DIAGONAL ACCOUNTABILITY AND DEVELOPMENT OUTCOMES

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1 Introduction

Good government is essential to the attainment of positive development outcomes (World Bank 2015). The anarchy of the market needs to be regulated so that externalities and failures do not squander its efficiency and ability to provide for society's material needs. Government action is thus essential to providing for basic human needs such as sanitation, public health, education, and the universal provision of the incompressible physical and material needs of citizens. We also proceed from the assumption that good government is not only a function of the quality of administration but of how well that administration responds to the needs of its citizens. Thus the accountability of government is central to its ability to meet the developmental needs of the population over which it governs.

The study of accountability has highlighted three distinct pathways – the vertical, horizontal, and diagonal – through which citizens keep governments accountable. Whereas there has been substantial study of the first two, diagonal accountability has only recently been identified and thus has been studied to a lesser extent. Here we focus on diagonal accountability, the ability of organized citizens to hold their rulers directly accountable. Such public engagement is key to a more open and responsive government. We thus expect it to promote a range of benefits for those human development outcomes which are dependent on government action.

We next discuss how diagonal accountability differs from the other two forms of accountability

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and how it should work to promote human development outcomes. After that we perform a series of statistical tests that look at the ways in which diagonal accountability affects public health, education rates, economic growth, and income equality. We also explore how other political environmental factors condition the ways in which diagonal accountability affect these outcomes.

2 Diagonal Constraints on Government – a New Path to Accountability

Accountability refers to "de facto constraints on the government's use of political power through requirements for justification of its actions and potential sanctions" (Lührmann, Marquardt and Mechkova, 2017*a*: p.1). It describes a relationship between two actors, where "A is accountable to B when A is obliged to inform B about A's... actions and decisions, to justify them, and to suffer punishment in the case of eventual misconduct" (Schedler, 1999: p.17). The academic literature has identified three main sub-types of governmental accountability – vertical, horizontal, and, more recently, diagonal accountability.

There has been extensive work on vertical and horizontal accountability. Vertical accountability is a long established concept that posits that constituents have power over politicians by their potential to vote them out of power if they are unhappy with their performance (Schumpeter, 1942; Schattschneider, 1942). Constituents who perceive politicians or parties as unrepresentative of or antagonistic to their interests will sanction them by voting for their opponents or abstaining in the next election (Przeworski, Stokes and Manin, 1999; Schedler, 1999). This accountability mechanism only works where elections are regular and relatively free and fair. Given that vertical accountability is tied to the timing of elections, we would expect it to be stronger in periods in which elections were forthcoming and that its impact would be dependent on the extent politicians believe that the probability that the next round of elections will be held are very high or near certain.

Horizontal accountability is a product of the oversight power that branches of government have over each other. The existence of checks and balances between the executive, legislative, and judicial arms of the government keeps each from abusing its power. In this sense each branch plays a role in keeping the other two with the bounds of the law (Merkel, 2004: p.41). This oversight capacity

includes the power to investigate and, if necessary to punish (Rose-Ackerman, 1996). O'Donnell (1998) adds the important caveat that the occupants of each branch not only have to be empowered to monitor and check the exercise of power by the other two branches, but also must be willing to do so (p.117). From the perspective of open government responsive to the citizenry, the legislative branch is key to horizontal accountability. As the representative of the people the legislature has a key role to play in the oversight of equal protection under the law, administrative competence and fairness, and restraining the arbitrary exercise of executive power. As legislatures become more representative of their populations, we would expect them to become more potentially effective in enforcing accountability.

Diagonal accountability constrains governments both indirectly by providing information that enhances the effectiveness of other accountability actors, or by directly pressuring government actors (Goetz and Jenkins, 2001). The literature on diagonal accountability is much more recent but traces its origins to older important literatures in political science. Among these are the political theory of participatory democracy which argues that an active engaged citizenry is central to effective high quality democracy (Pateman, 1970; Macpherson, 1977; Barber, 2003; Gould, 1990). It also owes much to two streams in the literature on civil society. The first stream emphasizes the ability of self-organized citizen organization to constrain the exercise of state power, even arbitrary state power (Arato, 1981; Bernhard, Fernandes and Branco, 2017). The second emphasizes how citizen participation in civic organizations promotes social capital which in turn enables good government (Putnam, Leonardi and Nanetti, 1994; Edwards and Foley, 1998; Welzel, Inglehart and Deutsch, 2005). The contentious civil society literature plays up the ability of citizen activism to impose sanctions on sitting politicians through direct political action. The preferences of the citizenry are directly articulated through protest and other forms of contentious reaction to unpopular policies and if the potential costs are high enough politicians may rethink their actions. The social capital literature pays more attention to the interface between citizens and government, and how citizen engagement can increase the effectiveness of government actions and in turn, enhance citizen trust in government. This second notion of the role of civil society is less antagonistic towards government and sees citizen organization as the integument of democracy, providing interests with access to government and government with both knowledge and support to implement effective policy.

A number of studies provide evidence of the ability of civil society participation to make gov-

ernment more accountable and effective. The contentious politics literature plays up the ways in which civil society can block unpopular actions thus enhancing accountability. Determined citizens organized in defense of their interests can use a range of contentious tools to constrain leaders and governments in the period between elections by making their preferences known loudly. These include protest against unpopular policies, contesting decisions and policies in the courts, as well as the compilation of information about government actions as a form citizen-based monitoring to provide additional oversight, and organizing publicity campaigns to overcome limitations to accountability posed by official secrecy (Smulovitz and Peruzzotti, 2000; Fearon, 1994; Falleti and Riofrancos, 2018). In particular, there is an extensive literature on how popular mobilization and contention has been effective in the fight against corruption. A range of indicators that gauge the strength of civil society from grassroots mobilization efforts to associational memberships have been shown to be associated with reductions in corruption both in specific instances and in large cross-national samples (Jenkins, 2007; Jenkins and Goetz, 1999; Mungiu-Pippidi, 2013) There is however some debate over whether the effects of civil society on corruption reduction are direct or contingent on other environmental conditions such as press freedom, party competition and general levels of state transparency (Grimes, 2013). Finally, there is evidence that the institutionalization of participatory mechanisms directly into governmental procedures such as budgeting have increased government transparency, making officials more accountable to citizens and also reducing corruption and clientelism (Grimes, 2013).[1]

In line with the social capital literature, multiple authors think of an active civil as a central and vital part of the system of interest articulation and representation. It represents a way for the people to articulate interests directly to the government. It not only supplements vertical accountability through elected representatives; it can even supplant it (Schmitter, 1992; Peruzzotti, 2012; Fung and Wright, 2003; Dalton, Scarrow and Cain, 2003; Houtzager and Lavalle, 2010). Ekiert and Kubik (2001: p.9) even go so far as posit it as a potential substitute for electoral representation when pathologies of the party system organization undermine vertical accountability.

In addition to civil society, the media also play a very important role in providing diagonal accountability. An open and free media empowers engaged citizens to make informed political choices through the diffusion of diverse and accurate information (Voltmer, 2010: p.139). It is also

[1] See also the contributors to Selee and Peruzzotti (2009).

a critical alternative information source for those exercising the countervailing power of horizontal accountability in the state and for voters at election time. Because of this, responding to the flow of public information is a major concern for political incumbents. The degree to which press and media freedom is impeded, makes it more difficult to exercise constraint over political leaders and other decision-makers or even sometimes to have a full understanding of the actions they are taking (Voltmer, 2010; Hutchings, 2003; Semetko, 2010). Thus the media provides an additional pathway for vertical accountability by shining light on areas the state might wish to keep secret and providing critical information for range of other actors exercising vertical, horizontal, and diagonal accountability.

If the extant literature on diagonal accountability is correct, this should have ramifications for both the mix of goods that government provides to the citizenry and its effectiveness in doing so. Here we focus on human development outcomes, the provision of that basket of services necessary to a decent life – health care, education, and a decent standard of living. In the case of the latter we will differentiate whether diagonal accountability has impact on the accumulation of wealth and the way it is distributed. Thus, we will probe whether there is a connection between diagonal accountability and economic growth as well as income equality.

One of the key potential mechanisms through which diagonal accountability may promote human development is through the reduction of corruption. If popular pressure and input creates an environment in which it is more difficult to purloin resources earmarked for the improvement of living conditions by those tasked to deliver them, we should expect delivery of public services on an equitable and universal basis with less waste and political pilferage. This should generally improve human development outcomes. There are two possible ways this could occur. It is possible that sort of activity and activism that are part of diagonal accountability would create pressures on government to improve human development outcomes. The effect could also be indirect in that vertical accountability may help to improve the quality of the state apparatus through enhanced monitoring and transparency. In this sense the effect would be indirect through the enhanced delivery of services by the state.

Finally, we will look for environment effects, whether the impact of diagonal accountability is dependent upon other the presence or absence of other conditions. One of the factors which we think would enhance its impact would be a strong tradition of Weberian versus patrimonial

administration (Evans and Rauch, 1999; Rauch and Evans, 2000; Henderson et al., 2007; Dahlström, Lapuente and Teorell, 2012). A second factor we will investigate is the level of development. We are interested in whether poorer states can improve human development outcomes by using the openness offered by diagonal accountability to make up for past deficits in providing services. And finally, we are interested in whether a deliberative political tradition, which stresses the positive effects of dispassionate and rational public debate over emotional and highly rhetorical exchanges, makes the state side more open to citizen input. We will investigate if such state openness makes diagonal accountability more effective in soliciting responsiveness and accountability to citizens. Finally, we also look at whether the other two forms of accountability work better in concert with high levels of diagonal accountability.

We find that diagonal accountability is correlated with higher levels of public health, education, economic growth, and income equality. We also find that when other forms of accountability (horizontal and vertical) are in place that their impact is enhanced by diagonal accountability and vice versa. We also uncover some threshold effects. Diagonal accountability has greater impact when states have attained at least medium levels of economic development and state capacity. Finally we also show that infant mortality diagonal accountability both has a direct effect and that it indirectly improves outcomes by enhancing state capacity in line with the literature on corruption. These effects range from moderate to substantial but their ubiquity suggests that diagonal accountability has great potential to improve overall social welfare.

3 Empirical strategy and data

In order to empirically test whether diagonal accountability has an independent effect on human development outcomes, we estimate a series of time-series cross-sectional regressions with country and time fixed effects. Table A1 in the Appendix shows the descriptive statistics of all variables used in the analysis.

3.1 Dependent variables

We use a broad basket of indicators to tap into different dimensions of human development. These include health outcomes (infant and maternal mortality, life expectancy), education (years of edu-

cation for the population above 15 years old), and material welfare (economic growth and income inequaiity).

3.2 Independent variables

The key explanatory variable is Diagonal accountability. We use the composite index provided by the V-Dem data set as the main indicator in our analysis. The main advantage of using the V-Dem data set is its richness, as the data set contains hundreds of indicators on democracy and governance, which allow to capture precisely the different aspects of diagonal accountability. Furthermore, the data set has coverage for virtually all polities in the world from 1900 until 2018, allowing to estimate models with long time-series coverage. Finally, V-Dem relies on country-expert codings, which the project aggregates using a Bayesian IRT model (Coppedge et al., 2018; Pemstein et al., 2018).

The composite index of Diagonal accountability (as shown in Figure 1) is designed to gauge the degree to which non-state actors are able to hold governments accountable, outside of formal institutions. The index consists of six variables capturing media freedom, an index of three variables that gauge civil society strength (the V-Dem core civil society index 2017), four variables that measure freedom of expression, and one variable on the breadth and independence of public deliberations when important political decisions are being made (Lührmann, Marquardt and Mechkova, 2017*b*).[2]

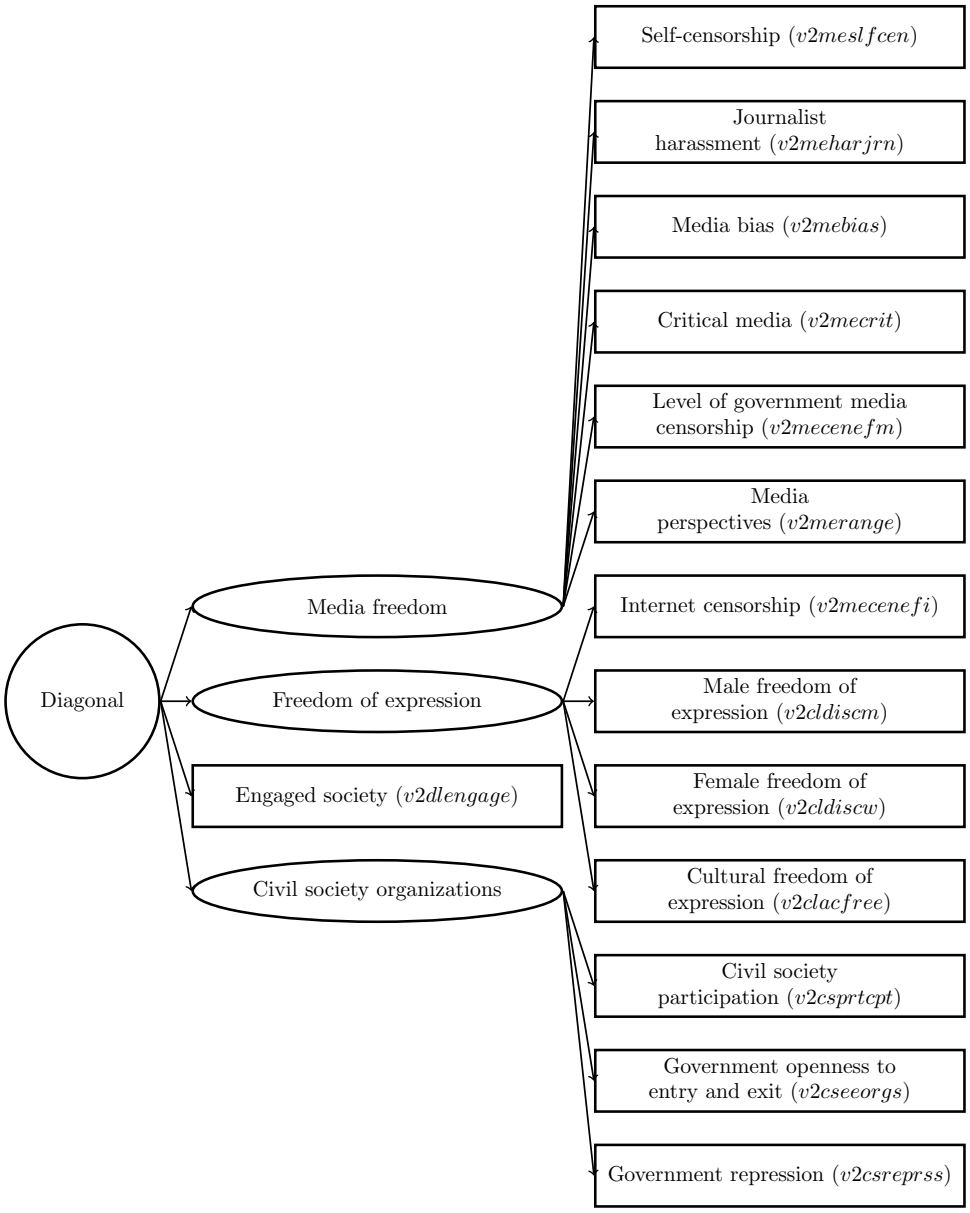
We also check to see if the effects of diagonal accountability are enhanced in democratic environments. We thus run a series of model that interact diagonal with vertical and horizontal accountability to establish how the other two forms enhance or retard the impact of diagonal. We also conduct a mediation analysis to examine if the impact of diagonal accountability on human development outcomes is direct or indirect through its impact on bureaucracies subject to higher levels of citizen oversight and intervention.

3.2.1 Potential confounders

We include a number of additional variables identified by the literature on the outcomes we study as potential confounders in the relationship between accountability and development. These in-

[2] All concepts except for citizen engagement (which has a single manifest variable) are modeled as hierarchically nested latent variables.

Figure 1: Operationalization of Diagonal Accountability. Source: Luhrmann 2018



clude: foreign aid, economic growth[3], resource dependence, income inequality, population, political violence (ongoing domestic conflict), communist government, fertility rates, inflation and urbanization.

4 Infant mortality

First, we start by showing a simple scatter plot between infant mortality rates and diagonal accountability in 2015. At first glance we see that there is some support for the theorized relationship between the two variables: countries with high scores on diagonal accountability and low infant mortality rates are clustered in the lower right-hand corner of the figure. However, there is wide variation in the mortality rates for the countries in the middle of the diagonal accountability spectrum.

Figure 2: Infant mortality and Diagonal accountability, 2015

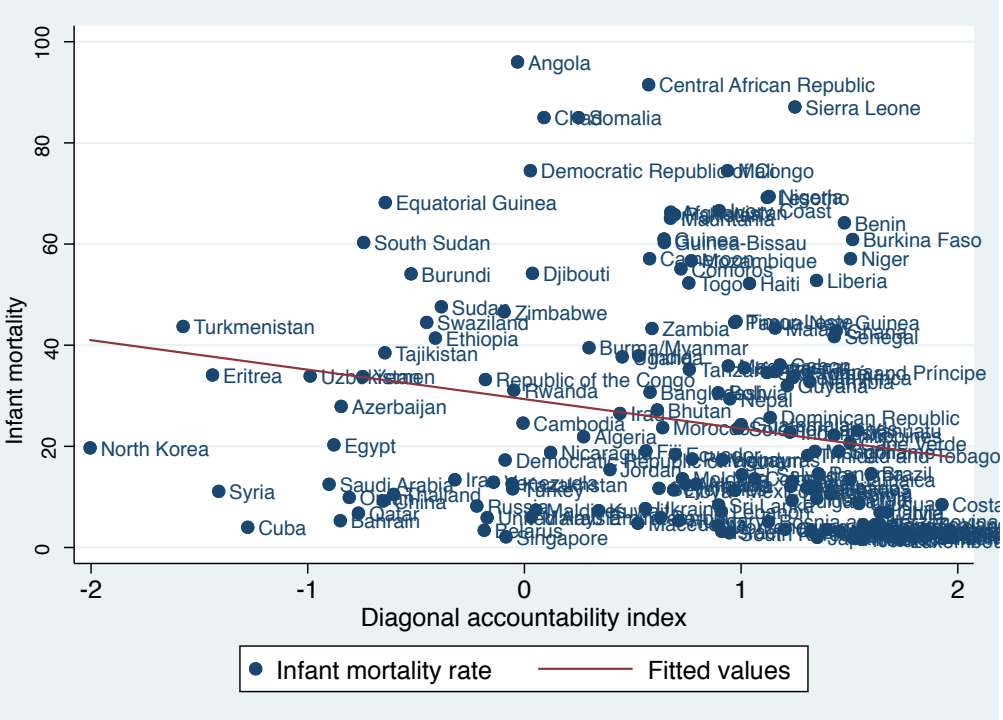


Table 1 shows the results from regression analysis with infant mortality as dependent variable. We use OLS estimations with the following specifications:

[3]Economic growth is used as control variable in all models but the ones where it is dependent variable.

- All models use country-fixed effects to account for stable country characteristics (such as geography, culture, slowly changing social norms) and basic control variables - GDP per capita and the urbanization rate.

- In addition to the country-fixed effects, Models 2 and 4 also have year fixed effects in order to account for temporal trends and a wider set of control variables. The choice of control variables is guided by previous studies on this topic (Miller, 2015). Year fixed effects account for time trends and important events that might affect both sides of the equation, such as wars or regime changes. Similar to Wang, Mechkova and Andersson (2018) we also add a regional average of the dependent variable (excluding the country itself) to for the fact that infant mortality is a highly trended variable, affected significantly by external shocks, for example, the introduction of new medicine or vaccines.

- Models 1 to 3 have a one year lag of the independent variables, and Models 4 to 6 - five year lags. The latter specification assumes that it takes longer time for development outcomes to exhibit themselves. This is a plausible assumption because development programs take a long time to be implemented.

The results of the six models suggest that there is a statistically significant negative association between diagonal accountability and infant mortality. That is, as countries become accountable through openness and the unimpeded actions of civil society and the media, the rates of infant mortality go down. The results are consistent when we control for important confounders, and when we include country and year fixed effects. This means that the results are not driven by time-invariant country attributes nor by time trends that affect both the dependent and independent variables.

However, the size of the effect is reduced substantially when we include year fixed effects. In Figure 3 we compare the effects over time in two hypothetical scenarios: when diagonal accountability is at its maximum value (red dots) and and its minimum value (blue dots), holding all other variables at their mean. After 10 years the infant mortality rate in the scenario with a high level of diagonal accountability is substantially lower than in the scenario with low levels of diagonal accountability. The estimated difference of 10 deaths per 1,000 is statistically significant.

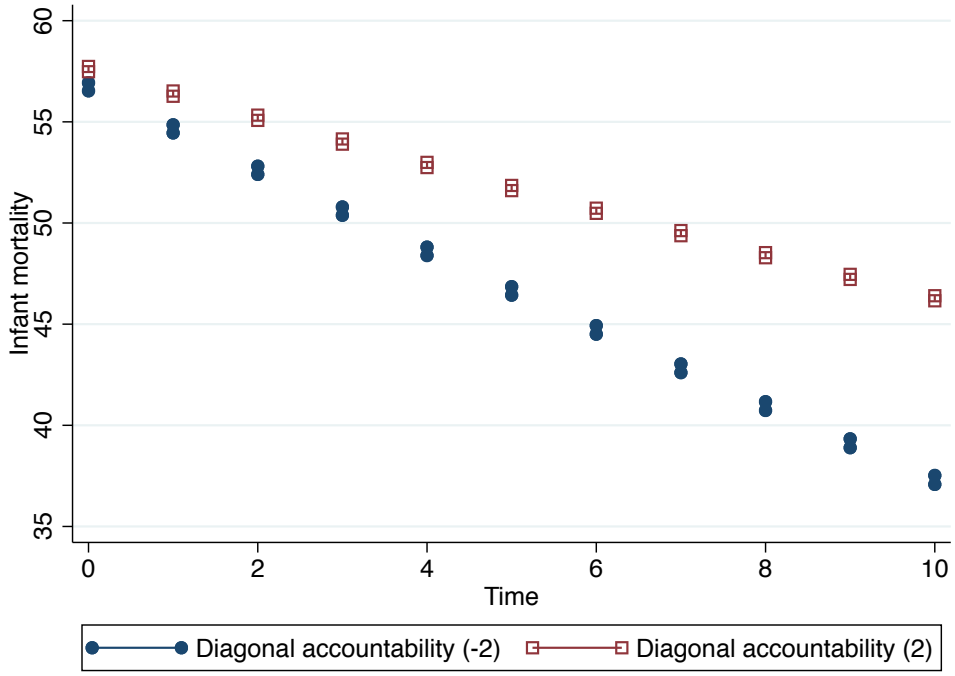
Table 1: The Effect of Diagonal Accountability on Infant Mortality.

	(1)	(2)	(3)	(4)	(5)	(6)
Diagonal accountability	-0.104***	-0.0139**	-0.0431***	-0.108***	-0.0276***	-0.0543***
	(-4.30)	(-3.00)	(-6.33)	(-3.98)	(-5.94)	(-7.90)
GDP per capita, log	-0.678***	-0.235***	-0.291***	-0.659***	-0.196***	-0.256***
	(-11.12)	(-28.06)	(-24.05)	(-10.86)	(-23.36)	(-20.87)
Urbanization	-2.971***	-0.250***	-0.0257	-3.138***	-0.189***	0.199**
	(-10.19)	(-4.41)	(-0.36)	(-10.79)	(-3.32)	(2.72)
Economic growth		-0.000124	-0.000161		-0.000977*	-0.000931*
		(-0.32)	(-0.40)		(-2.56)	(-2.31)
Population (ln)		0.193***	0.307***		0.182***	0.259***
		(11.28)	(12.97)		(10.64)	(10.84)
Political violence		0.00521*	0.00630**		0.00323	0.00510*
		(2.56)	(2.86)		(1.58)	(2.29)
Region: Infant mortality		0.443***	0.489***		0.413***	0.466***
		(34.90)	(27.02)		(32.43)	(25.48)
Foreign aid			0.000550			-0.000181
			(1.06)			(-0.34)
Resource dependence			0.00201***			0.00231***
			(5.43)			(6.16)
Rigorous administration			0.0112*			0.0188***
			(2.27)			(3.76)
Economic inequality			-0.00189***			-0.00194***
			(-3.75)			(-3.81)
Communist			-0.0809**			-0.0206
			(-3.22)			(-0.81)
Constant	10.94***	3.024***	1.919***	10.72***	2.773***	1.970***
	(24.57)	(16.73)	(7.59)	(24.04)	(15.28)	(7.71)
R-Squared	0.828	0.910	0.909	0.824	0.910	0.908
ll	-2485.2	2103.3	2349.9	-2884.3	2077.4	2307.6
N observations	8605	6311	4094	8850	6307	4091
N countries	147	139	134	147	139	134
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Lags structure	1 year	1 year	1 year	5 years	5 years	5 years

t statistics in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Full models have data from 1961 to 2008.

Figure 3: The effect of Diagonal accountability on Infant mortality over time (Model 3).



4.1 Interaction Effects

Next, we test whether the effect of diagonal accountability on infant mortality is conditioned by other aspects of governance. To this end, we interact diagonal accountability separately with: 1) vertical and horizontal accountability, and 2) GDP per capita and 3) rigorous and impartial public administration (Tables A4 and A5 in the Appendix).

Table A4 reports that the interaction term both with horizontal and vertical accountability is statistically significant. This means that the effect of diagonal accountability indeed changes with the level of horizontal and vertical accountability. Figure 4 and 5 illustrate the results from these interaction models.

Figure 4: Interactive Effects of Diagonal and Vertical Accountability on Infant mortality.

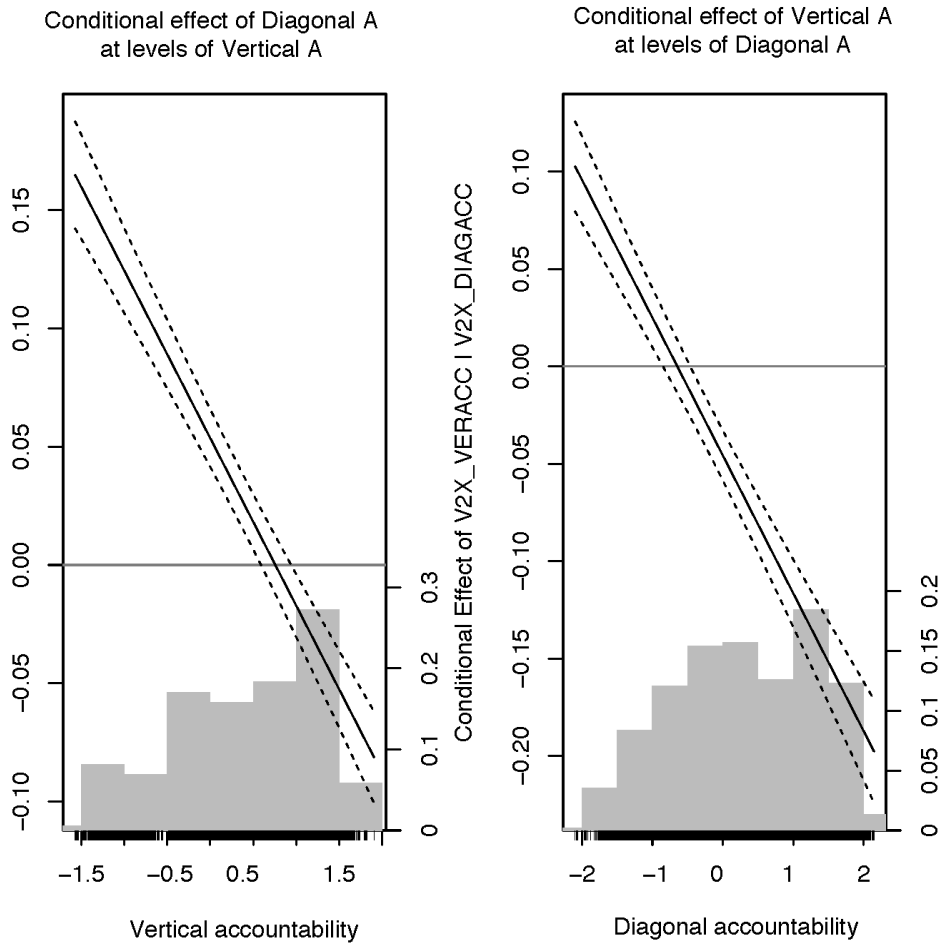
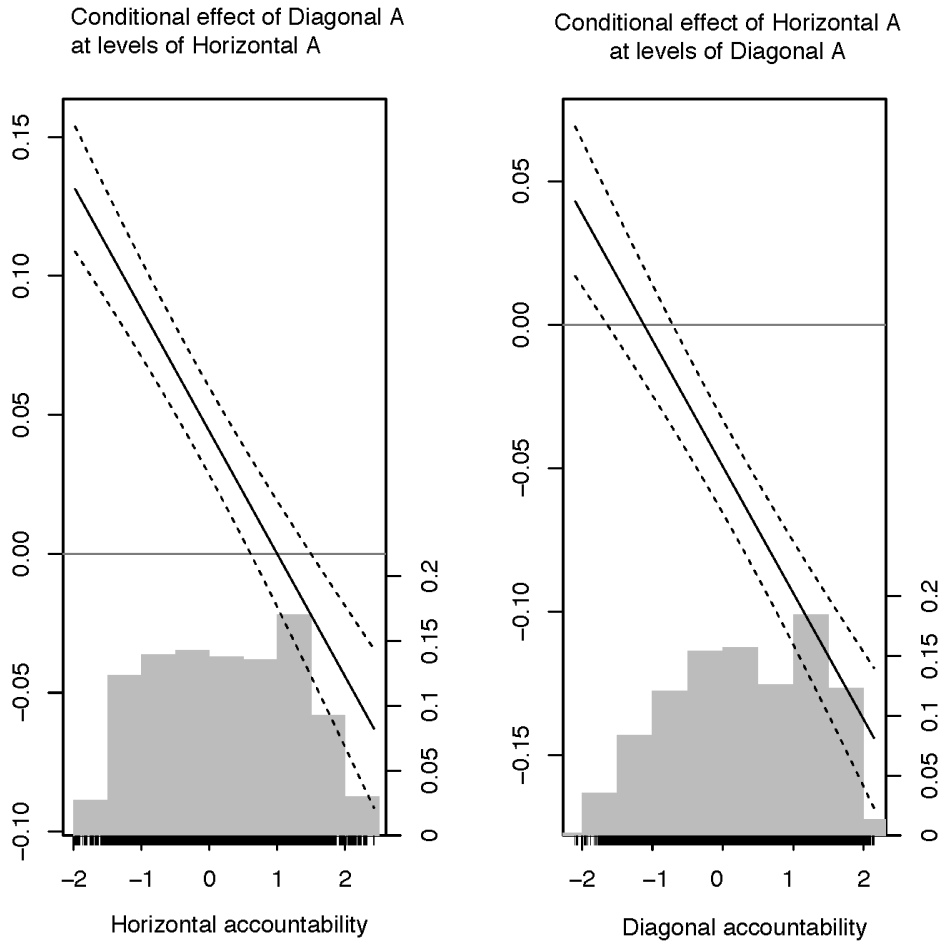


Figure 5: Interactive Effects of Diagonal and Horizontal Accountability on Infant mortality



Both figures show the different effect of one form of accountability at different values of the other. Figure 4, left hand panel, shows the effect of diagonal accountability at different levels of vertical. We see that the effect of diagonal accountability is positive when vertical accountability is low, meaning it is associated with higher infant mortality scores. As vertical accountability increases, the positive effect diminishes, and becomes negative (reduced mortality) when vertical accountability is high. The right hand figure shows the effect of vertical accountability at different levels of diagonal. Importantly, vertical accountability begins to enhance the impact of diagonal at a much lower level. While the impact of vertical accountability does not reduce infant mortality at low levels of diagonal accountability, the reductive effect of vertical accountability kicks in at lower

levels of diagonal accountability than vice versa.

In Figure 5, which looks at the interactive effect of horizontal and diagonal accountability, we observe a remarkably similar pattern, where the impact of horizontal accountability does not reduce infant mortality at low levels of diagonal accountability. The ability of diagonal accountability to reduce infant mortality only occurs where the level of horizontal accountability is high. Again in contrast, small improvements in diagonal accountability, even at a low level enhances the impact of horizontal accountability.

We test whether diagonal accountability has greater impact at higher levels of economic development. We do so by interacting GDP per capita with diagonal accountability. The interaction term is statistically significant and negative as shown in table A5. However, the coefficient for diagonal accountability is positive and statistically significant, which means that in the poorest countries diagonal accountability is not associated with lower infant mortality deaths. Figure 6 illustrates this relationship graphically with a descriptive graph. The figure shows the levels of infant mortality (y axis) at different levels of GDP per capita (x axis). The color of the dots represents the values of Diagonal accountability - orange corresponds to high levels of accountability, while blue is associated with restricted accountability. We see that the negative relationship between accountability and infant mortality is strongest at high levels of GDP per capita.

The effect of state capacity (operationalized as rigorous and impartial public administration) and diagonal accountability is illustrated in Figure 7. In both cases, the variables are only effective in reducing infant mortality when the other has obtained an intermediate level.

Figure 6: The Interactive Effect of Diagonal Accountability and GDP per capita on Infant mortality

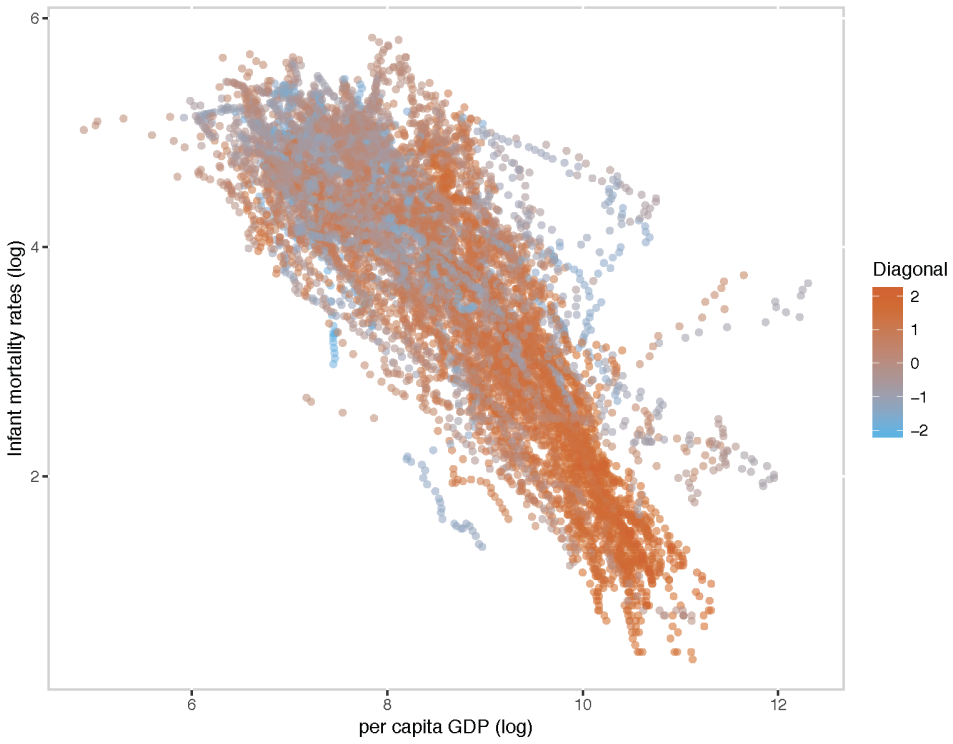


Figure 7: The Interactive Effects of Diagonal Accountability and Rigorous and Impartial Public Administration on Infant Mortality.

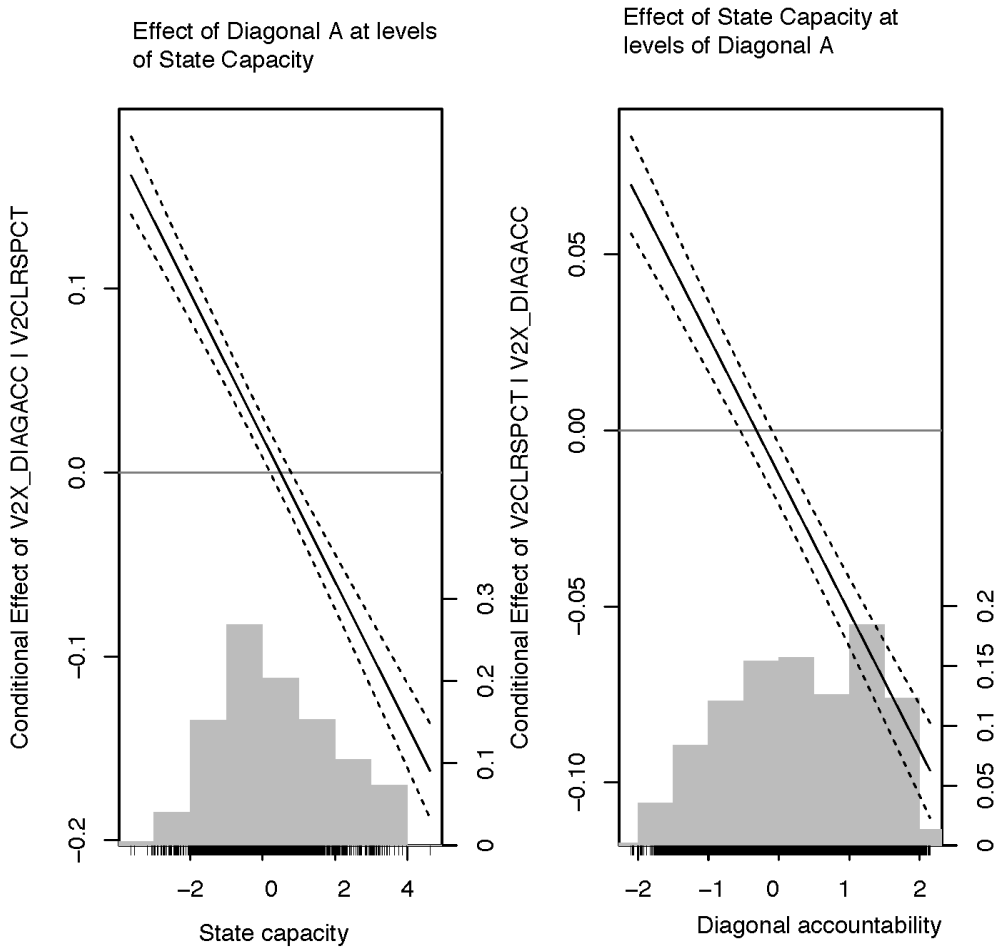


Table 2 shows the results of a mediation analysis, where we examine to what extent the effect of diagonal accountability on infant mortality goes through state capacity. In other words, the analysis highlights the indirect effects of diagonal accountability on infant mortality that occur because diagonal accountability enhances state capacity.[4] To do this, we separately estimate the direct effect of diagonal accountability on infant mortality as well as on impartial public administration. We then calculate the extent to which the effect of impartial administration on infant mortality is due to enhancement in diagonal accountability. Then, we show the effect of diagonal accountability on infant mortality that goes through impartial public administration (indirect effects). The total effects (last part of the table) sums up the findings from the analysis, by taking into account both the direct and indirect effects.

Table 2: The Direct and Indirect Effects (through State Capacity) of Diagonal Accountability on Infant Mortality

Direct effects	
DV: Rigorous and Impartial Public Administration	
Diagonal Accountability	1.009*** (.994, 1.024)
DV: Infant Mortality	
Rigorous and Impartial Public Administration	-.185*** (-.202, -169)
Diagonal Accountability	-.357*** (-.382, -333)
Indirect effects	
DV: Infant Mortality	
Rigorous and Impartial Public Administration	No path
Diagonal Accountability	-.187*** (-204, -171)
Total effects	
DV: Infant Mortality	
Rigorous and Impartial Public Administration	-.185*** (-.202, -.169)
Diagonal Accountability	-.545*** (-.563, -528)

Diagonal accountability has a significant effect both on infant mortality, and on the extent to which public administration is impartial. This is reported in the section looking at the direct effects. The section on indirect effects tests the hypothesis that the effect of diagonal accountability on infant mortality is, in part, caused by how it also enhances capacity. Diagonal accountability helps to increase the state capacity of a country, which in turn reduces mortality rates. The fact that the coefficient for diagonal accountability is statistically significant in the indirect effects section,

[4]For presentation purposes, the coefficients of control variables are not presented in the table.

supports this idea.

The total effects of diagonal accountability (direct effects and indirect effects through public administration) are shown in the last part of the table. The coefficient is -.545 or around half a standard deviation of infant mortality. Of that effect, the direct effect (only diagonal accountability) is larger than the effect mediated through public administration (direct effect is -.357 versus -.187 indirect effect).

Finally, we test the robustness of our findings by using two other important public health indicators: life expectancy and maternal mortality. Table A2 in the Appendix shows the results. We find that when we account for stable country characteristics and key control variables, higher levels of diagonal accountability are associated with longer life expectancy in the medium to the long term, measured by 10 and 20 twenty year lags. In the shorter term (one to five years) though the coefficients are positive, the effect is not statistically significant. However, we do not find that diagonal accountability is statistically significant in reducing maternal death in childbirth. As Table A6 shows, we find statistically significant results only in the most simple model with a one year lag, country fixed effects, and controlling for GDP per capita and urbanization. Once we include other important confounders such as economic growth, economic inequality, rigorous and impartial public administration, the coefficients for diagonal accountability become quite small in size and not significant no matter the lag structure (1, 5, 10 and 20 years).

5 Education

In this section we examine the association between diagonal accountability and the average years of education of citizens older than 15 years. Figure 8 shows a scatter plot between the two main variables of interest - years of education and diagonal accountability.

Figure 8: Education 15+ and Diagonal accountability, 2010

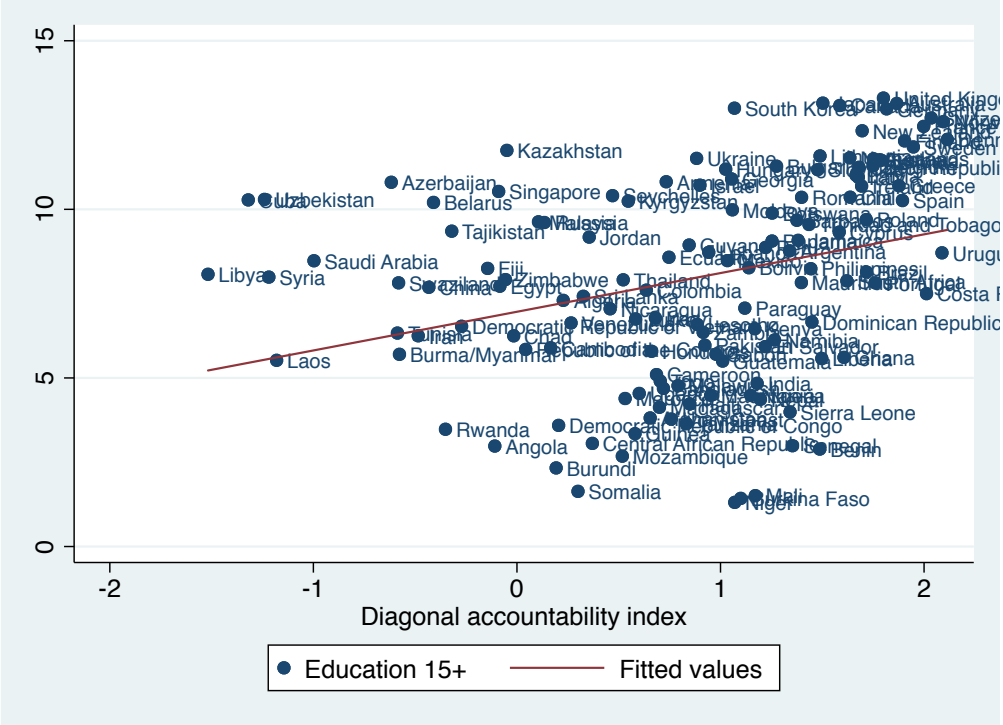


Table 3 shows the results form the regression analysis with five different models, where we vary the lags of the independent variable (5, 10 and 20 years), the control variables included and whether we use country and year fixed effects. Overall, we find that there is statistically significant association between diagonal accountability and years of education, and the relationship is particularly strong when we look at the effect of accountability 10 and 20 years later (Models 4 and 5). These results make sense because education is a slow-moving variable, and, arguably, it takes substantial time until any changes in the political situation affect its development. For example, building new schools, training teachers, or designing and implementing new education plans are all time-consuming efforts.

One important issue to note is that the size of the effect becomes quite small once we include

Table 3: The Effect of Diagonal accountability on Education.

	(1)	(2)	(3)	(4)	(5)
Diagonal accountability	0.393***	0.0279+	0.0412**	0.181**	0.0460**
	(0.0725)	(0.0157)	(0.0154)	(0.0679)	(0.0171)
GDP per capita, log	1.496***	0.737***	0.797***	1.366***	0.645***
	(0.211)	(0.0297)	(0.0302)	(0.131)	(0.0341)
Urbanization	0.0802***	0.0145***	0.0103***	0.0163**	0.00501***
	(0.00847)	(0.00114)	(0.00116)	(0.00601)	(0.00124)
Foreign aid		-0.00599***	-0.00712***	0.00317	0.000703
		(0.00132)	(0.00143)	(0.00460)	(0.00176)
Economic growth		-0.00558***	-0.00310**	-0.00568**	-0.000666
		(0.000998)	(0.000957)	(0.00173)	(0.000896)
Resource dependence		-0.00669***	-0.00642***	-0.00902*	-0.00369***
		(0.000866)	(0.000880)	(0.00363)	(0.000799)
Rigorous administration		0.0168	0.0133	-0.0354	0.00482
		(0.0123)	(0.0121)	(0.0578)	(0.0132)
Population (ln)		1.069***	1.333***	2.464***	1.531***
		(0.0463)	(0.0485)	(0.165)	(0.0589)
Constant	-8.731***	-11.53***	-13.91***	-28.42***	-13.45***
	(1.682)	(0.534)	(0.549)	(1.604)	(0.648)
R-Squared	0.709	0.890	0.887	0.855	0.870
ll	-6689.2	-2115.7	-1392.7	-1899.7	-201.2
N observations	5945	4671	4075	4075	2902
N countries	128	128	128	124	124
Model	Country FE	Two-way FE	Two-way FE	Country FE	Two-way FE
Lag	5 years	5 years	10 years	10 years	20 years

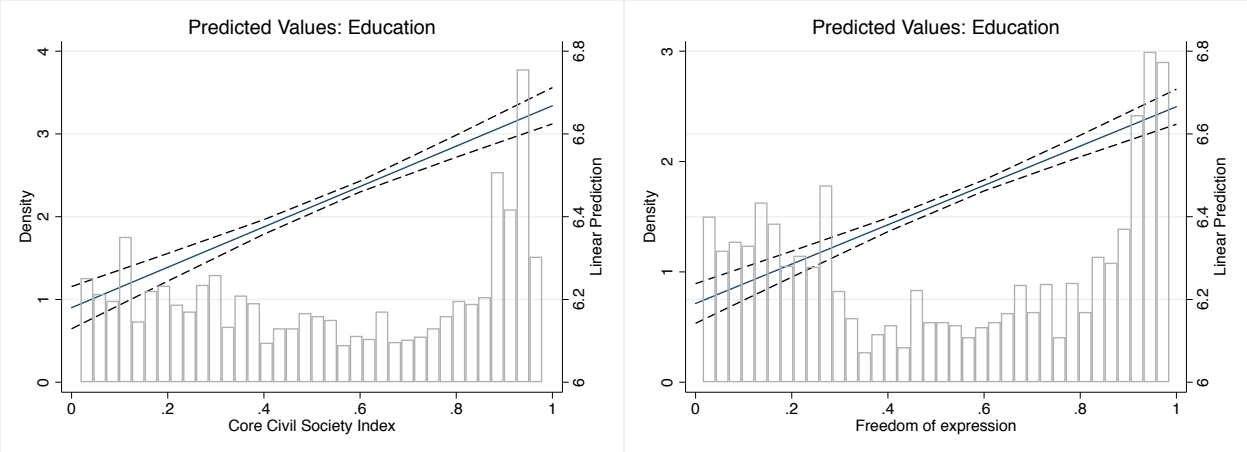
Standard errors in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ Full models have data from 1961 to 2008.

year-fixed effects (see for example the difference in the coefficients between models 4 and 5). These results could be interpreted as suggesting that time trends explain large part of the variation in both the dependent and independent variables.

Figure 9 shows the impact of the main components of the independent variable: Core Civil Society Index and Freedom of Expression and Alternative Sources of Information- Index. The full regression results are available in Table A7 in the Appendix. We see that the statistically significant effect is very similar across the two subsets of indicators and substantially relevant - about a year difference in average years of education between the most restricted and the most free countries as estimated by the country and year-fixed effects model.[5]

[5]The predicted values of years of education are displayed on axis on the the right-hand side of each figure - Linear prediction.



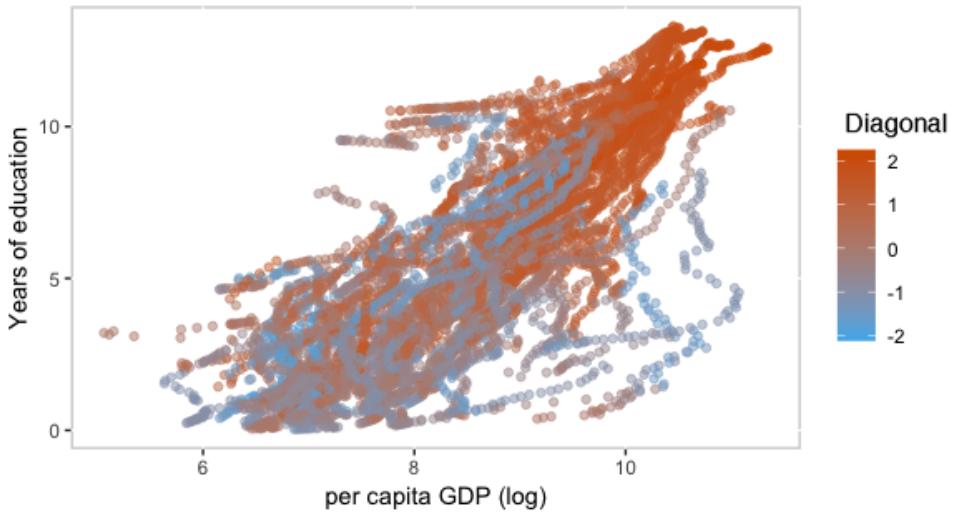
(a) Core Civil Society Index (b) Freedom of Information

Figure 9: Predicted values of Years of Education by the components of Diagonal Accountability.

We next examine the interaction effects between diagonal accountability and other factors: vertical and horizontal accountability (Table A8) and GDP per capita, and state capacity (Table A9). For state capacity, vertical and horizontal accountability, we get significant results for the interaction with diagonal accountability when we use country fixed effects, but these results are not robust when we include two way fixed effects. The one interaction for which we can report a robust statistically significant interaction effect with diagonal accountability for education is with national income. The effect of diagonal accountability on education is stronger when GDP per capita is higher.

Figure 10 shows the relationship between these three variables. The y-axis shows the average years of education in a country, the x-axis is the per capita income, and the color of the dots represents diagonal accountability with dark orange colors standing for higher levels. We see that countries with high GDP per capita tend also to have high scores on diagonal accountability and high average years of schooling. Howver, when GDP is high and diagonal accountability is weak, education outcomes tend to lag.

Figure 10: The Interactive Effect of Diagonal accountability and GDP per capita on Education)



6 Economic inequality and growth

Table 4 shows the result of OLS regression analysis with economic growth as the dependent variable, and diagonal accountability as main independent variable. First, Models 1 to 3 estimate the economic growth rates a year later, and Models 4 and 5, five years later. Model 1 is a simple regression with only current wealth levels as control variable and country FE, which controls for slowly changing variables, for example geography or social norms. In Model 2 we control for a series of other relevant control variables such as education, democracy (proxied by the with clean elections index), life expectancy and fertility rates, as well as current levels of inflation. The choice of control variables is based on previous research (see for example Barro (1996). The results are robust to this specification.

However, when we include year-fixed effects, the results are no longer significant. Controlling for time-trends in this model is important because economic growth is quite volatile and could be influenced by specific events that we have not controlled for in the expanded model with several control variables (Knutsen, 2012). Note that the coefficient becomes negative, however, this could be due to chance, as the coefficient is quite small. When we look at the impact of diagonal accountability on economic growth in the longer term by using a five-year lag, it is significant with both country and two-way fixed effects, though marginally so in the latter case.

Table 4: The Effect of Diagonal Accountability on Economic growth.

	(1)	(2)	(3)	(4)	(5)
Diagonal accountability	0.426*	0.701*	-0.0246	0.708**	0.580+
	(0.165)	(0.299)	(0.326)	(0.251)	(0.332)
GDP per capita, log	-1.656***	-1.088*	-2.037***	-3.370***	-3.352***
	(0.308)	(0.457)	(0.601)	(0.414)	(0.452)
Urbanization		-10.24**	-6.152*	-9.251***	-2.938
		(3.175)	(2.812)	(2.687)	(3.003)
Petroleum production p.c.		-0.000111*	-0.000258*	-0.000301***	-0.000277***
		(0.0000516)	(0.000113)	(0.0000613)	(0.0000345)
Education 15+		-0.468*		-0.0486	
		(0.228)		(0.201)	
Clean elections index		-1.131	-0.0950	0.288	-1.596
		(0.915)	(0.935)	(0.767)	(1.255)
Life expectancy		0.0156		0.00207	
		(0.0437)		(0.0351)	
Fertility rate, total		-0.946***		-0.869***	
		(0.202)		(0.239)	
Inflation, consumer prices		-0.000634*		-0.000277*	
		(0.000317)		(0.000111)	
Constant	16.27***	22.82***	21.31***	39.52***	30.94***
	(2.633)	(4.159)	(5.009)	(4.440)	(3.955)
R-Squared	0.0140	0.0318	0.123	0.0664	0.148
ll	-30822.3	-12642.7	-12430.9	-12507.7	-12311.0
N observations	9554	4293	4293	4293	4293
N countries	161	123	147	123	147
Country FE	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	Yes	No	Yes
Lags of independent variables	1 years	1 year	1 year	5 years	5 years

Standard errors in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Full models have data from 1951 to 2008.

In Table A10 in the appendix we investigate whether there are interaction effects between diagonal accountability and other two forms of accountability, as well as rigorous and impartial public administration. We find evidence for significant interaction effects for both vertical and horizontal accountability. Figures 11 and 12 illustrate these results. The effect of diagonal accountability on economic growth is positive and significant only at high levels of vertical and horizontal accountability. However, diagonal accountability boosts the impact of both horizontal and vertical accountability at comparatively lower levels.

Figure 11: The Interactive Effect of Diagonal and Vertical Accountability on Economic Growth)

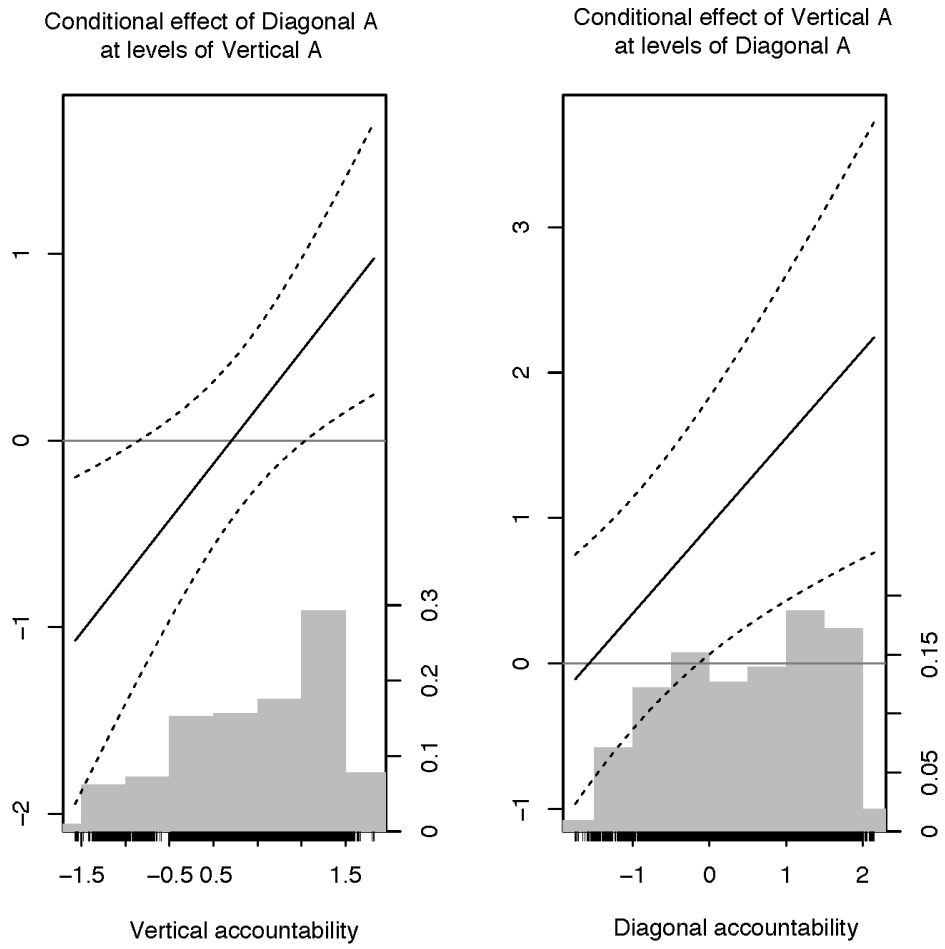
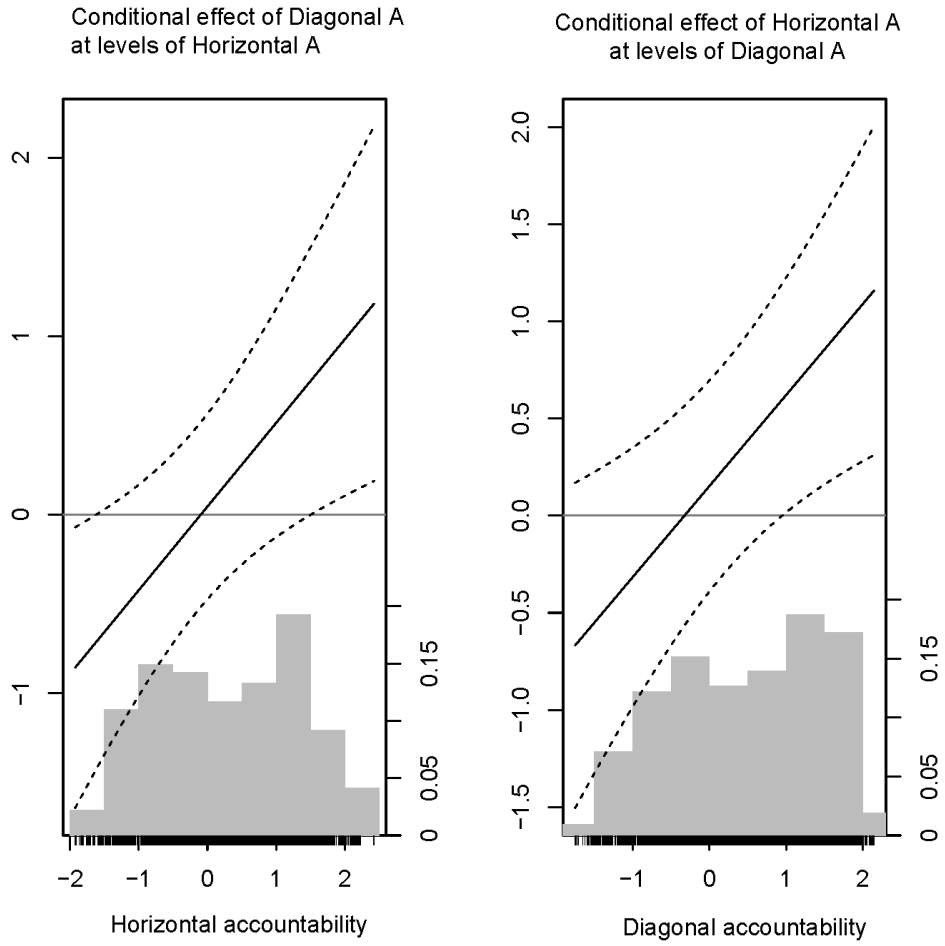


Figure 12: The Interactive Effect of Diagonal and Horizontal Accountability on Economic Growth)



Finally, we investigate another key economic outcome: income inequality measured with the Gini coefficient.[6] Table 5 shows different specifications of the model testing the association between income inequality and diagonal accountability. We vary the lag structure on the independent variables (from 1 to 10 years), and whether we include year-fixed effects. The sign for the coefficient is consistently in the theoretically expected direction (higher levels of accountability correlate with lower inequality), and the results are statistically significant at either level .1 or .05 for all models except for the ten-year lag model (5).

Table 5: The Effect of Diagonal Accountability on Economic inequality.

	(1)	(2)	(3)	(4)	(5)
Diagonal accountability index	-1.478*	-1.653**	-1.248*	-1.056+	-0.639
	(0.690)	(0.612)	(0.596)	(0.624)	(0.568)
GDP per capita, log	0.0456	-1.389	-1.626	-1.134	-1.446
	(1.715)	(1.264)	(1.309)	(1.570)	(1.366)
Urbanization	-83.85***	-9.619	-6.322	-5.513	-3.269
	(7.793)	(9.177)	(8.955)	(9.246)	(8.625)
Foreign aid		-0.00986	-0.0300	-0.0206	-0.0388
		(0.0352)	(0.0324)	(0.0321)	(0.0327)
Economic growth		-0.00506	-0.00140	-0.00407	-0.00557
		(0.0152)	(0.0138)	(0.0136)	(0.0116)
Resource dependence		0.0137	0.0102	0.00365	-0.00936
		(0.0270)	(0.0226)	(0.0231)	(0.0171)
Rigorous and impartial public administration		1.601**	1.432**	1.435**	1.079*
		(0.488)	(0.493)	(0.483)	(0.487)
Population (ln)		-22.47***	-22.74***	-21.42***	-22.72***
		(2.366)	(2.344)	(2.782)	(2.322)
Political violence		-0.133	-0.179	-0.149	-0.229
		(0.151)	(0.176)	(0.188)	(0.203)
Constant	80.59***	265.7***	266.9***	250.0***	261.8***
	(12.71)	(23.60)	(24.21)	(31.64)	(24.55)
R-Squared	0.609	0.774	0.769	0.770	0.751
ll	-23474.3	-13125.5	-12665.4	-12647.0	-10683.2
N observations	7069	4727	4606	4606	4016
N countries	130	126	126	126	122
Country FE	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes	No
Lags of independent variables	1 years	1 year	5 years	5 years	10 years

Standard errors in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Full models have data from 1961 to 2006.

[6] Data comes from Clio infra.

7 Discussion and Conclusion

Scholars and policymakers across the world have long suspected that diagonal accountability enhances human development. Our empirical findings strongly support this idea. In regression analysis with country- and year-fixed effects over more than 130 countries and over 60 years of history[7], we show that improvements in diagonal accountability are associated with a decrease in infant mortality as one of the major indicators of human development. Over 10 years the difference between countries with high and low levels of diagonal accountability is predicted to add up to a reduction of infant mortality by 10 deaths/1000 births.

Diagonal accountability shows a similar relationship to other indicators of human development in particular life expectancy, economic equality, education and economic growth. However, in some cases the relationship is less robust. The findings for the effect on economic growth does not hold with the inclusion of yearly fixed effects, which suggests that both factors are dependent on similar annual trends. The main effects of diagonal accountability on education (measured as years of schooling) seem to appear after a longer period of time (10 or 20 years), which makes sense as it takes time until educational reforms kick in. The same applies for life expectancy. Diagonal accountability shows no relationship to maternal child-birth mortality, which may well reflect the difficulty in improving this aspect of human development (Mechkova and Cartlitz, N.d.).

Diagonal accountability is a powerful tool which gives civil society actors a range of ways to monitor and impose costs on governments, constraining their autonomy from society. And while there are a number of cases where people power has brought down authoritarian governments and regimes (Marcos in the Philippines, the Arab Spring revolts in Egypt and Tunisia, and Milosevic in Serbia), it is clear that when diagonal accountability is embedded in political contexts in which there are competitive elections and rule of law, its ability to trigger vertical and horizontal accountability mechanisms such as "throwing the bums out," votes of no confidence, triggering veto points, and impeachment proceedings makes it a more credible threat to power holders (Mechkova, Lührmann and Lindberg, 2017). Take the example of removal of President Park Guen-hye in South Korea in 2017 for influence peddling (Shin and Moon, 2017). Here popular protests prodded the legislature

[7]The models for infant mortality are based on 134 countries (full model) from 1961 to 2008, for education the full model has data on 124 countries from 1961 to 2008, for economic growth - 123 countries from 1951 to 2008, and the economic inequality models for 126 countries from 1961 to 2006

to act to impeach her, a verdict upheld by the Constitutional Court, and for the criminal courts to try and sentence her to 24 years in prison. In our interactive models for infant mortality and economic growth we see a remarkably similar pattern. Diagonal accountability only has a positive effect on these development outcomes at high levels of vertical or horizontal accountability. However, when vertical or horizontal accountability is in place, even gradual improvements of diagonal accountability are predicted to have a positive impact on development outcomes.

Furthermore, diagonal accountability seems to work for human development only at intermediate and high levels of economic development and state capacity. This seems logical. If governments lack the organizational and financial capacity to implement reforms for human development, even strong societal pressures might not be immediately effective. However, the results from mediation analysis suggest that diagonal accountability is instrumental to enhancing state capacity, which in turn indirectly improves human development.

Overall, our findings suggest that investments in diagonal accountability not only empower citizens politically, they also contribute to human development. In countries with limited vertical and horizontal accountability as well as state capacity and economic development, such pay-offs may not immediately materialize. However, even in such contexts diagonal accountability contributes to human development in the long-run as it allows citizens and civil society to more forcefully articulate demands for accountable governance that rests on capable public administration and fosters economic development.

8 Appendix

Table A1: Descriptive statistics

Statistic	N	Mean	St. Dev.	Min	Max	Source
Dependent variables						
Infant mortality	11,017	72.123	58.030	1.500	420.000	Gapminder
Infant, logged	11,017	3.831	1.092	0.405	6.040	Gapminder
Life expectancy	6,894	62.065	12.117	30.81	84.58	Gapminder
Education 15+	11,640	4.490	3.383	01	13.3	Clio Infra
Economic growth	2.110	6.265	-63.879	130.869	9,622	Maddison
Maternal mortality	1,306	2,153	.004	16.477	4,582	WDI
Gini (economic inequality)	5,409	41.062	8.814	18.649	74.330	Haber et al 2011
Main explanatory variables						
Diagonal accountability	18,179	−0.00004	0.984	−2.097	2.191	V-Dem
Horizontal accountability	18,179	0.0001	0.945	−2.305	2.426	V-Dem
Vertical accountability	18,179	0.014	0.953	−1.571	1.905	V-Dem
Controls						
Aid	6,273	4.952	9.160	0.000	185.940	AidData
GDP, logged	8.608	1.224	5.062	12.930	9,783	Maddison
Rigorous administration	18,283	.0543	1.450	-3.631	4.622	V-Dem
Resource dependence	7,255	5.134	11.152	0.000	100.000	Haber et al 2011
Population	8,014	9.100	1.497	4.824	14.096	Heston et al 2011
Urbanization	7,653	20.972	15.932	0.000	90.626	Clio Infra
Political conflict	7,830	0.667	1.664	0	10	V-Dem
Communist	8,198	0.081	0.273	0	1	Miller 2015
Fertility	4.102	2.031	1.076	8.606	8,472	WDI
Inflation	34.754	489.442	-35.836	24411.03	7,123	WDI

Table A2: The Effect of Diagonal Accountability on Life Expectancy.

	(1)	(2)	(3)	(4)
Diagonal accountability	0.192	0.497	1.048*	1.011***
	(0.360)	(0.402)	(0.442)	(0.296)
GDP per capita, log	2.684***	3.279***	2.911***	2.192***
	(0.772)	(0.758)	(0.724)	(0.632)
Urbanization	47.97***	9.985	6.607	3.837
	(3.952)	(6.234)	(5.600)	(4.116)
Foreign aid		0.0469	0.0458	0.0903***
		(0.0326)	(0.0316)	(0.0261)
Economic growth		0.0203+	0.0376*	0.0121
		(0.0116)	(0.0152)	(0.00947)
Resource dependence		0.0314	0.0208	-0.00499
		(0.0471)	(0.0441)	(0.0243)
Rigorous administration		-0.376	-0.450	-0.372
		(0.409)	(0.440)	(0.306)
Economic inequality		0.0167	-0.0140	-0.0294
		(0.0319)	(0.0340)	(0.0240)
Population (ln)		8.337***	7.377***	6.972***
		(1.566)	(1.307)	(1.290)
Political violence		0.172*	0.370***	0.301**
		(0.0837)	(0.0972)	(0.0926)
R-Sq. Within	0.660	0.599	0.570	0.554
ll	-22765.7	-10218.4	-10108.6	-6870.9
N	8078	4252	4252	3198
Lags	1 year	5 years	10 years	20 years

Standard errors in parentheses $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Country fixed effects.

Table A3: The Effect of Core Civil Society Index and Freedom of expression and Alternative sources of information on Infant mortality.

	(1)	(2)	(3)	(4)
Core civil society index	-0.261**	-0.149***		
	(-3.31)	(-7.36)		
Freedom of Expr. and Alt. Sources of Information			-0.235**	-0.0832***
			(-3.21)	(-4.34)
GDP per capita, logged, base 10	-0.676***	-0.290***	-0.690***	-0.290***
	(-10.98)	(-24.05)	(-11.17)	(-23.86)
Urbanization	-3.037***	-0.0147	-3.036***	-0.0384
	(-10.43)	(-0.20)	(-10.57)	(-0.53)
Foreign aid		0.000731		0.000394
		(1.40)		(0.76)
Economic growth		-0.000165		-0.000128
		(-0.42)		(-0.32)
Resource dependence		0.00219***		0.00193***
		(5.89)		(5.19)
Economic inequality		-0.00181***		-0.00190***
		(-3.60)		(-3.73)
Population (ln)		0.320***		0.309***
		(13.47)		(12.96)
Rigorous and impartial public administration		0.0112*		0.00410
		(2.38)		(0.85)
Political violence		0.00620**		0.00707**
		(2.82)		(3.21)
Communist		-0.0854***		-0.0600*
		(-3.44)		(-2.40)
Regional: Infant mortality		0.494***		0.487***
		(27.26)		(26.79)
Constant	11.07***	1.832***	11.17***	1.943***
	(24.54)	(7.24)	(24.74)	(7.66)
R-Squared	0.825	0.909	0.825	0.908
N	8571	4094	8605	4094
Year FE	No	Yes	No	Yes
Lags of independent variables	1 year	1 year	1 year	1 year

t statistics in parentheses $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Country FE.

Table A4: The Interactive Effect of Diagonal Accountability with Vertical and Horizontal Accountability on Infant Mortality

	(1)	(2)	(3)	(4)	(5)	(6)
Diagonal accountability	-0.0398	0.0166**	-0.0133	-0.0840+	0.0145+	-0.00858
	(-1.16)	(2.62)	(-1.58)	(-1.98)	(1.82)	(-0.94)
Vertical accountability	-0.0340	-0.0317***	-0.0261***			
	(-0.96)	(-4.75)	(-3.80)			
Horizontal accountability				-0.0438	-0.0459***	-0.0499***
				(-1.02)	(-5.57)	(-5.69)
Diagonal × Vertical	-0.177***	-0.0522***	-0.0463***			
Diagonal × Horizontal				-0.160***	-0.04 19***	-0.0302***
				(-5.94)	(-8.69)	(-5.39)
Rigorous administration			0.0179***			0.0210***
			(3.59)			(4.12)
	(-5.97)	(-10.19)	(-7.66)			
GDP per capita, logged	-0.623***	-0.228***	-0.290***	-0.596***	-0.228***	-0.291***
	(-10.40)	(-27.45)	(-24.09)	(-9.51)	(-27.39)	(-24.11)
Urbanization	-2.791***	-0.204***	0.000984	-2.811***	-0.260***	-0.0402
	(-10.15)	(-3.63)	(0.01)	(-10.10)	(-4.64)	(-0.56)
Economic growth		-0.000364	-0.000200		-0.000277	-0.000201
		(-0.96)	(-0.51)		(-0.73)	(-0.51)
Population (ln)		0.167***	0.284***		0.156***	0.282***
		(9.70)	(11.89)		(9.06)	(11.83)
Political violence		0.00612**	0.00698**		0.00650**	0.00774***
		(3.03)	(3.19)		(3.21)	(3.53)
Regional: Infant mortality		0.436***	0.477***		0.436***	0.479***
		(34.62)	(26.42)		(34.60)	(26.61)
Foreign aid			0.000252			0.000442
			(0.49)			(0.86)
Resource dependence			0.00183***			0.00185***
			(4.98)			(5.03)
Economic inequality			-0.00155**			-0.00189***
			(-3.09)			(-3.77)
Communist			-0.0866***			-0.0831***
			(-3.47)			(-3.33)
Constant	10.54***	3.246***	2.169***	10.33***	3.337***	2.207***
	(24.16)	(17.94)	(8.53)	(22.78)	(18.40)	(8.69)
R-Squared	0.840	0.911	0.910	0.841	0.911	0.910
N	8605	6311	4094	8605	6311	4094
Year FE	No	Yes	Yes	No	Yes	Yes

t statistics in parentheses $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Lag of independent variables: 1 year.

Table A5: The Interactive Effect of Diagonal Accountability with GDP per capita and Rigorous and Impartial Public Administration on Infant mortality

	(1)	(2)	(3)	(4)	(5)	(6)
Diagonal accountability	1.170***	0.273***	0.0767+	-0.114***	-0.0224***	-0.0438***
	(6.24)	(8.77)	(1.91)	(-3.43)	(-3.91)	(-6.47)
GDP per capita, logged	-0.532***	-0.230***	-0.287***	-0.604***	-0.229***	-0.284***
	(-8.61)	(-27.61)	(-23.50)	(-9.70)	(-27.44)	(-23.54)
Diagonal × GDP per capita, log	-0.152***	-0.0345***	-0.0145**			
Diagonal × Impartial admin.				-0.0909***	-0.0332***	-0.0218***
				(-5.61)	(-12.29)	(-6.92)
	(-6.93)	(-9.32)	(-3.03)			
Rigorous impartial admin.			0.0144**	0.0110	0.00400	0.0144**
			(2.85)	(0.36)	(0.86)	(2.91)
Urbanization	-3.121***	-0.240***	-0.0227	-2.885***	-0.217***	-0.0353
	(-11.02)	(-4.26)	(-0.31)	(-10.22)	(-3.86)	(-0.49)
Economic growth		-0.000297	-0.000252		-0.000295	-0.000222
		(-0.78)	(-0.63)		(-0.78)	(-0.56)
Population (ln)		0.114***	0.273***		0.137***	0.267***
		(6.02)	(10.42)		(7.84)	(11.04)
Political violence		0.00654**	0.00657**		0.00670***	0.00722***
		(3.23)	(2.98)		(3.30)	(3.29)
Regional: Infant mortality		0.410***	0.476***		0.435***	0.486***
		(31.32)	(25.64)		(34.35)	(27.02)
Foreign aid			0.000427			0.000256
			(0.82)			(0.49)
Resource dependence			0.00203***			0.00184***
			(5.47)			(4.98)
Economic inequality			-0.00182***			-0.00200***
			(-3.60)			(-3.98)
Communist			-0.0922***			-0.0847***
			(-3.64)			(-3.39)
Constant	9.858***	3.815***	2.241***	10.39***	3.492***	2.258***
	(22.18)	(19.21)	(8.18)	(23.27)	(19.11)	(8.82)
R-Squared	0.851	0.911	0.909	0.841	0.912	0.910
N	8605	6311	4094	8605	6311	4094
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Lags of independent variables	1 year	1 year	1 year	1 year	1 year	1 year

t statistics in parentheses $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A6: The Effect of Diagonal Accountability on Maternal mortality.

	(1)	(2)	(3)	(4)
Diagonal accountability	-0.518***	-0.0964	-0.158	-0.0209
	(0.154)	(0.125)	(0.139)	(0.0905)
GDP per capita, log	-0.517^{+}	0.453	0.773*	0.375^{+}
	(0.278)	(0.287)	(0.337)	(0.198)
Urbanization	-8.031***	-2.786	-2.989	-0.0618
	(1.694)	(2.763)	(2.827)	(1.343)
Foreign aid		-0.00737	-0.0173^{+}	-0.0313*
		(0.00725)	(0.00929)	(0.0141)
Economic growth		-0.00791*	-0.00730**	-0.00179
		(0.00375)	(0.00265)	(0.00164)
Rigorous administration		-0.0417	0.0913	0.129
		(0.126)	(0.108)	(0.130)
Economic inequality		0.0119	0.0162	0.00432
		(0.0133)	(0.0115)	(0.0104)
Population (ln)		-2.398***	-2.093***	-2.124***
		(0.511)	(0.560)	(0.404)
Political violence		-0.0445	-0.0684^{+}	-0.0161
		(0.0290)	(0.0404)	(0.0217)
R-Sq. Within	0.345	0.409	0.427	0.389
N	3248	2517	2800	2549
Country FE	Yes	Yes	Yes	Yes
Lags	1 year	5 years	10 years	20 years

Standard errors in parentheses $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A7: The Effect of Core Civil Society Index and Freedom of expression and Alternative sources of information on Education.

	(1)	(2)	(3)	(4)	(5)	(6)
Core civil society	0.127**	0.488***	0.179***			
	(0.0468)	(0.0468)	(0.0460)			
Freedom of Expression				0.130**	0.476***	0.160***
				(0.0447)	(0.0444)	(0.0438)
Foreign aid	-0.00612***	0.00254	-0.00745***	-0.00595***	0.00324*	-0.00715***
	(0.00132)	(0.00154)	(0.00143)	(0.00131)	(0.00153)	(0.00142)
GDP per capita, log	0.749***	1.389***	0.816***	0.754***	1.396***	0.819***
	(0.0298)	(0.0271)	(0.0302)	(0.0300)	(0.0271)	(0.0303)
Economic growth	-0.00531***	-0.00495***	-0.00269**	-0.00532***	-0.00500***	-0.00273**
	(0.00100)	(0.00105)	(0.000955)	(0.001000)	(0.00105)	(0.000955)
Resource dependence	-0.00679***	-0.00962***	-0.00662***	-0.00667***	-0.00926***	-0.00648***
	(0.000867)	(0.000935)	(0.000879)	(0.000865)	(0.000935)	(0.000877)
Rigorous administration	0.0169	0.00143	0.0160	0.0150	-0.00340	0.0166
	(0.0118)	(0.0129)	(0.0116)	(0.0120)	(0.0131)	(0.0118)
Population (ln)	1.068***	2.450***	1.333***	1.071***	2.459***	1.339***
	(0.0462)	(0.0375)	(0.0481)	(0.0462)	(0.0371)	(0.0482)
Urbanization	0.0145***	0.0156***	0.0100***	0.0144***	0.0153***	0.00989***
	(0.00114)	(0.00129)	(0.00116)	(0.00114)	(0.00129)	(0.00116)
Political violence	0.0167**	0.0520***	0.0280***	0.0157**	0.0480***	0.0266***
	(0.00538)	(0.00583)	(0.00525)	(0.00537)	(0.00582)	(0.00525)
Constant	-11.69***	-28.72***	-14.15***	-11.76***	-28.85***	-14.22***
	(0.533)	(0.339)	(0.546)	(0.535)	(0.336)	(0.549)
R-Squared	0.890	0.856	0.888	0.890	0.857	0.888
N	4671	4075	4075	4671	4075	4075
Model	Country FE	Country FE	Two-way FE	Country FE	Country FE	Two-way FE
Lag	5-years	10-years	10-years	5-years	10-years	10-years

Standard errors in parentheses $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A8: The Interactive Effect of Diagonal Accountability with Vertical and Horizontal Accountability on Education.

	(1)	(2)	(3)	(4)
Diagonal accountability	0.406***	0.0254	0.500***	-0.0327
	(0.108)	(0.0667)	(0.123)	(0.0779)
Vertical accountability index	-0.0870	0.00839		
	(0.0963)	(0.0592)		
Diagonal × Vertical	0.188**	-0.00345		
	(0.0644)	(0.0505)		
GDP per capita, log	1.433***	0.745***	1.351***	0.735***
	(0.213)	(0.201)	(0.210)	(0.196)
Urbanization	0.0794***	0.0144**	0.0806***	0.0146**
	(0.00833)	(0.00494)	(0.00810)	(0.00496)
Foreign aid		-0.00598		-0.00570
		(0.00449)		(0.00441)
Economic growth		-0.00533**		-0.00518**
		(0.00194)		(0.00189)
Resource dependence		-0.00666^{+}		-0.00632^{+}
		(0.00370)		(0.00365)
Rigorous administration		0.0208		-0.000621
		(0.0590)		(0.0593)
Population (ln)		1.073***		1.122***
		(0.270)		(0.263)
Political violence		0.0163		0.0133
		(0.0259)		(0.0254)
Horizontal accountability index			-0.0957	0.100
			(0.139)	(0.0768)
Diagonal × Horizontal			0.302***	0.0464
			(0.0734)	(0.0527)
Constant	-8.318***	-11.64**	-7.814***	-12.03***
	(1.692)	(3.574)	(1.664)	(3.471)
R-Squared	0.714	0.890	0.720	0.891
N	5945	4671	5945	4671
Model	Country FE	Two-way FE	Country FE	Two-way FE
Lag	5-years	5-years	5-years	5-years

Standard errors in parentheses $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A9: The Interactive Effect of Diagonal Accountability with GDP per capita and Rigorous Impartial Administration on Education.

	(1)	(2)	(3)	(4)
Diagonal accountability index	-0.653	-0.972*	0.586***	0.0337
	(0.524)	(0.384)	(0.0962)	(0.0567)
GDP per capita, log	1.406***	0.737***	1.449***	0.724***
	(0.223)	(0.187)	(0.204)	(0.194)
Diagonal × GDP per capita, log	0.122*	0.120**		
	(0.0611)	(0.0450)		
Urbanization	0.0819***	0.0145**	0.0786***	0.0146**
	(0.00885)	(0.00516)	(0.00786)	(0.00496)
Foreign aid		-0.00314		-0.00544
		(0.00406)		(0.00438)
Economic growth		-0.00445*		-0.00514**
		(0.00170)		(0.00189)
Resource dependence		-0.00643+		-0.00631+
		(0.00369)		(0.00378)
Rigorous administration		-0.0135	-0.245**	0.0163
		(0.0570)	(0.0885)	(0.0587)
Population (ln)		1.392***		1.161***
		(0.302)		(0.265)
Political violence		0.0114		0.0150
		(0.0243)		(0.0251)
Diagonal × Rigorous administration			0.117*	0.0495
			(0.0511)	(0.0315)
Constant	-8.076***	-14.42***	-8.442***	-12.30***
	(1.758)	(3.720)	(1.613)	(3.479)
R-Squared	0.713	0.893	0.723	0.891
N	5945	4671	5945	4671
Model	Country FE	Two-way FE	Country FE	Two-way FE
Lag	5-years	5-years	5-years	5-years

Standard errors in parentheses $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A10: The effect of Diagonal Accountability on Economic growth.

	(1)	(2)	(3)	(4)	(5)	(6)
Diagonal accountability index	0.417	-0.125	0.720*	0.0439	0.672*	0.0513
	(0.267)	(0.258)	(0.347)	(0.310)	(0.301)	(0.274)
Vertical accountability index	1.130*	0.947+				
	(0.530)	(0.486)				
Diagonal × Vertical	0.653*	0.604*				
	(0.271)	(0.247)				
Horizontal accountability index			-0.0185	0.152		
			(0.380)	(0.319)		
Diagonal × Horizontal			0.466+	0.469*		
			(0.243)	(0.212)		
Rigorous administration					0.0539	0.0955
					(0.208)	(0.207)
Diagonal × Rigorous administration					0.0361	0.0945
					(0.122)	(0.102)
GDP per capita, log	-3.461***	-3.395***	-3.578***	-3.500***	-3.417***	-3.430***
	(0.429)	(0.422)	(0.418)	(0.420)	(0.455)	(0.450)
Urbanization	-9.249***	-9.251***	-8.551**	-8.488**	-9.303***	-9.374***
	(2.650)	(2.579)	(2.641)	(2.576)	(2.667)	(2.622)
Petroleum production pc	-0.000306***	-0.000262***	-0.000302***	-0.000260***	-0.000299***	-0.000256***
	(0.0000610)	(0.0000465)	(0.0000594)	(0.0000446)	(0.0000613)	(0.0000465)
Education 15+	-0.126	-0.883**	-0.149	-0.927**	-0.0542	-0.880**
	(0.202)	(0.285)	(0.216)	(0.290)	(0.216)	(0.290)
Clean elections index	-2.647+	-1.736	0.175	0.482	0.229	0.656
	(1.386)	(1.226)	(0.838)	(0.734)	(0.776)	(0.681)
Life expectancy	0.00463	0.0115	0.00525	0.0132	0.00351	0.00838
	(0.0351)	(0.0355)	(0.0347)	(0.0347)	(0.0344)	(0.0349)
Fertility rate, total	-0.905***	-0.879***	-0.940***	-0.914***	-0.882***	-0.882***
	(0.242)	(0.220)	(0.243)	(0.221)	(0.245)	(0.223)
Inflation, consumer prices	-0.000266*	-0.000161	-0.000264*	-0.000156	-0.000275*	-0.000164
	(0.000113)	(0.000111)	(0.000114)	(0.000110)	(0.000111)	(0.000111)
Constant	41.17***	41.69***	41.27***	41.87***	39.93***	41.67***
	(4.617)	(4.754)	(4.494)	(4.718)	(4.705)	(4.886)
R-Squared	0.0689	0.105	0.0680	0.104	0.0665	0.105
N	4293	6790	4293	6790	4293	6790
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes	No	Yes
Lags of independent variables	5 years	5 years	5 years	5 years	5 years	5 years

Standard errors in parentheses $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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