Respect, Responsibility, and Development

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Abstract

We examine the impact of the values *Respect for others* and *Responsibility* on output, productivity, and the accumulation of physical and human capital for a sample of 58 countries. We find that these two core values are important and that their impact is substantial. *Respect for others* works primarily through productivity whereas *Responsibility* is important for investment in physical and human capital. We also show that *Respect* and *Responsibility* reduce the influence of trust and mitigate the negative macroeconomic effects associated with fractionalized societies. Our results are robust to various treatments for endogeneity and under alternative samples.

JEL Codes: O11, O43, Z13

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1 Introduction

In an influential paper, Hall and Jones (1999) argue that the enormous variation in output per worker across countries is driven by differences in social infrastructure. They show that countries with stronger institutions achieve higher levels of investment in human and physical capital, greater productivity, and higher levels of output per worker. In this paper, we consider two social values - *Respect for others* and *Responsibility* - that we believe are more fundamental to prosperity than are institutions. We call these *core values* because we believe they reflect deeply-held beliefs that guide one's behavior and are fundamental elements of culture. We find strong evidence that *Respect for others* and *Responsibility* are critical to economic development. We also find that the effect of *Trust* is mitigated when we consider these two values, and that core values moderate the negative economic effects associated with fractionalized societies.

The literature linking values to institutions and to economic development has been sparse. There are exceptions. Tabellini (2008a) finds that culture and institutions affect economic development. In his presidential address to the European Economic Association, Tabellini (2008b) called for more research on how individual values influence institutional outcomes. Guiso et al. (2006) summarize recent research relating culture to economic behavior and outcomes. They define culture as a set of unchangeable values and beliefs and identify religious belief and ethnicity as the key exogenous determinants of institutions and economic activity. Few papers have a fully worked-out theory of how variables like trust, social capital, and ethnic fractionalization actually affect economic outcomes. Rather, they propose plausible chains of causality and support their contentions with empirical analyses.[1] Our paper follows this same approach.

Our view is that core values are deep determinants of productivity, physical and human capital accumulation, and output per worker. First, we may think of *Respect for others* and *Responsibility,* like *Trust,* as components of social capital. *Respect for others* is a rough measure of how seriously people take the Golden Rule. This code of conduct, prominent in nearly all religions, encourages individuals to be trustworthy

[1] Examples include the pioneering work of Mauro (1995) on corruption, Knack and Keefer (1997) on trust, and Acemoglu et al. (2001) on colonial development. An exception is Zak and Knack (2001) who present a model of growth and finance that incorporates trust.

when dealing with others, regardless of social distance. *Respect for others* discourages shirking, cheating, and corruption in economic exchange. It also raises the level of trust in society as in Breuer and McDermott (2012a), which facilitates exchange and increases economies of scope and scale. Productivity and output per worker are enhanced.

Responsibility is also important.[2] We conceive of individuals who place value on responsibility as having a low subjective discount rate. A low rate of time preference is the essence of responsibility. When individuals place a greater value on the future at the expense of the present, they are likely to invest in physical and human capital. Thus, we believe accumulation will be high in societies where responsibility is high. If this is true, output per worker will also be high.[3]

We test our ideas using survey data on *Respect for others* and *Responsibility* from the World Values Survey (2006). We follow a methodology similar to Hall and Jones (1999) where we investigate the impact of values on output per worker and its three component parts – productivity, capital intensity, and human capital. We find consistent evidence that values matter. Our results show that *Respect for others* works primarily through productivity, while *Responsibility* influences the accumulation of physical capital and human capital. The effects of both on output per worker are large and significant. The two values together are statistically significant in explaining 46% of the cross-country variation in output per worker. This pattern of results remains when we consider alternative specifications and samples.

Trust is considered an element of social capital and an important determinant of economic outcomes. So, we include it in our regressions alongside our two core values. Our results, however, show no role for *Trust* once *Respect* and *Responsibility* are included. It has also been argued that fractionalization retards economic development because societal divisions may bring civil conflict, corruption, mistrust, and oppression not experienced in more homogeneous societies.[4] To test this idea, we include a measure of *Ethnic Fractionalization* in our regressions. We find that core values eliminate the negative impact of fractionalization on capital accumulation, productivity, and output per worker.

[2]President Obama made *Responsibility* a centerpiece of his speech given to school children on September 8, 2009; see http://www.whitehouse.gov/MediaResources/PreparedSchoolRemarks.

[3]We develop a model of these ideas in Breuer and McDermott (2012b).

[4]See Mauro (1995).

Last, we confront the issue of endogeneity. The core values we propose may not be exogenous, either because of simultaneity with our outcome variables, because we have omitted other relevant observables or unobservables, or because of measurement error. We address these issues in several ways: with instrumental variables estimation, by expanding the set of regressors to include other qualities from the World Values Survey (2006), by investigating selection on observables and unobservables, and by using a sample that is less likely to contain measurement error. Whether we use instrumental variables estimation or include additional regressors individually or as a group along with *Respect* and *Responsibility,* we find the pattern established in the OLS results largely remains. We find no evidence that unobservable variables sufficiently explain our results. We also find that our results are robust to alternative samples.

The paper is organized as follows. In Section 2 we describe our data and its sources. In Section 3 we estimate our basic model and report baseline results from OLS regressions where *Respect* and *Responsibility* are the main regressors. Here, we also investigate the influence of trust and ethnic fractionalization on output in the presence of core values. In Section 4, we address concerns about potential endogeneity and the robustness of our results using several approaches. Section 5 concludes.

2 Data

2.1 Core Values

The *Survey* (2006), extensively used by researchers from many different areas of the social sciences, provides us with data pertaining to individuals' views on many facets of life. We focus on a set of questions (numbered a027 - a043) that we call the "Qualities Group." In the Qualities Group, the following question was asked several times sequentially:

> *"Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you feel to be especially important? Please choose up to five (CODE FIVE ONLY)."*

Each time it was asked, the question was accompanied by a list of qualities[5] in order as:

> *good manners, independence, hard work, feeling of responsibility, imagination, tolerance and respect for others, thrift saving money and things, determination and perseverance, religious faith, unselfishness, and obedience.*

The number of respondents per wave varies across countries but typically ranges from 1,000-1,300. We use responses from the 1995 (Wave 3) and 2000 (Wave 4) editions. Where there are duplicate countries across Waves 3 and 4, we use data from the most recent wave only. We use responses to *tolerance and respect for others (Respect,* for short) and *feeling of responsibility* (*Responsibility*, for short) and calculate the percentage of respondents selecting the value as important for each country. This response rate is our measure of the two core values, *Respect* and *Responsibility*.

Table 1 reports the percentage of respondents selecting each of the core values for a sample of fifteen countries. We also report response rates averaged across *OECD* and *non-OECD* countries. There are twenty-three *OECD* countries and thirty-five *non-OECD* countries. The full sample average, standard deviation, and range are also reported. Appendix A describes the data in detail and Appendix B presents the values data for each country in our sample.

In constructing the response rates, we had to correct for over-responses because some respondents selected more than five values. To address this, we dropped individuals who selected more than five values. We also constructed an alternative measure of *Respect* and *Responsibility* for each country by running a regression of the response (0 or 1) of each individual in the *World Values Survey* on three personal characteristics – sex, age, and education level – and a country dummy (U.S. was the excluded country). Our thinking is that core values are those values shared by society irrespective of demographic characteristics. The response rate controlling for the three characteristics was measured as the constant (the U.S. response rate) plus the coefficient on the country dummy. The cross-country correlation of these response rates with the corresponding raw response rates was about 0.95. Thus, we report results using only the original source response rates.

[5]We select only those qualities that were asked in Waves 3 or 4, which leaves us with a list of eleven.

Table 1: Data: Selected Countries and Groups

Country	*Respect*	*Responsibility*	A	k^{ρ}	h	y
United States	0.80	0.72	1.00	1.00	1.00	1.00
Argentina	0.69	0.76	0.44	0.93	1.02	0.42
Canada	0.82	0.77	0.73	1.07	0.95	0.74
China	0.72	0.64	0.14	0.93	0.78	0.10
France	0.85	0.73	0.74	1.10	1.01	0.82
Germany	0.71	0.82	0.77	1.17	0.84	0.76
India	0.58	0.63	0.16	0.68	0.82	0.09
Ireland	0.75	0.52	1.22	0.90	0.80	0.88
Japan	0.71	0.91	0.61	1.30	0.84	0.66
Mexico	0.71	0.77	0.36	0.94	0.86	0.29
Russian Fed.	0.68	0.76	0.26	1.11	0.89	0.26
Singapore	0.69	0.81	0.72	1.24	0.99	0.88
Sweden	0.92	0.87	0.69	1.07	0.94	0.69
Uganda	0.56	0.55	0.14	0.36	0.65	0.03
United Kingdom	0.79	0.47	0.92	0.97	0.82	0.73
Average by Income Group						
OECD	0.77	0.73	0.73	1.10	0.92	0.73
non-OECD	0.65	0.69	0.34	0.86	0.84	0.27
Entire Sample						
Range	.43-.92	.47-.92	.13-1.21	.36-1.29	.60-1.05	.03-1.0
Overall Average	0.70	0.72	0.50	0.96	0.87	0.45
Overall Std. Dev.	0.11	0.12	0.26	0.19	0.10	0.28

Overall, we see that descriptive statistics on *Respect* and *Responsibility* are similar. They each average about 70% and have standard deviations and ranges that are similar. There is about an equal split between the fifteen countries where *Respect for others* is higher than *Responsibility* and vice-versa. However, a look at the cross-country correlation between the two values in Table 2 shows it is quite low at 0.28.

2.2 The Components of Production

Output in each country is produced according to:

$$Y = K^{\alpha} (AH)^{1-\alpha} \tag{1}$$

where Y is total output, K is the capital stock, A is productivity, and H is total human capital. As is standard, $H = hL$, where h is individual human capital and L is the number of workers. Following Hall and Jones (1999), we express output per worker $y \equiv \frac{Y}{L}$ as:

$$y = Ak^{\rho}h \tag{2}$$

where $k \equiv \frac{K}{Y}$ is the *capital intensity* and $\rho \equiv \frac{\alpha}{1-\alpha}$.

We decompose output per worker into each of its components in (2). Our data for y comes from the Penn World Table (Heston et al. (2006)) – we use the $RGDPWK$ series. We construct our own capital series using the perpetual inventory method.[6] To get capital intensity, we divide our capital series by $RGDPCH$ from the Penn World Table. For h, we use the method of Hall and Jones (1999). They assume that the logarithm of h is related to years of schooling in a piece-wise linear manner.[7] Our data for years of schooling comes from Barro and Lee (2001). Finally, we set $\alpha = .33$, which is a standard value. Productivity A is found as the residual once

[6] We constructed K in two steps. First, we found the initial capital stock: $K_0 = \frac{I_a}{g+\delta}$. In this expression, I_a is the average of the first four observations of investment in each country, g is technology growth and δ is depreciation. We assume $g = .02$ and $\delta = .06$ in all countries. Second, we applied the recursive formula $K_{t+1} = (1-\delta) K_t + I_t$ to fill out later values of K. We use the earliest observation possible, which is 1960 in most cases.

[7] For 1 to 4 years, the return to schooling is 13.4 percent; for the next four, 10.1 percent; after that, it is 6.8%. These are average rates of return for, respectively, Sub-Saharan Africa, the world, and the OECD, as measured by Psacharopoulos (1994).

Table 2: Correlations

	Respect for others	*Responsibility*	A	k^ρ	h	y
Respect for others	1					
Responsibility	0.28	1				
A	0.59	0.39	1			
k^ρ	0.39	0.50	0.49	1		
h	0.31	0.53	0.46	0.53	1	
y	0.59	0.51	0.94	0.73	0.64	1
Correlations for A, k^ρ, h, and y use logs of each series.						

the other series in (2) have been constructed. The sources and descriptions of the variables are provided in Appendix A.

The last four columns of Table 1 show output per worker and the three components in (2) for fifteen selected countries and averages by the OECD indicator – relative to the United States. Appendix B contains data for the full list of countries. The decomposition updates estimates on these three components and output per worker reported in Hall and Jones (1999). As in their work, we see substantial variation in output per worker across countries. The variation appears most notably linked to large differences in productivity A across the sample. The country with the highest productivity is Ireland and the country with the lowest productivity is Uganda. Differences in k^ρ and h are most pronounced for the low income countries.

In Table 2, we report correlations between the variables. We see that the correlation between y and A (in logs) is 0.94 which is close to the estimate of 0.89 in Hall and Jones (1999). They also found a correlation of 0.52 between A and h. In our data – with fewer countries and more recent data – we find a correlation of 0.46. Hall and Jones (1999), however, found that A and k^ρ were correlated at 0.25. In our data, the correlation is much higher at 0.49. Table 2 also shows that *Respect for others* and *Responsibility* are positively correlated with our components of production, A, k^ρ, h, and y. We turn next to an empirical examination of core values and the components of production.

3 OLS Estimation

3.1 Basic Model

Our basic model is the following:

$$Y_j = \alpha_0 + \alpha_1 Respect_j + \alpha_2 Responsibility_j + \alpha_3 X_j + \epsilon_j \tag{3}$$

where Y_j represents the set of outcome variables (A_j, k_j^ρ, h_j, or y_j), each in logs, and X_j represents a control variable.[8] Our primary control variable for reported results is a ten-year lag of *Civil Liberties*. (See Appendix A for details). Our parameters of interest are α_1 and α_2, which capture the positive effect of values on Y. Finally, ϵ_j is the error term. For now, we assume ϵ_j is uncorrelated with *Respect* and *Responsibility* - a point we will take up in Section 4.

3.2 Baseline Results

The first set of results we present uses OLS to estimate (3) with and without our control variable, X_j. These are reported in Table 3, panels A, B, C, and D, corresponding to the outcome variables in Y_j. In the first two columns of each panel, we include either *Respect for others* or *Responsibility* separately. In the third column, we include both. Column 4 of each panel includes the ten-year lag of *Civil Liberties* as a control. The inclusion of the control reduces our sample size by one observation. We also run all specifications including six regional dummies or an *OECD* dummy. The pattern of results is very similar. For brevity, we do not report the results.

Table 3 reveals a pattern that we will see repeated throughout the paper: *Respect for others* works through productivity A, whereas *Responsibility* works through the capital intensity k^ρ and human capital h. Both values are highly significantly related to output per worker y.

Panel A reports the results for productivity. When *Respect* or *Responsibility* is included alone, each core value is statistically significant and positive across all specifications. *Responsibility* loses significance, however, when it is included with

[8] Breuer and McDermott (2010) show that output per capita (not per worker) is closely related to Respect (which they label "intrinsic trustworthiness"). They do not however, consider Responsibility or the separate components of output.

Table 3: OLS

	Panel A: Dependent = A				Panel B: Dependent = k^{ρ}			
Respect for others	3.27**		2.89**	1.24*	0.86**		0.59*	0.20
	[0.00]		[0.00]	[0.02]	[0.00]		[0.02]	[0.42]
Responsibility		1.93*	1.19	0.44		1.00**	0.85**	0.67**
		[0.01]	[0.11]	[0.47]		[0.00]	[0.00]	[0.00]
10-year lag of Civil Liberties				0.22**				0.05*
				[0.00]				[0.02]
Constant	6.76**	7.64**	6.16**	6.66**	-0.28	-0.39*	-0.70**	-0.58*
	[0.00]	[0.00]	[0.00]	[0.00]	[0.20]	[0.05]	[0.01]	[0.02]
Observations	58	58	58	57	58	58	58	57
Adj. R^2	0.34	0.14	0.39	0.61	0.14	0.24	0.29	0.39
	Panel C: Dependent = h				Panel D: Dependent = y			
Respect for others	0.36*		0.2	0.07	4.49**		3.68**	1.51*
	[0.02]		[0.13]	[0.68]	[0.00]		[0.00]	[0.02]
Responsibility		0.55**	0.50**	0.44**		3.48**	2.54**	1.55*
		[0.00]	[0.00]	[0.00]		[0.00]	[0.01]	[0.04]
10-year lag of Civil Liberties				0.02				0.29**
				[0.13]				[0.00]
Constant	0.44**	0.29**	0.19	0.23	6.92**	7.54**	5.65**	6.32**
	[0.00]	[0.01]	[0.15]	[0.07]	[0.00]	[0.00]	[0.00]	[0.00]
Observations	58	58	58	55	58	58	58	55
Adj/ R^2	0.08	0.27	0.28	0.34	0.34	0.25	0.46	0.67
Notes: Robust p values in brackets. **significant 1%; * at 5%.								

Respect, with or without the control. By itself, *Respect* accounts for 34% of the cross-country variation in productivity and rises to 61% with the inclusion of the *Civil Liberties* control. We find that for productivity, a 1 percentage point increase in *Respect for others* corresponds to a rise in productivity between 1.2-2.9 percent.

Panel B reports the results for these same specifications for capital intensity.[9] Without the control, we see that *Respect* and *Responsibility* are positive and significant and jointly explain 29% of the cross-country variation in k^{ρ}. With the inclusion of lagged *Civil Liberties*, however, only *Responsibility* retains significance. Our estimates suggest that a 1 percentage point rise in *Responsibility* will raise capital intensity by 0.67 percent or more.

Panel C reports the results for human capital. *Respect* loses significance when *Responsibility* is included. On the other hand, *Responsibility* retains significance across all specifications. The overall explanatory power of *Responsibility* alone is 27%. The result is consistent with our hypothesis that an individual's decision to invest in human capital will be positively correlated with the value they place on being responsible. However, the effect of core values on h is smaller than those reported for k^{ρ} or A. Countries with a *Responsibility* score that is 1 percentage point higher will see human capital 0.4-0.5 percent higher.

Our decomposition of y suggests that the effect of values should stem from their separate effects on A, k^{ρ}, and h. Panel D reports the results for y. Looking across the specifications, we see that these values have a positive, statistically significant effect on output per worker, with or without the control variable. When both values are included, 46% of the variation in cross-country output is explained. The overall effect of these values is large. Without controls, our results suggest that a 1 percentage point increase in each of these values will collectively increase output per worker by 6.1 percent. The inclusion of *Civil Liberties* dampens the effect, but it still remains large at 3.2%.

We also estimated (3) using three alternative controls that are similar to *Civil Liberties*. These are:

- *25-year lag of Civil Liberties* $CL - 25$
- *Index of Economic Freedom* IEF

[9] When we use the term "capital intensity", we mean it to refer to k^{ρ}.

- *Property Rights PR*

The variables are described in Appendix A. Unfortunately, the data for IEF and PR do not go back far enough to allow us to lag them. With the inclusion of the 25-year lag of *Civil Liberties*, the sample size is reduced to 47 observations. When we re-estimate (3) with these three alternative controls, we find (but do not report) the same pattern of sign and significance on *Respect for others* and *Responsibility.*

Overall, we find support that our two core values contribute positively to production per worker. In nearly all cases, where one or both of the core values are statistically significant, we see levels of statistical significance of 3% or higher.

3.3 Core Values and Trust

There has been much empirical work that examines the influence of trust on economic outcomes and finds a statistically significant, positive relationship (Knack and Keefer, 1997; Zak and Knack, 2001; and Guiso et al., 2009). In this section, we include the well-known trust question from the World Values Survey (2006) in (3), to see if it adds anything to the determination of y or its components. Another reason to include *Trus*t is that it may be an omitted variable that is correlated with our core values. If so, its inclusion is warranted to lessen any endogeneity that might arise from this source.

The trust question reads:

> *"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. and 2. Can't be too careful."*

The percentage of respondents in each country selecting *"Most people can be trusted"* corresponds to our measure of *Trust.* (See Appendix A for details).

Table 4 reports the results where we now include *Trust* and our two core values, with and without the 10-year lag of *Civil Liberties.* As a starting point, we present results where only *Trust* is a regressor. The first column of Table 4 documents that trust is significant to A, k^{ρ}, and y but not h. However, after the inclusion of the two core values and the control, the empirical results differ little from those reported earlier. Trust has no statistically significant impact on the components of production

Table 4: Trust and Core Values

	Panel A: Dependent $=A$			Panel B: Dependent $= k^{\rho}$		
Trust	1.27**	0.49	0.41	0.47**	0.19	0.17
	[0.01]	[0.25]	[0.18]	[0.012]	[0.24]	[0.34]
Respect for others		2.70**	1.11*		0.52*	0.14
		[0.00]	[0.05]		[0.03]	[0.56]
Responsibility		1.04	0.32		0.79**	0.62**
		[0.17]	[0.60]		[0.00]	[0.00]
10-year lag of Civil Liberties			0.22**			0.05*
			[0.00]			[0.02]
Constant	8.66**	6.26**	6.74**		-0.66*	-0.55*
	[0.00]	[0.00]	[0.00]		[0.01]	[0.02]
Observations	58	58	57	58	58	57
Adj. R^2	0.11	0.39	0.62	0.09	0.3	0.40
	Panel C: Dependent $= h$			Panel D: Dependent $= y$		
Trust	0.08	-0.09	-0.09	1.81**	0.59	0.49
	[0.44]	[0.30]	[0.26]	[0.00]	[0.24]	[0.24]
Respect for others		0.23+	0.10		3.45**	1.35*
		[0.08]	[0.56]		[0.00]	[0.05]
Responsibility		0.52**	0.47**		2.35*	1.40†
		[0.00]	[0.00]		[0.01]	[0.06]
10-year Lag of Civil Liberties			0.05*			0.29**
			[0.02]			[0.00]
Constant		0.17	0.21		5.77**	6.40**
		[0.19]	[0.11]		[0.00]	[0.00]
Observations	58	58	57	58	58	57
Adj R^2	-0.01	0.28	0.35	0.12	0.47	0.68
Notes: Robust p-values in brackets. **significant 1%; * at 5%; † at 10%.						

or overall output per worker. *Respect* remains significant for productivity and output per worker. *Responsibility* remains significant for capital intensity, human capital, and output per worker.

Our results may signal that something more fundamental is happening. In Breuer and McDermott (2012a), we constructed a theoretical model to explain how trust arises endogenously. One of the key building blocks of that model was the causal relationship running from trustworthiness to trust. If *Respect for others* is conceptually similar to trustworthiness, as we believe, then it is not surprising that *Trust* does not register as a significant determinant of Y when included with *Respect* and *Responsibility*.

3.4 Core Values and Societal Divisions

It is unsurprising that in countries with recurring ethnic and religious tensions, we see lower standards of living and lower levels of education, investment, and productivity. Empirical work by Mauro (1995), Easterly and Levine (1997), Alesina and Ferrara (2005), and Montalvo and Reynal-Querol (2005) report that societies that are highly fractious or polarized along ethnic or religious lines are likely to be under-performers.[10] We question whether *Respect for others* and *Responsibility* may ameliorate the negative influences of societal divisions on physical and human capital accumulation, productivity, and output per worker. If these core values are overarching guides to behavior between people, then ethnic or religious differences may not impede economic progress.

To test our idea, we investigate the effect of *Ethnic Fractionalization* on Y using data from Alesina et al. (2003). (See Appendix A). We first regress our outcome variables on *Ethnic Fractionalization* alone. These results are reported in the first column of each of the panels in Table 5. *Ethnic fractionalization* has a statistically significant negative effect on A, k^{ρ}, and y and on average explains about 14% of the cross-country variation in each.

Next, we add our two core values alongside *Ethnic Fractionalization*. The results

[10]There is an alternative view. Fractionalized societies are more diverse and therefore more likely to bring variety, imagination, and better problem solving to the production process. It is possible, therefore, that fractionalized societies could achieve better economic growth rates. See Alesina et al. (2000) and Lazear (1999).

Table 5: Societal Fractionalization and Core Values

	Panel A: Dependent = A			*Panel B: Dependent = k^{ρ}*		
Ethnic Fractionalization	-0.94**	-0.41	-0.15	-0.41*	-0.25	-0.19
	[0.00]	[0.18]	[0.50]	[0.03]	[0.13]	[0.22]
Respect for others		2.66**	1.19*		0.45	0.14
		[0.00]	[0.03]		[0.06]	[0.53]
Responsibility		1.06	0.42		0.77**	0.63**
		[0.16]	[0.68]		[0.00]	[0.00]
10-year lag of Civil Liberties			0.22**			0.05*
			[0.00]			[0.03]
Constant	9.33**	6.54**	6.79**	0.46**	-0.47	-0.41†
	[0.00]	[0.00]	[0.00]	[0.00]	[0.06]	[0.06]
Observations	58	58	57	58	58	57
Adj. R^2	0.12	0.40	0.61	0.14	0.33	0.41
	Panel C: Dependent = h			*Panel D: Dependent = y*		
Ethnic Fractionalization	-0.11	-0.02	0.00	-1.46**	-0.67	-0.34
	[0.24]	[0.82]	[0.22]	[0.01]	[0.13]	[0.33]
Respect for others		0.19	0.07		3.30**	1.41*
		[0.18]	[0.68]		[0.00]	[0.03]
Responsibility		0.49**	0.44**		2.33*	1.49*
		[0.00]	[0.00]		[0.01]	[0.04]
10-year lag of Civil Liberties			0.02**			0.28**
			[0.00]			[0.00]
Constant	0.72**	0.21	0.23	10.51**	6.28**	6.60**
	[0.00]	[0.17]	[0.11]	[0.00]	[0.00]	[0.00]
Observations	58	58	57	58	58	57
Adj R^2	0.02	0.27	0.34	0.15	0.49	0.68

Notes: Robust p-values in brackets. **significant 1%; * at 5%; † at 10%.

are reported in the second column of each panel. Accounting for core values removes the statistical significance of *Ethnic Fractionalization* wherever it was significant. At the same time, *Respect* remains significant for A and y; and *Responsibility* remains significant for k^{ρ}, h, and y. In the third column of each panel, we include *Civil Liberties* as a control and obtain the same result. *Ethnic fractionalization* remains insignificant and the pattern for core values from earlier tables persists.

We also investigate several other measures of societal division: *Religious Fractionalization, Ethnic Polarization,* and *Religious Polarization.*[11] (See Appendix A for descriptions). In no case are these measures statistically significant when *Respect* and *Responsibility* are included. Moreover, the pattern of results for *Respect* and *Responsibility* that we see in Tables 3 and 4 remains. Our results suggest that core values may reduce, if not completely eliminate, the negative effects of ethnic or religious divisions on development.

4 Exogeneity and Robustness

4.1 OLS and Endogeneity Problems

We have maintained to this point that our core values are exogenous. In this section, we consider the alternative. Let R stand for the two core values *Respect* and *Responsibility*. If $Cov(R, \epsilon) \neq 0$ in (3) then core values are endogenous and our OLS estimates of α_1 and α_2 reported in Table 3 are biased. There are three common sources of endogeneity: simultaneity, omitted variables, and measurement error. We address these potential problems in turn.

4.2 Simultaneous Equations Bias and Instrumental Variables Estimation

If core values R are influenced by income per capita y_j, then we have endogeneity arising from simultaneity. This is probably the critique most people have in mind with studies like this one. If true, our estimates in (3) are biased.

[11] Polarization is a measure of societal division that reaches a maximum when there are two groups. Fractionalization rises with the number of groups. See Montalvo and Reynal-Querol (2005).

We now consider an alternative model that accounts for this simultaneity and is closely related to our original model. Letting j index countries, the structure we propose is:

$$y_j = \alpha_0 + \alpha_1 Respect_j + \alpha_2 Responsibility_j + \epsilon_j \tag{4}$$

$$Respect_j = \beta_0 + \beta_1 y_j + \beta_2 Z_j + \nu_j \tag{5}$$

$$Responsibility_j = \delta_0 + \delta_1 y_j + \delta_2 Z_j + \omega_j \tag{6}$$

Here, we focus exclusively on the single outcome, per capita income y, since it makes most sense to link the determination of values to income and not, say, to capital intensity. In (5) and (6), Z stands for a vector of variables that are exogenous to y (uncorrelated with the error ϵ). Further, we see that y is determined predominantly, if not exclusively, by values R. Given this structure, there is a reduced form in which y and R are determined by the vector Z. Since Z is assumed uncorrelated with ϵ, we can use Z as a vector of instruments to recover estimates of (4) that are free of bias.

We can address simultaneous equations bias in (4) – as well as other sources of bias – by using instrumental variables estimation (or two-stage least squares). However, IV estimation has its own problems, which are often ignored. It is well-known that the instrumental variables estimator is biased, but that this bias disappears as the sample size gets large, provided two conditions are met. The conditions for *consistency* are:

- (i) $Cov\,(R, Z) \neq 0$
- (ii) $Cov\,(Z, \epsilon) = 0$,

where Z is the instrument. Our sample size is quite small. So, even if conditions (i) and (ii) *were* met, the instrumental variables bias might be large. Worse yet, if (i) is satisfied but (ii) is not, the bias problem can be severe even asymptotically. Asymptotically, the instrumental variables bias is $\frac{Corr(Z,\epsilon)}{Corr(R,Z)}\frac{\sigma_\epsilon}{\sigma_R}$. In contrast, the use of OLS introduces an asymptotic bias of $Corr\,(R, \epsilon)\,\frac{\sigma_\epsilon}{\sigma_R}$. The loss, therefore, from

using instrumental variables is:

$$L = \left(\frac{Corr\left(Z, \epsilon\right)}{Corr\left(R, Z\right)} - Corr\left(R, \epsilon\right) \right) \frac{\sigma_\epsilon}{\sigma_R} \tag{7}$$

To the extent that our instrument works on y mainly through R – so that $Corr\left(R, Z\right)$ is high and $Corr\left(Z, \epsilon\right)$ is low – we may well be better off using IV. This is why it is interesting to carry out this exercise and contrast the coefficients from the two methods.

Identification of α_1 and α_2 in (4) requires that we have at least two instruments. Ideally, we would like to use measures of *past core values* as instruments Z for current core values R. Because cultural traits exhibit persistence, values that were prevalent during the formation of societies are likely to be good instruments for R.[12] Unfortunately, we do not have data for early core values. So, instead we use data on early *institutions* for Z.

We posit that institutions embed the dominant values of society so that institutions in place in the past are proxies for early core values. We follow the literature on social capital and growth in choosing instruments determined by geography and past history. As instruments for *Respect* and *Responsibility*, we use *Common Law* and *Latitude*. (See Appendix A). *Common law* is an indicator that reflects the kind of legal system – common law or civil law – that the country possesses. In most cases, the legal system was inherited from the distant past. *Latitude* has been considered a determinant of colonial history and early institutions.[13]

These instruments do well in satisfying Condition (i): the bottom panel of Table 6 shows that they are highly correlated with both *Respect* and *Responsibility*. A case for Condition (ii) – that our instruments are uncorrelated with the error in the structural equation – is more difficult to make. We assume that *Common Law*

[12]Fernandez (2010), Fernandez and Fogli (2009), and Tabellini (2008) show that the country of origin of one's grandparents is very influential in determining a person's values today. Spolaore and Wacziarg (2009) use genetic distance as a metric for the extent to which cultural or biological beliefs, customs, etc. are transmitted intergenerationally.

[13]Hall and Jones (1999) use *latitude* as an instrument for *social infrastructure*. Acemoglu et al. (2001) use *settler mortality,* as an instrument for contemporary institutions (*constraint on the executive*). Our selection of instruments was limited by a desire to retain the sample size. If we used a 100-year lag of *constraint on the executive* or *settler mortality*, our sample size is reduced to 36 and 23 respectively.

Table 6: IV Results

	Dependent = y	
	IVs: *Common Law, Latitude*	
Respect for others	7.99**	
	[0.00]	
Responsibility	2.67†	
	[0.06]	
Constant	2.55	
	[0.15]	
Observations	58	
	First Stage Regression Results	
	IVs: *Common Law, Latitude*	IVs: *Common Law, Latitude*
	Respect	*Responsibility*
F-Test	9.39**	11.61**
	[0.00]	[0.00]
Notes: Robust p-values in brackets. **significant 1%; * at 5%; † at 10%.		

and *Latitude* affect y primarily through R. This is close to what Hall and Jones (1999) argue, but they frame the discussion in terms of current institutions, not values. We think that they are essentially correct except for one thing: institutions are determined fundamentally by values so that R alone can be used in the primary equation (4).[14] Even if our instruments *are* correlated with the error ϵ, equation (7) makes clear that the bias from using instrumental variables may be smaller than that from OLS.

To implement this approach we estimate (4) using *Common Law* and *Latitude* as instruments for our two core values. We report the two-stage least squares results of our IV estimation in the top portion of Table 6. Our IV results reveal a similar pattern to our OLS results. *Respect* is highly significant and *Responsibility* is significant at the 6% level.[15]

4.3 Omitted Variables Bias and Other Variables from the WVS

It is also possible that endogeneity arises from other sources. Omitted variables bias may arise if we have omitted relevant variables that are correlated with R. In this case, ϵ will contain the omitted variables causing $Cov(R, \epsilon) \neq 0$ in (3). Here, we address bias that may arise because of endogeneity induced from omitting potentially important variables from (3). Other variables correlated with *Respect* and *Responsibility* may be important in the determination of Y. Candidate omitted variables may include any of the other allied qualities asked in the *Qualities Group.* By including some of these in (3) we reduce the potential for omitted variables bias.[16]

There is little guidance as to what specifications would be appropriate to consider. Have we excluded one additional relevant quality; or two, or more? Therefore, we estimate several variants of (3). First, we include, one by one, each of the other eight

[14] In terms of our model above, add the structural equation $I_j = \pi_0 + \pi_1 R_j + \omega_j$ and add a term $\alpha_3 I_j$ to (4) where I refers to institutions.

[15] The system of equations (4), (5), and (6) gives a reduced form in Z for $Y = (A, k^\rho, h, y)$. We estimate the reduced form for each element of Y_j and find that *Common Law* and *Latitude* are jointly statistically significant.

[16] The results reported in Table 4 and Table 5, where we included *trust* and *ethnic fractionalization,* can be viewed as additional tests of omitted variable bias.

values from the list described in Section 2.1.[17] Our results are shown in Table 7. The first column shows the coefficient and p-value for the newly added value (e.g. *Independence* in Row 1); the second column shows the same information for *Respect*; and the third column for *Responsibility*. We do not report the coefficients or p-values for our control variable, the 10-year lag of *Civil Liberties,* or the constant, but both were always included and were positive and significant. Our two core values retain the pattern observed earlier. *Respect* is significant and large in magnitude in every specification in the panels for A and y. *Responsibility* is significant and large in the regressions for k^{ρ}, h and y. In fact, there may be some bias in our earlier results because of the omission of these additional qualities, but it does not seem to be severe. If we compare, for example, the coefficient of *Respect* on y in Table 7 to the most inclusive specification in each of Tables 3, 4, and 5, they are respectively, 1.48, 1.51, 1.35, and 1.41.

There is no reason to restrict ourselves to a *single* extra quality on the list, so we also estimated a specification that includes pairs of the remaining qualities from the Qualities Group plus *Trust*. We estimate:

$$Y_j = \alpha_0 + \alpha_1 Respect_j + \alpha_2 Responsibility_j + \alpha_3 X_j + \beta_1 Q_{1,j} + \beta_2 Q_{2,j} + \nu_j \qquad (8)$$

where Q_1 and Q_2 are any two qualities from the Qualities Group plus *Trust*. We sequentially estimate (8) for all possible quality pair combinations. By introducing the nine additional values two at a time, we get 36 supplemental specifications. We estimate each for our primary control, the 10-year lag of *Civil Liberties* and for the three other controls we introduced earlier in Section 3.2. Thus, we ran a total of 144 specifications for each outcome in $Y = (A, k^{\rho}, h, y)$.

Table 8 summarizes the results of the exercise for the magnitude of the *coefficient estimates* on *Respect* and *Responsibility*. Each cell is the average of α_1 or α_2 over the 36 specifications determined by the combinations of two of the other nine qualities, given the control variable X_j included in (8). The results are divided horizontally based on the control variable. We see that the magnitudes of these averages do not differ much from our baseline specification.

[17] We exclude *good manners* from the list because it was not asked in sixteen countries in our sample.

Table 7: Added Qualities

	Panel A: Dependent = A			Panel B: Dependent = k^{ρ}		
Added Value ↓	*Added*	*Respect*	*Respon*	*Added*	*Respect*	*Respon*
independence	0.32	1.22*	0.29	0.06	0.20	0.64**
	[0.94]	[0.03]	[0.65]	[0.66]	[0.42]	[0.01]
hard work	-0.64*	0.97*	0.12	0.10	0.24	0.72**
	[0.02]	[0.05]	[0.84]	[0.44]	[0.33]	[0.00]
perseverance	-0.14	1.23*	0.49	-0.19	0.19	0.73**
	[0.77]	[0.02]	[0.44]	[0.61]	[0.42]	[0.01]
thrift	-0.43	1.17*	0.56	0.38	0.26	0.57**
	[0.26]	[0.02]	[0.37]	[0.12]	[0.32]	[0.01]
imagination	0.36	1.06†	0.37	-0.16	0.27	0.70*
	[0.59]	[0.09]	[0.58]	[0.61]	[0.30]	[0.01]
religious faith	-0.49	1.19†	0.14	-0.13	-0.03	0.56*
	[0.20]	[0.06]	[0.81]	[0.41]	[0.91]	[0.02]
unselfishness	0.14	1.17*	0.48	0.02	0.19	0.68**
	[0.71]	[0.04]	[0.44]	[0.93]	[0.45]	[0.00]
obedience	-0.25	1.25*	0.34	-0.48*	0.22	0.47*
	[0.46]	[0.02]	[0.59]	[0.03]	[0.32]	[0.02]
	Panel C: Dependent = h			Panel D: Dependent = y		
Added Value ↓	*Added*	*Respect*	*Respon*	*Added*	*Respect*	*Respon*
independence	0.02	0.07	0.43**	0.39	1.48*	1.35†
	[0.78]	[0.69]	[0.00]	[0.27]	[0.02]	[0.07]
hard work	0.13*	0.13	0.51**	-0.40	1.34*	1.34†
	[0.04]	[0.45]	[0.00]	[0.19]	[0.04]	[0.07]
perseverance	-0.09	0.07	0.47**	-0.42	1.50*	1.68*
	[0.54]	[0.70]	[0.00]	[0.48]	[0.02]	[0.04]
thrift	-0.07	0.06	0.46**	-0.12	1.49*	1.58*
	[0.60]	[0.72]	[0.00]	[0.84]	[0.02]	[0.04]
imagination	-0.29	0.21	0.50**	-0.08	1.55*	1.57†
	[0.12]	[0.28]	[0.00]	[0.92]	[0.05]	[0.07]
religious faith	-0.08	0.04	0.38**	-0.71†	1.21†	1.08
	[0.28]	[0.83]	[0.00]	[0.08]	[0.10]	[0.13]
unselfishness	-0.11	0.12	0.41**	0.04	1.49*	1.56*
	[0.35]	[0.53]	[0.01]	[0.93]	[0.04]	[0.04]
obedience	0.01	0.07	0.44**	-0.72	1.54*	1.25
	[0.88]	[0.68]	[0.00]	[0.13]	[0.02]	[0.11]
Notes: 10-year lag of *Civil Liberties* and a constant included. Robust p-values in brackets.** significant at 1%; * at 5%; † at 10%.						

Table 8: Averages of α_1 and α_2

$X_j = Control \downarrow$		A	k^ρ	h	y
10-year lag of Civil Liberties	*Respect for others*	1.08	0.19	0.12	1.40
	Responsibility	0.25	0.61	0.46	1.32
25-year lag of Civil Liberties	*Respect for others*	1.38	0.12	0.14	1.65
	Responsibility	0.39	0.95	0.59	1.93
Index of Economic Freedom	*Respect for others*	1.29	0.32	0.06	1.67
	Responsibility	0.05	0.65	0.45	1.16
Property Rights	*Respect for others*	1.41	0.35	0.07	1.83
	Responsibility	0.03	0.65	0.45	1.14

Table 9: Average *p-values* for α_1 and α_2

$X_j = Control \downarrow$	α	A	k^ρ	h	y
10-year lag of Civil Liberties	*Respect for others*	0.071†	0.458	0.549	0.065†
	Responsibility	0.673	0.014**	0.004**	0.104†
25-year lag of Civil Liberties	*Respect for others*	0.059†	0.492	0.480	0.076†
	Responsibility	0.582	0.001**	0.003**	0.082†
Index of Economic Freedom	*Respect for others*	0.023*	0.305	0.700	0.029*
	Responsibility	0.675	0.017*	0.003**	0.102†
Property Rights	*Respect for others*	0.020*	0.243	0.660	0.019*
	Responsibility	0.698	0.017*	0.002**	0.106†
** significant at 1%; * at 5%; † at 10%.					

Table 9 shows the averages of the *p-values* for *Respect* and *Responsibility* from estimating (8). Again, each cell is the average of 36 specifications based on using all possible combinations of two of the other nine qualities. The table is again divided horizontally by the included control variable. The results confirm the baseline OLS results obtained earlier: *Respect for others* is significant for A and y; *Responsibility* is significant for k^ρ, h, and for y with ten-year lag of *Civil Liberties,* and for the other three controls at about the 10% level or better.

The effects of *Respect* and *Responsibility* are robust to a great number of different specifications. Other qualities on the list perform much differently. In particular, *Hard Work*, *Faith*, and *Obedience* are robustly *negatively* correlated with both *Respect* and *Responsibility* as well as with y.

4.4 Omitted Variables Bias and Selection on Unobservables

It is possible that even after controlling for observable omitted variables, bias in our estimates of α_1 and α_2 from (3) may persist because of important omitted *un*observables. The additional observable variables – call the set V – may not completely capture an additional important intangible cultural quality index C that influences Y and that may be correlated with core values R. In other words, our estimating equation (3) should be replaced with:

$$Y_j = b + R'_j\alpha + \beta_1 X_j + \beta_2 C_j + \epsilon_j \tag{9}$$

where R includes *Respect* and *Responsibility.*

Assume that *Culture* C is determined by observable qualities, V, and unobservable qualities c. Thus,

$$C = V'\gamma + c \tag{10}$$

If $Cov(R, c) \neq 0$, then our estimates of *Respect* and *Responsibility* in Table 7 or in Table 8 will be biased, even though we have controlled for V. It is possible that the bias is so large that the effect of R on Y is really zero, and our positive and significant estimates of α_1 and α_2 are just an illusion. We would like to know how large the selection on *unobservables* would have to be, relative to selection on *observables,* for this to be the case.

To find the relevant ratio, we follow Bellows and Miguel (2009) and Nunn and Wantchekon (2011). This method stems from original work by Altonji et al. (2005) in a set-up where the variable of interest is binary. The first step in the method is to estimate α_i in two models, one using a *restricted* set of controls (possibly no controls) based on the theorized model, and then a *full* model that introduces additional controls (or observables) the researcher thinks may create a source of bias. In our case, the restricted model corresponds to our original estimating equation (3). These $\hat{\alpha}_i$ estimates are reported in Table 3 using (3). We estimate two variants of a full model, V_1 and V_2. V_1 adds *Trust* and *Ethnic Fractionalization* to (3). V_2 augments the first variant with the first principal component of the eight additional qualities from the *Qualities Group.* Instead of introducing combinations of qualities

two at a time as we did in Section 4.3, we use the principal component of the eight additional qualities for convenience and brevity. The estimates from these variants are labelled $\hat{\alpha}_{i,Vj}$.

From these regressions, we calculate the ratio for each outcome in Y:

$$T_{i,j} = \hat{\alpha}_{i,Vj}/(\hat{\alpha}_i - \hat{\alpha}_{i,Vj}) \quad (i = Respect, Responsibility)\ (j = 1, 2) \tag{11}$$

Under the assumption that the true effect $\alpha_i = 0$, we know that $T_{i,j} = Cov(R_i, c_j)/Cov(R_i, V_j)$, so we can use it to consider the plausibility that our results are driven by unobservables in (3).[18] For outcome A, if we form $T_{1,1}$ using the coefficient estimate $\hat{\alpha}_1$ from (3) for *productivity A* on *Respect* and the coefficient estimate $\hat{\alpha}_{1,V1}$ from the same regression supplemented with *Trust and Ethnic Fractionalization*, we get a value of 6.75 (see the first cell of Table 10). We interpret this to mean that the influence of unobservables on *Respect* must be 6.75 times greater than the influence of observables if $\hat{\alpha}_1$ were really zero. Altonji et al. (2005), Bellows and Miguel (2009), and Nunn and Wantchekon (2011) state that the larger the ratio in absolute value, the less plausible it is that results can be explained by omitted *unobservables*. In these papers, ratios in excess of 1 were interpreted to mean that bias from unobservables was unlikely.

In Table 10 we present the $T_{i,j}$ ratio in ten cases. The row labeled V_1 reports the T ratios in (11) using $\alpha_{i,Vj}$ from our first full model; the row labeled V_2 reports the T ratios from our second full model. We only show the ratio for the coefficients that have been shown to be significant in the tables above. For example, since $\hat{\alpha}_1$ in the regression of h on *Respect* is rarely significant, we calculate a T ratio for $\hat{\alpha}_2$ only. In all cases the T ratios are above 2 – and in most cases they are well above 3.

4.5 Measurement Error and an Alternative Sample

Another source of bias may arise because of measurement error. Our data on values R is measured from survey responses, making it likely to be subject to error. If $R = R^* + \omega$, where R^* is the true value, our estimates in (3) will be biased toward zero. Our data aggregates the responses of approximately 256,000 respondents in 58 different countries. We took the answers from those individuals who selected at

[18] See the Appendix of Bellows and Miguel (2009) for more details on this method.

Table 10: $T_{i,j}$ for Omitted Variables Bias and Selection on Unobservables

	$A\,[\alpha_1]$	$k^{\rho}\,[\alpha_2]$	$h\,[\alpha_2]$	$y\,[\alpha_1]$	$y\,[\alpha_2]$
V_1	6.75	7.38	23	5.56	7.16
V_2	14.5	12.4	7.29	5.04	2.78
Source: Author's calculations. Absolute values reported.					

most five of the qualities from the *Qualities Group* (see Section 2.1), discarding the responses of those who chose six or more qualities. The great majority of those in our sample selected exactly five qualities.

A sizable minority – about 61,000 – chose *fewer* than five. We think this set of responses contains valuable information, because these individuals could have identified another quality as "important" but chose not to do so. We infer that the qualities chosen by this sub-sample were absolutely important to the responders. The qualities not selected must have been unimportant since choosing them was costless. This sub-sample thus provides stronger information about the relative importance of *Respect* and *Responsibility* and any of the other qualities in the *Qualities Group*. We cannot make this inference about people who selected five qualities. For this group, they may have thought ten of the qualities were important, but chose the five they thought were *most* important. Those who chose only three, however, did not think any of the other seven were important – otherwise, they would have identified them.

We use this sample of "under-responders" and re-run all of our specifications and tests. In large measure, we find strong support for our previous results. The OLS results in Tables 3 differed slightly in terms of the coefficient magnitudes, but the p-values were typically smaller (better). The inclusion of *Trust* and *Ethnic Fractionalization* changed our earlier results little. In a few cases, *Trust* retained significance at the 10% level for A and y. For the IV estimation results in Table 6, using the small sample improved the results in two ways: *Responsibility* became significant at the 2% level in the y regression; and the magnitude of the coefficient on *Respect* in the regressions of y and A were much lower, and closer to the OLS results of Table 3.

Adding the other qualities one by one (as in Table 7) using the under-responders sample demonstrated the same general pattern – the core values continued to be significant if they were significant using the larger data set, except in few cases for y.

When *Faith* was the added quality in the regression for y, *Respect* and *Responsibility* were not significant at the 10% level or better and when *Obedience* was added, *Responsibility* was not significant. When we added two qualities and one control variable and took the average p-value over 144 specifications for each outcome, our results were again very similar to those reported in Table 8 and Table 9. *Respect* was significant for A for all controls except with the 25-year lag of *Civil Liberties.* *Responsibility* remained highly significant for k^{ρ} and h. *Respect* and *Responsibility* generally fell in significance in the equations for y. *Respect* was significant at the 11% level or better except with the 25- year lag of *Civil Liberties.* The same was true of *Responsibility.*

5 Conclusion

This paper continues recent work on the search for deep determinants of economic development. We show that our measures of two core values – *Respect for others* and *Responsibility* – are almost always significant and of sizable magnitude in explaining productivity, capital, human capital, and output per worker. We propose that these core values are fundamental factors in economic prosperity. Our empirical results, even after controlling for potential sources of endogeneity, are strong and consistently support our contention, even if some degree of endogeneity is present.

We also showed that the popular measure of *Trust* performed poorly when it was paired with our core values. One interpretation is that core values determine trust. Since trust entails an expectation of another's behavior, it seems plausible that expectations of core values influence trust.

A large body of work finds that societal divisions hurt economic performance. Yet, these findings ignore values. Our results show that it is possible that in societies where core values are embraced, countries that are more highly fractious than others need not have lower standards of living. Values may overcome the detrimental effects of ethnic or other divisions.

Finally, we addressed potential concerns about the exogeneity of core values and the robustness of our results. First, we allowed for simultaneity between core values and our outcome variables. We then estimated our main equation for output per worker and each of its components using instrumental variables estimation. Sec-

ond, we addressed omitted variables bias by introducing other qualities that may be thought important to accumulation and productivity into our estimating equation. Third, because we cannot observe all potentially omitted variables, we investigated the potential for bias arising from selection on unobservables. Fourth, we re-estimated all of our results using an alternative sample of under-responders to the *Qualities Group* question in the *World Values Survey (2006)*. This sample is less likely to suffer from measurement error. When we use these approaches, we find that the statistical significance of our core values rarely changes. We take this as support for our idea that *Respect for others* and *Responsibility* are key factors in the determination of output per worker.

Our findings have several important implications. First, they suggest an alternative interpretation to studies that find institutions are critical to output per worker and economic development. It is conceivable that institutions may matter because fundamentally, they capture the core values a society embraces. Our work also offers an explanation for the inertia of institutions and underdevelopment that is addressed by Rajan and Zingales (2006). Because core values are likely to be highly persistent (Tabellini, 2008a), they may be able to explain the persistence of institutions and underdevelopment. Glaeser et al. (2004) find that human capital is more essential for economic growth than are good institutions. Our work suggests an alternative interpretation: core values may raise human capital by influencing individual behavior.

We see the core values, *Respect for others* and *Responsibility*, as distinct from culture. It is our view that values may be shared by diverse cultures and do not define them. While culture is commonly distinguished by ethnicity, language, or religious faith, core values may span these cultural boundaries and indeed make them inconsequential in production and economic exchange. Various theories have been advanced about the persistence of underdevelopment. If core values are the key to economic success, then persistence may reflect the difficulty in changing the fundamental principles by which citizens behave and interact.

A Data Appendix

We used the following data in the paper.

1. *Respect*. Proportion of individuals selecting *Respect* - Question a035. (Corrected for over-responders). Latest of 1995 or 2000. Source: *World Values Survey*.

2. *Responsibility*. Proportion of individuals selecting *Responsibility* - Question a032. (Corrected for over-responders). Latest of 1995 or 2000. Source: *World Values Survey*.

3. *Property Rights*. One of ten components of the *Index of Economic Freedom*. This variable is on a scale of 1 – 5 (inverted) with 5 indicating the *most* secure property rights. Latest of 1995 or 2000. Source: Heritage Foundation and *Wall Street Journal*. (Note: current data has been re-normed to a scale of 1 – 100)

4. y. Output per worker; series $RGDPWK$. Latest of 1995 or 2000. Source: *Penn World Table* v. 6.2.

5. h. Human capital per capita. Latest of 1995 or 2000. Source: Constructed using the method of Hall and Jones, 1999 using the data from Barro and Lee, 2001. See footnote 7.

6. k. Physical capital intensity $\frac{K}{Y}$. Latest of 1995 or 2000. Source: K is constructed using the perpetual inventory method using data from investment from the Penn World Table v. 6.2.

7. A. Total factor productivity. Latest of 1995 or 2000. Source: Constructed as the residual $A = \frac{y}{k^{\rho}h}$ where $\rho \equiv \frac{\alpha}{1-\alpha}$.

8. Other Qualities. Proportion of individuals selecting questions a029 (*independence),* a030 *(hard work)*, a039 (*perseverance*), a038 (*thrift*), a034 (*imagination*), a040 (*religious faith*), a041 (*unselfishness*), a042 (*obedience)*. Latest of 1995 or 2000. Source: *World Values Survey*.

9. *Trust*. Proportion of individuals selecting *"most people can be trusted"* - Question a165. Latest of 1995 or 2000. Source: the *World Values Survey*.

10. *Ethnic Fractionalization*. Measure of number of different ethnic groupings within a country. Various years. Source: Alesina et al. (2003).

11. *IEF*. *Index of Economic Freedom*. Scale of 1 – 5 (inverted), with 5 indicating the *most* economic freedom. Latest of 1995 or 2000. Source: Heritage Foundation and *Wall Street Journal*. (Note: most current data has been re-normed to a scale of 1 - 100.)

12. *CL*. Index of Civil Liberties. Scale of 1 – 7, with 7 indicating the most free. Latest of 1995 or 2000. Source: Freedom House.

13. *Common Law*. La Porta et al. (1998). Score of 0 or 1 with 0 indicating *civil law* and 1 indicating *common law*.

14. *Latitude*. La Porta et al. (1998). Absolute value of latitude.

B Basic Data

The complete data that we used for the two core values and the four dependent variables are given below.

APPENDIX

Table 11: Values and Output by Country

Country	*Respect*	*Respon*	y	$k^{\frac{\alpha}{1-\alpha}}$	h	A	*Country*	*Respect*	*Respon*	y	$k^{\frac{\alpha}{1-\alpha}}$	h	A
Algeria	0.53	0.57	0.25	0.84	0.82	0.36	Japan	0.71	0.91	0.66	1.30	0.84	0.61
Argentina	0.69	0.76	0.42	0.93	1.02	0.44	Jordan	0.67	0.65	0.18	0.85	0.92	0.23
Australia	0.81	0.66	0.67	1.08	0.88	0.71	Korea, Rep.	0.65	0.92	0.46	1.18	0.89	0.44
Austria	0.72	0.87	0.87	1.12	1.06	0.73	Mexico	0.71	0.77	0.29	0.94	0.86	0.36
Bangladesh	0.70	0.53	0.05	0.66	0.60	0.14	Netherlands	0.92	0.87	0.85	1.08	0.81	0.96
Belgium	0.83	0.77	0.89	1.10	1.05	0.77	New Zealand	0.77	0.57	0.56	1.06	0.94	0.57
Brazil	0.59	0.65	0.23	0.96	0.76	0.31	Norway	0.66	0.92	0.82	1.14	0.97	0.75
Bulgaria	0.59	0.76	0.21	0.56	0.84	0.45	Pakistan	0.53	0.50	0.10	0.73	0.60	0.23
Canada	0.82	0.77	0.74	1.07	0.95	0.73	Peru	0.71	0.77	0.17	1.00	0.91	0.18
Chile	0.75	0.84	0.42	0.94	0.96	0.46	Philippines	0.58	0.65	0.14	0.81	0.94	0.18
China	0.72	0.64	0.10	0.93	0.78	0.14	Poland	0.79	0.73	0.25	1.00	0.85	0.29
Colombia	0.68	0.77	0.21	0.78	0.81	0.33	Portugal	0.67	0.64	0.51	1.04	0.84	0.58
Czech Rep.	0.63	0.66	0.36	1.01	0.83	0.43	Romania	0.58	0.62	0.16	1.07	0.83	0.18
Denmark	0.87	0.81	0.75	1.09	0.86	0.80	Russia	0.68	0.76	0.26	1.11	0.89	0.26
Dom. Rep.	0.70	0.85	0.18	0.70	0.83	0.31	Singapore	0.69	0.81	0.88	1.24	0.99	0.72
Egypt	0.64	0.51	0.18	0.55	0.72	0.45	Slovakia	0.57	0.67	0.26	1.10	0.81	0.29
El Salvador	0.59	0.67	0.16	0.63	0.75	0.35	Slovenia	0.70	0.75	0.53	0.99	0.91	0.58
Finland	0.82	0.85	0.67	1.17	0.87	0.66	South Africa	0.72	0.63	0.29	0.66	0.96	0.47
France	0.85	0.73	0.82	1.10	1.01	0.74	Spain	0.79	0.82	0.66	1.08	0.90	0.68
Germany	0.71	0.82	0.76	1.17	0.84	0.77	Sweden	0.92	0.87	0.69	1.07	0.94	0.69
Greece	0.53	0.83	0.48	1.11	1.03	0.42	Switzerland	0.78	0.79	0.75	1.29	0.87	0.67
Hungary	0.66	0.74	0.35	1.05	1.06	0.32	Taiwan	0.59	0.81	0.52	0.82	0.98	0.64
Iceland	0.84	0.81	0.68	1.07	1.05	0.61	Turkey	0.62	0.64	0.18	0.87	0.83	0.25
India	0.58	0.63	0.09	0.68	0.82	0.16	Uganda	0.56	0.55	0.03	0.36	0.65	0.14
Indonesia	0.43	0.72	0.12	0.87	0.82	0.16	United Kingdom	0.79	0.47	0.73	0.97	0.82	0.92
Iran	0.53	0.67	0.26	1.15	0.81	0.28	United States	0.80	0.72	1.00	1.00	1.00	1.00
Ireland	0.75	0.52	0.88	0.90	0.80	1.22	Uruguay	0.69	0.81	0.33	0.83	0.87	0.46
Israel	0.82	0.66	0.77	1.03	0.81	0.92	Venezuela	0.80	0.88	0.27	0.93	0.77	0.38
Italy	0.74	0.81	0.76	1.11	0.88	0.77	Zimbabwe	0.76	0.48	0.11	0.81	0.84	0.16

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