalization (restricted), we used countries that have data for more than or equal to half of neighbors. Panel B reports the corresponding first stage.

Standard errors in parentheses * p<0.1, ** p<0.05, *** p<0.01.

Source: Rule of law; WGI.

C. Other cultural diversity measures

The relationship between cultural diversity and the quality of institutions has been mainly researched from diversity in 'external traits' such as ethnicity, religion and language. For example, people likely to vote following ethnic identity rather than policy so that diversity in external traits matters. Using cultural diversity data from Alesina et al. (2003), we control for three cultural diversity measures based on external traits. In table 7, we include cultural diversity based on external traits. We find that value fractionalization is significant after controlling for these measures. We further add these three cultural diversity measures based on external traits in our IV model and investigate the impact of them on the quality of institutions in table 8. Ethnic, religious, or language fractionalization has no significant impact on the quality of institutions, while value fractionalization plays an important role.

Table 7 - Robustness to the Inclusion of Cultural Diversity Measures, OLS

	(1)	(2)	(3)	(4)
Dependent variable : Rule of law in 2014				
Value fractionalization	2.11***	1.94***	2.54***	2.68***
	(0.62)	(0.68)	(0.68)	(0.57)
Ethnic fractionalization	-1.38**	-1.35**	-1.42**	-0.82*
	(0.56)	(0.56)	(0.55)	(0.49)
Language fractionalization	0.34	0.45	0.33	0.04
	(0.47)	(0.51)	(0.47)	(0.41)
Religious fractionalization	0.63	0.74	0.16	0.26
	(0.46)	(0.50)	(0.50)	(0.46)
Sub-Saharan Africa		-0.25		
		(0.41)		
British colony			0.50*	
			(0.26)	
French colony			-0.27	
			(0.33)	
Socialist legal origin				-0.95***
				(0.25)
German legal origin				0.26
				(0.38)
French legal origin				-0.56**
				(0.25)

Scandinavian legal origin				1.01**
				(0.50)
R-squared	0.35	0.35	0.39	0.56
Number of observations	81	81	81	81

Notes: OLS regressions of the rule of law on cultural diversity measures; Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01

Sources: Ethnic fractionalization, language fractionalization and religious fractionalization; Alesina et al. (2003). Rule of law; WGI.

Table 8- Robustness to the Inclusion of Cultural Diversity Measures, IV

	(1)	(2)	(3)	(4)
Panel A: Two-stage least squares; Dependent variable is Rule of law in 2014				
Value fractionalization	4.07***	4.88**	6.02**	6.26***
	(1.43)	(2.14)	(2.52)	(3.02)
Ethnic fractionalization	-1.04	-0.99	-1.15	-1.11
	(0.71)	(0.76)	(0.83)	(0.87)
Language fractionalization	1.08*	0.92	0.61	0.59
	(0.60)	(0.65)	(0.87)	(0.88)
Religious fractionalization	-0.70	-1.10	-1.65	-1.83
	(0.70)	(1.00)	(1.21)	(1.54)
Sub-Saharan Africa		0.53		0.63
		(0.68)		(1.70)
Panel B: First stage for Value fractionalization				
Mean neighbors value fractionalization	0.60***	0.47***	0.51***	0.43***
	(0.14)	(0.16)	(0.17)	(0.15)
Ethnic fractionalization	-0.13	-0.12	-0.07	-0.08
	(0.11)	(0.10)	(0.10)	(0.09)
Language fractionalization	0.01	0.05	0.12	0.11
	(0.10)	(0.10)	(0.11)	(0.10)
Religious fractionalization	0.24**	0.29***	0.24**	0.31***
	(0.09)	(0.09)	(0.11)	(0.10)
Sub-Saharan Africa		-0.14*		-0.39***
		(0.08)		(0.12)
R-squared	0.41	0.44	0.45	0.56
F statistics	17.68	8.99	9.41	8.08
Number of observations	69	69	47	47

Notes: In columns (1) and (2), full sample is used. In columns (3) and (4), we use countries that have data for more than or equal to half of neighbors. Panel A reports the two stage-least squares estimates with the rule of law in 2014 as the dependent variable and value fractionalization is instrumented using mean neighbors value fractionalization. Mean neighbors value fractionalization is calculated using countries that are directly bordering. Panel B reports the corresponding first stage.

Standard errors in parentheses * p<0.1, ** p<0.05, *** p<0.01
Sources: Ethnic fractionalization, language fractionalization and religious fractionalization; Alesina et al. (2003). Rule of law; WGI.

D. A different measure of institutions

We then seek whether our result is sensitive to the use of different measures of the quality of institutions. We first replace rule of law with the average of six categories for the quality of institutions-Rule of Law, Control of Corruption, Government Effectiveness, Political stability and Absence of Violence/ Terrorism, Regulatory Quality, Voice and accountability. Tables 9 and 10 show OLS and IV results using this measure instead of the rule of law. In conclusion, our main results survived. Therefore, the use of the average six categories does not affect our main findings.

We then investigate whether our results hold using alternative indices for institutions. Following La Porta et al. (1999) and Alesina and Zhuravskaya (2011), we use the Corruption Perception Index from Transparency International (www.transparency.org) as a measure for government efficiency. As seen in table 11, we find a positive association between diversity in human values and government efficiency. Further, several additional robustness checks have been done in Appendix..[9]

[9] .(provisional) Adding tables for Influential observations, different instrument, different measures of institutions and conflict (whether our model is robust to excluding countries that had conflict since 1990).

Table 9 – Diversity in Human Values and Average of six categories for the Quality of Institutions, OLS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable: Average of six categories for the quality of Institutions								
Value fractionalization	3.05***	2.96***	3.16***	3.04***				
	(0.44)	(0.49)	(0.47)	(0.50)				
Cultural fractionalization					10.17***	10.80***	9.41***	10.78***
					(2.70)	(2.54)	(2.75)	(2.64)
Sub-Saharan Africa		-0.11		-0.18		-0.91		-0.92***
		(0.26)		(0.27)		(0.28)		(0.30)
British colony			0.30	0.33			-0.04	0.19
			(0.20)	(0.20)			(0.23)	(0.23)
French colony			-0.27	-0.25			-0.68	-0.31
			(0.29)	(0.29)			(0.40)	(0.39)
R-squared	0.37	0.37	0.40	0.40	0.17	0.29	0.21	0.31
Number of observations	84	84	84	84	70	70	70	70

Notes: Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01.
Sources: Value fractionalization; Authors' calculation. Cultural fractionalization; Desmet et al. (2017) ; Rule of Law, Control of Corruption, Government Effectiveness, Political stability and Absence of Violence / Terrorism, Regulatory Quality, Voice and accountability; WGI.

Table 10 – Effects of Value Fractionalization on Average of six categories for the Quality of Institutions, IV

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Two-stage least squares; Dependent variable is Rule of law in 2014						
Instrument	Mean neighbors value fractionalization			Mean neighbors value fractionalization (coast)		
Value fractionalization	3.87***	4.46***	4.46***	4.45***	5.47***	5.32***
	(0.84)	(1.19)	(1.11)	(0.91)	(1.40)	(1.36)
British colony		0.43			0.63*	
		(0.30)			(0.34)	
French colony		0.01			0.09	
		(0.38)			(0.40)	
Sub-Saharan Africa			0.34			0.50
			(0.36)			(0.45)
Panel B: First stage for Value fractionalization						
Mean neighbors value fractionalization	0.72***	0.63***	0.68***			
	(0.12)	(0.15)	(0.15)			
Mean neighbors value fractionalization (coast)				0.74***	0.60***	0.65***
				(0.13)	(0.15)	(0.16)
British colony		-0.07			-0.09*	
		(0.05)			(0.05)	
French colony		-0.03			-0.07	
		(0.07)			(0.06)	
Sub-Saharan Africa			-0.03			-0.07
			(0.07)			(0.07)
R-squared	0.35	0.37	0.35	0.30	0.33	0.31
F statistics	36.20	18.75	21.85	31.53	15.39	16.42
Number of observations	70	70	70	77	77	77

Notes: Mean neighbors value fractionalization is used as an instrument for value fractionalization. Panel A reports the two stage-least squares estimates with the rule of law in 2014 as the dependent variable. In columns (1)-(3), value fractionalization is instrumented using mean neighbors value fractionalization. In columns (4)-(6), value fractionalization is instrumented using Mean neighbors value fractionalization (coast). Panel B reports the corresponding first stage. Mean neighbors value fractionalization is calculated using countries that are directly bordering. In mean neighbors value fractionalization (coast), we consider countries that are not only directly bordering but also coastlines are less than 150 miles apart. Standard errors in parentheses; *

p<0.1, ** p<0.05, *** p<0.01. *Source:* Rule of Law, Control of Corruption, Government Effectiveness, Political stability and Absence of Violence / Terrorism, Regulatory Quality, Voice and accountability; WGI.

Table 11 – Diversity in Human Values and Government Efficiency, OLS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: Corruption Perception Index							
Value frac.	55.74***	54.11***	58.83***	56.36***				
	(10.40)	(11.46)	(0.99)	(11.72)				
Cultural frac.					193.30***	205.88***	189.94***	213.76***
					(61.28)	(58.69)	(62.95)	(60.95)
Sub-Saharan Africa		-2.14		-3.86		-17.67***		-19.21***
		(6.17)		(6.19)		(6.46)		(7.03)
British colony			7.49	8.06*			1.58	6.17
			(4.62)	(4.72)			(5.25)	(5.28)
French colony			-5.53	-5.16			-10.56	-3.01
			(6.67)	(6.72)			(9.06)	(9.07)
R-squared	0.26	0.26	0.30	0.30	0.17	0.22	0.15	0.24
Number of observations	83	83	83	83	69	69	69	69

Notes: Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01.
Sources: Value fractionalization; Authors' calculation. Cultural fractionalization; Desmet et al. (2017); Corruption Perception Index; Transparency International (www.transparency.org).

Table 12- Effects of Value Fractionalization on Government Efficiency, IV

	(1)	(2)	(3)	(4)
Panel A: Two-stage least squares; Dependent variable is Corruption Perception Index				
Value fractionalization	71.72***	81.63***	86.70***	94.85***
	(19.37)	(25.55)	(27.60)	(33.66)
Sub-Saharan Africa		-5.63		4.24
		(8.20)		(8.37)
British colony			9.95	10.15
			(6.89)	(7.11)
French colony			1.66	2.05
			(8.68)	(8.99)
Panel B: First stage for Value fractionalization				
Mean neighbors value fractionalization	0.72***	0.68***	0.63***	0.60***
	(0.12)	(0.15)	(0.15)	(0.17)
Sub-Saharan Africa		-0.03		-0.02
		(0.07)		(0.07)
British colony			-0.07	-0.07
			(0.05)	(0.05)
French colony			-0.03	-0.03
			(0.07)	(0.07)
R-squared	0.34	0.34	0.36	0.36
F statistics	34.44	20.69	17.93	12.57
Number of observations	69	69	69	69

Notes: Panel A reports the two stage-least squares estimates with Corruption Perception Index (CPI) as the dependent variable and value fractionalization is instrumented using mean neighbors value fractionalization. Mean neighbors value fractionalization is calculated using countries that are directly bordering. Panel B reports the corresponding first stage.

Standard errors in parentheses * p<0.1, ** p<0.05, *** p<0.01.

Sources: Value fractionalization; Authors' calculation; Corruption Perception Index; Transparency International (www.transparency.org).

VI. Concluding remarks

In contrast to studies that investigate the impact of diversity in external traits on the quality of institutions, we examine the relationship between cultural diversity based on internal traits and institutional quality. This is because the institutional quality is often determined by the values of people living in the country. We develop value fractionalization as a measure of diversity based on human values and investigate the impact of value fractionalization on institutional quality.

Exploiting neighbours' value fractionalization as an instrument for value fractionalization, we show a positive causal impact of value fractionalization on institutional quality. Several robustness checks confirm that heterogeneity in human values leads to efficient institutions. Our results suggest that addressing diversity in human values promotes institutional flexibility and contributes to improving institutional quality. That is, having a tolerance for different values lead to flexible and efficient institutions.

This study offers suggestions for the missing link between diversity in values and economic performance. Given a positive impact of institutional quality on economic performance, shown by many papers, a positive impact of value fractionalization on institutions suggests that diversity in human values improves institutional quality, which in turn, enhances economic performance. Finally, and most importantly, our paper advocates the promotion of cultural diversity based on internal traits across countries.

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ONLINE APPENDIX

Table A1 – Diversity Measures for Argentina and Tanzania

	Argentina	Mean	Tanzania
Ethnic fractionalization	0.26	0.40	0.74
Language fractionalization	0.06	0.34	0.90
Religion fractionalization	0.22	0.45	0.63
Value fractionalization	0.66	0.45	0.14
Cultural fractionalization	0.58	0.53	0.47

Notes: Ethnic fractionalization, language fractionalization and religious fractionalization; Alesina et al. (2003). Value fractionalization; Authors' calculation. Cultural fractionalization; Desmet et al. (2017).

A2 - Ten Items used in the Paper

Importance of God :
Question-wording: "How important is God in your life? Please use this scale to indicate where 10 means very important and 1 means not at all important."
Individual-level data is used, and it takes a discrete number from 1 to 10. Larger numbers indicate a higher degree of importance.

Teach Children Obedience and Faith rather than Independence and Determination (Autonomy index) :
Question-wording: "Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five."
The list of qualities we used contains the following; "obedience," "religious faith," "independence," and "determination, perseverance."
We coded each of the above-mentioned qualities as 1 if chosen and 0 if not chosen. Then we calculated the following index:

$$\text{Autonomy index} = \text{Obedience} + \text{Religious faith} - \text{Independence} - \text{Determination, Perseverance}$$

This index is called autonomy index (Inglehart and Baker, 2000). The index ranges from –2 to +2. Thus, an individual who chose both independence and determination but neither obedience nor religious faith has a score -2. On the other hand, it scores +2 if an individual chose both obedience and religious faith but neither independence nor determination.

Disapproval of Abortion :
Question-wording: “Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card.”
The card provides discrete numbers from 1 to 10. 1 means “never justifiable” and 10 means “always justifiable.” The statement is “abortion.” Thus, this number shows the degree of approval of abortion, and it provides discrete numbers from 1 to 10 with larger numbers indicating a higher degree of approval. We reversed this scale so that larger numbers indicate a higher degree of disapproval of abortion.

National Pride :
Question-wording: “How proud are you to be [nationality]?”
It is required to answer the question from the following options. 1 “very proud”, 2 “quite proud”, 3 “not very proud”, and 4 “not at all proud.”
This paper reversed this scale. Therefore, larger numbers indicate a stronger degree of national pride.

Respect for Authority :
Question-wording: “I'm going to read out a list of various changes in our way of life that might take place in the near future. Please tell me for each one, if it were to happen, whether you think it would be a good thing, a bad thing, or don't you mind?”
The list we use is “greater respect for authority.” We coded individuals 1 if they showed greater respect for authority to be a good thing and 0 otherwise.

Priority for Economic and Physical Security (Materialist Values) :
Question-wording:
The first question is “People sometimes talk about what the aims of this country should be for the next ten years. On this card are listed some of the goals which different people would give top priority. Would you please say which one of these you, yourself, consider the most important?” and the next question is: “And which would be the next most important?”
The options include the followings: “Maintaining order in the nation,” “giving people more say in important government decisions,” “fighting rising prices” and “protecting freedom of speech.”
We coded each of “maintaining order in the nation” and “fighting rising prices” 1 if chosen in first or second choice and 0 if not chosen. We added them and calculated so-called Materialist values which range from 0 to 2 (Inglehart and Baker, 2000). An individual who chose both “maintaining order in the nation” and “fighting rising prices” has score 2 which means strong priority for materialistic goals.

The feeling of Unhappiness:
Question-wording: “Taking all things together, would you say you are: 1 Very happy, 2 quite happy, 3 not very happy, 4 not at all happy.”

It measures the degree of unhappiness. Larger numbers indicate a higher degree of unhappiness.

Disapproval of Homosexuality :
Question-wording: “Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card.”
The card provides discrete numbers from 1 to 10. 1 means “never justifiable” and 10 means “always justifiable Statement is “homosexuality.” Therefore, it indicates the degree of acceptance of homosexuality. We reversed this scale so that larger numbers indicate a higher degree of disapproval of homosexuality.

Abstaining from Signing Petitions:
Question-wording: “Now I'd like you to look at this card. I'm going to read out some different forms of political action that people can take, and I'd like you to tell me, for each one, whether you have actually done any of these things, whether you might do it or would never, under any circumstances, do it.”
Individuals who answered “have done” or “might do” are coded 0. Other individuals are coded 1. Hence, 1 indicates abstaining from signing petitions.

Distrusting in Other People:
Question-wording: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?: 1 Most people can be trusted, 2 need to be very careful.”
Individuals are coded 1 if they answered “need to be very careful” and 0 otherwise. Thus, this measure indicates how people are distrusting in other people.

Source: World Values Surveys Wave 3 (1995-1998), Wave4 (1999-2004), Wave 5 (2005-2009) and Wave 6 (2010-2014).

Table A3– Robustness Check for countries lacking data for more than half of neighbors

	(1)	(2)	(3)
Panel A: Two-stage least squares; Dependent variable is Rule of law in 2014			
Instrument	Mean neighbors value fractionalization		
Value fractionalization	4.21***	5.85***	4.40***
	(1.43)	(2.12)	(1.65)
British colony		0.82*	
		(0.43)	
French colony		0.89	
		(0.77)	
Sub-Saharan Africa			0.32
			(0.85)
Panel B: First stage for Value fractionalization			
Mean neighbors value fractionalization	0.71***	0.58***	0.64***
	(0.15)	(0.17)	(0.15)
British colony		-0.05	
		(0.05)	
French colony		-0.11	
		(0.09)	
Sub-Saharan Africa			-0.16
			(0.10)
R-squared	0.34	0.37	0.37
F statistics	23.71	11.68	18.55
Number of observations	48	48	48

Notes: This table uses countries that have data for more than or equal to half of the neighbors. Panel A reports the two stage-least squares estimates with the rule of law in 2014 as the dependent variable and value fractionalization is instrumented using mean neighbours value fractionalization. Mean neighbours value fractionalization is calculated using countries that are directly bordering. Panel B reports the corresponding first stage. Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01.

Source: Rule of law; WGI.