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Constraining Governments: New Indices of Vertical, Horizontal and Diagonal Accountability

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April 2017

UNIVERSITY OF GOTHENBURG
DEPT OF POLITICAL SCIENCE

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Constraining Governments: New indices of vertical, horizontal and diagonal accountability[*]

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Abstract

Accountability - constraints on the government's use of political power - is one of the cornerstones of good governance. However, conceptual stretching and a lack of reliable measures have limited cross-national research and comparisons regarding the role of both accountability writ large and its different sub-types. To address this research gap, we use the V-Dem dataset and Bayesian statistical models to develop new ways to conceptualize and measure accountability and its core dimensions. We provide indices capturing the extent to which governments are accountable to citizens (vertical accountability), other state institutions (horizontal accountability) and the media and civil society (diagonal accountability), as well as an aggregate index that incorporates the three sub-types. These indices cover virtually all countries from 1900 to today. We demonstrate the validity of our new measures by analyzing trends from key countries, as well as by demonstrating that the measures are positively related to development outcomes such as health and education.

Introduction

Accountability is a concept of cross-disciplinary academic importance, and is also directly relevant to many policy decisions. Scholars of political science emphasize the importance of accountability in preventing the abuse of political power and the continuing concern for checks and oversight in the state (Schedler 1999: 13). Similarly, international organizations such as the World Bank have long argued that officials and bodies need to be held accountable for their actions in order to ensure that they provide public goods in a committed, impartial and effective manner (WB Institute 2005). Indeed, building accountable institutions was recently singled out as one targets of Sustainable Development Goal 16 (UN Resolution: A/Res/70/1).

However, cross-national research on accountability suffers from two main impediments: (1) conceptual ambiguity, and (2) limited data availability. *(1) Conceptual ambiguity*: The wide use of the concept has resulted in a surge of meanings and dimensions associated with accountability, making it seem "ever-expanding" (Mulgan 2000) and "over-stretched" (Lindberg 2013). The challenges to defining and measuring the concept stem from its multi-dimensional character, which make its core and meaning difficult to define and distinguish from other related concepts such as democratic or representative governments. *(2) Limited data availability:* Currently, the World Bank's Voice and Accountability Index is the only cross-national accountability index available. This index has been criticized for conceptual inconsistency and lack of transparency in its construction (Thomas 2009; Langbein/Knack 2008; Apazaa 2009). It is also limited in scope, covering only the years after 1996. Therefore, researchers have used measures of democracy writ large to proxy accountability, as opposed to accountability and its constituent units specifically (Adam et al. 2011, Harding et al. 2010, Gerring et al. 2012).

In order to address these shortcomings, we suggest a novel way to conceptualize and systematically measure the accountability of the government. Building on the Schedler (1999) and Lindberg (2013), we define accountability as constraints on the government's use of political power through requirements for justification of its actions and potential sanctions. We organize the sub-types of accountability in regard to the relative positions of different groups of actors, incorporating both the common distinction between vertical and horizontal components and a third sub-type of diagonal accountability. Vertical accountability refers to the ability of a state's population to hold its government accountable through elections and political parties. Horizontal accountability concerns the capacity of state institutions such as legislatures and the judiciary to oversee the government by demanding information, questioning officials and punishing improper behavior. However, agents of vertical and horizontal accountability –

parliaments, voters, courts – often rely on the input of media and civil society in order to preform effectively, for instance the reports of investigative journalists (Grimes 2013). Based on Goetz and Jenkins (2010) we call this third dimension - oversight by civil society organizations and media - diagonal accountability due to its intermediary nature.

The Varieties of Democracy Institute (V-Dem) data set (Coppedge et al. 2016) allows us to create accountability indices that precisely model our conceptual notions with unprecedented cross-national and temporal coverage. We aggregate conceptually relevant V-Dem indicators to separate indices of vertical, horizontal and diagonal accountability. To do so, we incorporate both hierarchical and structural equation components to Bayesian factor analytic models to account for both the nested nature of these indicators and the interaction between the *de facto* and *de jure* institutions that influence accountability. Finally, we create a composite index of accountability from these indices to allow scholars to estimate their aggregate effect.

The paper proceeds as follows: drawing on the existing literature, we define accountability and its core dimensions (Part 1). Based on this discussion, we present our operationalization of the concept, lay out the aggregation strategy and introduce the indices (Part 2). Finally, we assess the resulting measures with empirical tests (Part 3).

Part 1: Accountability

1.1.   What is accountability?

Scholars commonly understand political accountability as constraints on the use of power (Lindberg 2013). Accountability describes a relationship between two actors or groups of actors, where "A is accountable to B when A is obliged to inform B about A's (past or future) actions and decisions, to justify them, and to suffer punishment in the case of eventual misconduct" (Schedler 1999: 17). The two main dimensions of accountability in Schedler's (1999) conceptualization are answerability and enforcement. The former aspect underlines the mechanisms of monitoring and oversight of political institutions, and includes the right to demand information as well as explanation and argumentation for them. The latter concept involves rewarding good behavior and punishing improper behavior through sanctions.

As a radial concept, accountability does not have a conceptual core of necessary and sufficient conditions (Schedler 1999: 17). Sub-types of such radial concepts might not share any

attributes with each other (Collier and Mahoney 1993: 848). For instance, there may be acts of accountability, which involve only the provision of information but do not include sanctions (Schedler 1999: 17, Lindberg 2013: 210). Investigative journalists are unable to directly sanction politicians but their reports and research are nevertheless crucial for holding governments to account.

Related but distinct concepts are responsibility, responsiveness and representation. While the term accountability denotes the concern with the external functions of scrutiny, requiring justifications and imposing sanctions, responsibility refers to internal functions of personal culpability, morality and ethics (Mulgan 2000, citing Uhr 1993 and Bovens 1998). Responsive governments are those that adopt policies preferred by citizens, while representative governments are those that pursue the interest of the majority (Przeworski, Stokes and Manin 1999: 8 – 10). In contrast, issues of government accountability typically relate to questions like: how voters can make elected representatives answer for their policies and accept electoral retribution, how legislators can scrutinize the actions of the executive and make them answerable, and finally, how the public can seek redress from governing institutions (Mulgan 2000: 556).

Further ambiguity stems from the fact that accountability relationships may exist between very different types of actors, for instance in the public or private sector. For our purposes we are concerned with the accountability of the executive branch of the government including the head of state or government, the cabinet, ministries and top civil servants (Coppedge et al. 2016: 413). As a result, we understand accountability as constraints on the government's use of political power through requirements for justification of its actions and potential sanctions.

One common way to organize the sub-types of accountability is to divide accountability mechanisms in regard to the spatial direction between the actors (Lindberg 2013: 212). O'Donnell's widely used classification distinguishes between vertical accountability, which describes a relationship between unequals – citizens and elected officials, and horizontal, which refers to relationship between more or less equally standing institutions (O'Donnell 1998). We adopt this classification and develop it further by adding one important dimension – diagonal accountability - that focuses on the oversight function of non-state actors such as media and civil society. We also make a contribution by suggesting specific ways to conceptualize and measure the core aspects of government accountability.

Vertical accountability refers to the ability of a state's population to hold its government accountable through elections and political parties. It focuses on the relationship between citizens and their elected representatives (Fox 2015, Mainwaring 2003, Schedler 1999). Well-established theories going back to authors like Schattschneider (1942) and Schumpeter (1950) highlight elections as the main mechanism by which people exert control over politicians and political decisions. By voting for competing candidates running on the tickets of various political parties, citizens can select political leaders and punish them for improper behavior. This establishes accountability mechanisms based on incentives for leaders who want to gain and keep power (Skaaning 2015: 5). In order to be re-elected, incumbents should aim to meet voters' expectations in terms of policy- and decision-making (Olson 2000). In addition to voting, political parties provide an important mediating function in establishing conditions for vertical accountability. Strong and organized parties constrain politicians' behavior to the effect that they fulfill the party program and prevent illicit activities that would hurt the party's reputation (Gehlbach and Keefer, 2011; Svolik, 2012). Parties are also instrumental in minimizing policy volatility by committing to a coherent line of action (Bernhard et al. 2015: 8-10). Vertical accountability thus includes the ability to organize in political parties and participate in elections.

By contrast, the oversight that different institutions in a political system exercise on each other is commonly termed **horizontal accountability**. Typical institutions of horizontal accountability include legislative committees, which question governments about their actions and have the power to hold them accountable by initiating a vote of no-confidence. The horizontal accountability mechanism thus emphasizes the separation of powers in a state. Such separation of powers prevents its abuse by allowing other state institutions to demand information, question officials and, possibly, punish improper behavior (Rose-Ackerman 1996). In order to establish horizontal accountability, state agencies - legislative, and judicial branches, as well as various oversight agencies, ombudsmen, prosecutor generals - should not only have the legal power but also the will to oversee the actions of other agencies and impose sanctions (O'Donnell 1998, p. 117f). We are here mainly concerned with the accountability of the government to other oversight bodies.

Vertical and horizontal accountability reflect mainly the role of formal institutions – elections, parliaments, courts – in government oversight. However, effectiveness of vertical and horizontal forms of accountability by themselves is limited (Goetz and Jenkins 2010, p. 364). Such formal institutions of accountability may lack the capacity to continuously oversee the day-to-day activity of the whole state apparatus. Research on corruption and voting has shown that

in practice citizens often fail to punish corrupt regimes through elections (Choi and Woo 2010: 250).

Non-state actors can fill in the accountability gap that formal institutions leave. Citizens, civil society organizations (CSOs), and an independent media can use a broad range of actions and mechanisms to hold the government and public officials accountable, such as "public demonstrations, protests, investigative journalism, and public interest lawsuits" (Malena et al 2004, p.3). Thus, citizens and journalists can serve an important "fire alarm" function by monitoring government offices and reporting irregularities (Grimes 2013, p.382). In addition, when important policy is being considered, independent public deliberations among a wide range of groups, such as participatory public policy-making or budget discussions, constitute other means of furthering accountability outside of elections. Peruzzotti and Smulowitz among others (2006, p. 4, 10) underline the growth of this alternative political control, using informal tools (social mobilization and media exposure) to activate institutional tools (e.g. legal oversight by controlling agencies).

The term social accountability is frequently used to describe the direct involvement of CSOs and the media in the realization of accountability towards politicians and state institutions beyond formal political participation (Malena et al. 2004, p. 3). However, the success of the actions of civil society organizations and the media ultimately depend on whether the institutions of vertical and horizontal accountability respond to them (Mainwaring and Welna 2003). For example, after journalists expose a corrupt politician he can only lose his office only if party leaders withdraw support or voters decide to act upon the accusations (vertical accountability connection). Similarly, a grass-roots initiative to change a particular law is adopted only with the support of sufficient number of legislators (horizontal accountability connection). Therefore, we follow Goetz and Jenkins (2010) and describe the civil society and media's involvement in the oversight of public officials as *diagonal accountability (Figure 1).* Such accountability relationships function diagonally, through their effect on vertical and horizontal accountability (Figure 1).

Figure 1. Direction of accountability relationships
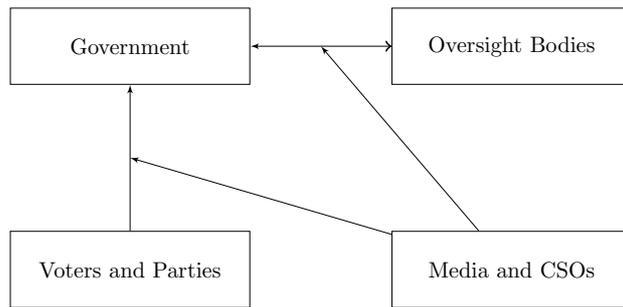
Three additional conceptual clarifications are important to note. First, we are concerned with *de facto* accountability only. In order to ensure effective accountability of any kind, oversight mechanisms need to work in practice and not just exist as inconsequential *de jure* regulations and institutions. For example, elections must be free and fair in practice in order to give citizens the full power to sanction elected officials.

Second, our concept of accountability is closely related to prominent notions of democracy. For example, Schmitter and Karl (1991) define democracy as a "system of governance in which rulers are held accountable for their actions in the public realm by citizens, acting indirectly through the competition and cooperation of their elected representatives." However, governments can also be accountable to some degree in non-democratic states (Lindberg 2013: 209). For example, grass-roots movements can emerge in authoritarian settings (e.g. Solidarity in Poland or African National Congress in South Africa). Similarly, the exercise of repeated elections, even if they are not completely free and fair, can bring about improved political accountability (Lindberg 2006, 2009; Roessler and Howard 2006). Nevertheless, accountability is likely to improve the more democratic its components are. For instance, it is plausible to assume that free and fair elections bring about higher levels of accountability than manipulated ones. Furthermore, our notion of accountability does not include constraints on governments from actors which are themselves not held accountable such as the military or religious leaders.

Finally, our definition and conceptualization of accountability focuses on the national government. Therefore, it does not capture the variation in the strength of accountability sub-nationally or across sectors. While our approach limits opportunities for microanalysis, it lends itself for analysis of accountability opportunities at broad systemic level, in particular in comparative perspective and for looking at changes over time. Studying development of

accountability at systemic level poses an interest in and of itself, but also allows for analyzing how accountability affects the performance of countries overall.

1.2 Existing indices of accountability are not sufficient

The World Bank Voice and Accountability Indicator is the only existing accountability index with worldwide coverage. As one of six Worldwide Governance Indicators (WGI), the index aggregates perception-based indicators from various sources (e.g. Freedom House) with the help of an Unobserved Components Model (Kaufmann et al. 2010). Depending on data availability, the number of sources per observation varies between one and 19 with an average of nine.[1] This structure makes it difficult to trace what the index is actually capturing and limits comparability of the measure across countries. Consequently, critics have argued that the measure - and other WGIs - lacks conceptual consistency and validity (Thomas 2009; Langbein/Knack 2008; Apazaa 2009). The index also has limited temporal coverage, as it only covers 1996 onwards.

Several other accountability-related indices exist, but they are limited in either cross-national coverage or the aspect of accountability they cover. For example, Williams (2014) puts forward a composite measure of accountability and transparency, covering 1980-present with a limited number of countries. The Global Integrity Report introduces a set of indicators on government oversight and electoral integrity and anti-corruption, but only covers 33 countries in 2016.[2] The World Bank's IDA Resource allocation index also provides some information on horizontal and social accountability, but only for countries receiving development aid since 2005.[3] Polity IV includes a variable on executive constraints, but this variable covers also non-democratic forms of constraints such as the ruling party in a one party state or a powerful military (Marshall et al. 2013: 24). This diverges from our democracy-related notion of accountability.

In light of the lack of a cross-national accountability index with wide coverage, scholars have resorted to wider democracy indices as proxies for accountability for their empirical studies

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[1] Own calculations based on World Bank data taken from Teorell et al. 2016.
[2] Global Integrity (2011); The Global Integrity Report: 2011 – Methodology White Paper, https://www.globalintegrity.org/wp-content/uploads/2013/08/2011_GIR_Meth_Whitepaper.pdf (access 12. August 2016), p.5
[3] The World Bank, IDA Resource Allocation Index, http://www.worldbank.org/ida/IRAI-2012.html (access 12 August 2016).

(Adserà et al. 2003). In contrast, the accountability indices we present in this paper will allow scholars to directly investigate the causes and effects of different types of accountability.

Part 2: The Indices

2.1 Operationalization and Aggregation strategy

Based on the conceptual framework outlined above, we operationalize each type of accountability as being a composite of multiple indicators from the V-Dem data set (Coppedge et al. 2016), and overall accountability as being an aggregation of these types.[4] The functional form of all types of accountability requires going beyond a standard Bayesian factor analysis framework. Our accountability indices include hierarchically nested variables, since we assume that the influence of many measures on a type of accountability is mediated by their relationship to other conceptually similar measures. Moreover, some variables – for instance on election quality - are systematically missing in the data because the institutions they capture (e.g. elections) do not exist. However, the existence of these institutions itself is of prime importance to accountability. Structural equation modeling accounts for the relative contribution of these measures to the overall latent concept being estimated. Our model therefore includes both hierarchical and structural equation components.

In this section, we provide a narrative description of each accountability measure in turn. The Methodological Appendix provides an analytical description of the measures and details about the aggregation strategy.

2.1.1 Vertical accountability

Vertical accountability captures the mechanisms of formal political participation in the exercise of accountability. Figure 1 illustrates our conceptual scheme for vertical accountability, which consists of two main aspects: electoral accountability and political parties.

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[4] The V-Dem dataset has world-wide coverage from 1900 to 2012 for over 350 indicators on democracy and political systems. While approximately half of the indicators in the V-Dem dataset are based on factual information, the other half consists of more subjective expert judgments (Coppedge et al., 2015a). V-Dem relies on more than 2,500 local and cross-national experts to collect these judgments, which are aggregated through a Bayesian item response theory model (Pemstein et al., 2015).

Figure 1: Vertical accountability path diagram
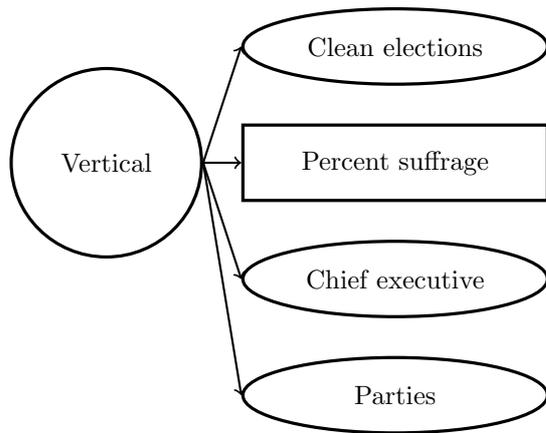
We operationalize electoral accountability as measures of 1) the quality of elections in the state; 2) the percent of enfranchised population and 3) whether the chief executive is elected. In order to capture the *de facto* opportunity for citizens to sanction politicians through elections, we take into account the extent to which 1) there are elections and 2) the degree to which elections reflect the will of the people and are not a mere façade. This is especially salient since more than half of the current elections in the world violate the basic principles of freedom and fairness (Hafner-Burton et al. 2013:152). Therefore, we weight a dichotomous measure of the presence of elections in a polity (v2x_elecreg) by measures of clean elections. The underlying assumption here is that polities with no elections have worse vertical accountability than a polity that has elections, even if they are fraudulent. At the same time, vertical accountability improves with election quality. We therefore reflect the quality of national elections with seven variables autonomy and capacity of the electoral management body (v2elembaut and v2elembcap); and accuracy of the voter registry (v2elrgstry), intentional irregularities conducted by the government and opposition (v2elirreg); intimidation and harassment by the government and its agents (v2elintim); to what extent the elections were multi-party in practice (v2elmulpar); and an overall measure for the freedom and fairness of elections (v2elfrfair). These variables represent a modified version of the V-Dem Clean elections index (v2xel_frefair), to which we added the variable v2elmulpar, which is theoretically important for accountability, and we removed v2elvotbuy and v2elpeace, as they have low loadings to the index.

Furthermore, we account for both the percentage of the population to which a government is accountable and the degree to which a country's chief executive is accountable with variables that directly load to the latent concept. Specifically, we include a measure the percentage of people that have the legal right to vote (v2elsuffrage) to capture the degree to

which some citizens are excluded from the exercise of electoral accountability. Since governments that do not subject the chief executive to direct or indirect elections are substantially less accountable to voters, we also account for an elected chief executive with a binary indicator.[5]

Finally, we incorporate the presence and activities of political parties into our estimation of vertical accountability. To do so, we estimate an aggregate measure of different variables related to the quality of the party system in a polity. First, we capture whether there are barriers to forming a party and how restrictive they are (v2psparban and v2psbars), as well as whether the opposition parties are independent of the ruling regime (v2psoppaut). As argued above, political parties serve an important function to address citizens' grievances outside of elections as a formal forum to gather, coordinate and defend the interests of their followers. Political parties also open avenues for vertical participation in countries without elections.

2.1.2 Horizontal accountability

Horizontal accountability represents the extent to which state institutions are able to hold to account the executive branch of the government (head of state, head of government and cabinet ministers). Three main institutions are essential in this regard: the legislature, the judiciary, and special bodies designed for such a purpose (comptroller general, general prosecutor, or ombudsman). Figure 2 illustrates this conceptual scheme. There is no *a priori* reason to privilege any of these institutions in the measure, so we model them as having potentially the same influence on the country year level of horizontal accountability.

Figure 2: Horizontal accountability path diagram
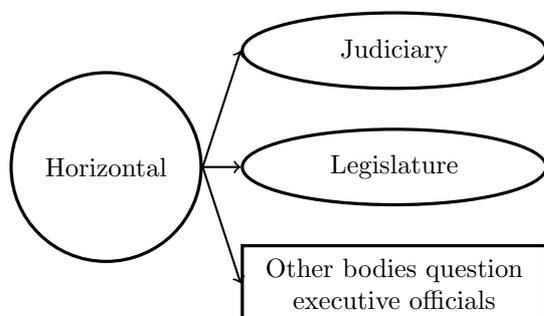
[5] The chief executive is either the head of state or head of government – whoever has more relative power over the appointment and dismissal of cabinet ministers, as measured by v2ex_hosw. Its appointment is measured by v2expathhs, v2ex_legconhos, v2expathhg and v2exaphogp.

We measure the effect of the judiciary as a composite score of five variables. First, we incorporate higher and lower court independence (v2juhcind and v2juncind). These two indicators capture the capability of the high respectively lower court to rule impartially in cases that are salient to the government. Second, we include two indicators capturing how often the government complies with important decisions undertaken by the high court and other courts (v2juhccomp and v2jucomp). Finally, we add a measure for whether the executive branch respects the constitution (v2exrescon). The resulting composite measure speaks to whether members of the executive compromise horizontal accountability by "unlawfully encroaching" into legitimate authority of the judiciary branch (Sklar 1999: 55).

With regard to accountability, the key function of a legislature is to scrutinize government officials' (potential) misconduct by demanding information for their policies and decisions, and taking specific actions in case of irregularities. As with quality of elections, we assume that polities without legislatures have worse horizontal accountability than polities with legislatures. We therefore weight an indicator of the existence of a parliament (a dichotomized version of v2lgbicam) by measures of the degree to which the legislature actually holds the executive branch accountable: 1) whether the legislature routinely questions the executive (v2lgotovst); and 2) the degree to which a legislature is likely to investigate and produce a decision unfavorable to the executive, if the latter were engaged in an illegal or unethical activity (v2lginvstp).

Finally, we include a variable regarding the degree to which other state bodies (comptroller general, general prosecutor, or ombudsman) are likely to investigate and report on potential illegal or unethical activities on part of the executive (v2lgotovst). We model this indicator as a direct input to the horizontal accountability score since we do not believe that states without such bodies and with weak additional oversight bodies necessarily have different levels of horizontal accountability.

The resulting measure of horizontal accountability captures the degree to which a network of institutions with legal power to check and balance the executive branch exercise this function in practice.

2.1.3 Diagonal accountability

Diagonal accountability represents the extent to which citizens are able to hold a government accountable outside of formal political participation. We model this form of accountability as a function of media freedom, civil society characteristics, freedom of expression, and the degree to which citizens are engaged in politics. Figure 3 demonstrates graphically our conceptualization of diagonal accountability.

Figure 3: Diagonal accountability path diagram
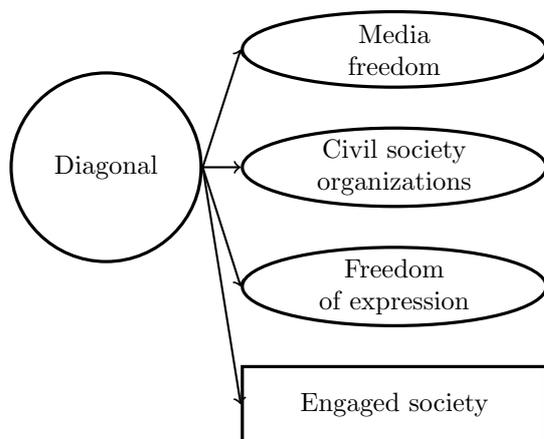
Media freedom represents a composite value with two broad dimensions. The first dimension captures the extent to which the government attempts to censor the media (v2mecenefm) and information on the Internet (v2mecenefi), as well as the extent to which government and other powerful actors harass journalists (v2meharjrn). These three indicators give insights into the questions whether the government attempts to silence the media and thus preventing them from exercising their profession. The second dimension is concerned with the work of the media itself, thus capturing the extent to which citizens have access to un-biased and diverse sources of information, allowing them to objectively inform themselves about the policies of the government and the outcomes of these policies. The four indicators we use focus on the extent to which: the media criticizes the government at least occasionally (v2mecrit); there is bias against opposition candidates (v2mebias); the media offers a wide array of political perspectives in their coverage (v2merange); and there is self-censorship on salient issues for the government (v2meslfcen).

The second aggregate measure we use to estimate diagonal accountability regards civil society. We use the components of the V-Dem core index of civil society to account for the

opportunity of citizens to channel their interests and potentially oppose the government and its policies in an organized way through a robust, self-organized and autonomous civil society organizations. More specifically, the indicators included in this index are: popular and voluntary participation in CSOs, (v2csprtcpt), government control to the entry and exit of CSOs into the public life, (v2cseeorgs), and government oppression of CSOs (v2csreprss).

Freedom of expression represents a weighted aggregation of male and female freedom of discussion in private discussions on political issues without fear of harassment on the part of the government, or as result of cultural of customary restrictions (v2cldiscm and v2cldiscw). The inclusion of this measure adds information on whether private citizens can freely discuss political issues – a fundamental right and basic prerequisite for citizens to be able to participate in any form in the scrutiny of the government. The separate measure for women taps into potential specific restrictions to that group, a phenomenon not uncommon in particular in traditionalistic societies. We also add an indicator on the freedom of academic and cultural expression (v2clacfree). This is a measure on whether censorship and intimidation are frequent towards academic activities and cultural expressions, which could otherwise play an important role in scrutinizing the government and its activities.

All of these institutions are composites of multiple indicators, except for engaged society (v2dlengage). This indicator gives information on the width and depth of public deliberations when important policy changes are being considered. In particular, it assesses to what extend non-elite groups and ordinary citizens are discussing major policy issues in an unconstrained way.

2.1.4 Accountability

To create an aggregate measure of accountability, we conduct a hierarchical analysis using the sub-index models from the preceding section. This strategy assumes that overall accountability is a function of all variables included in the model, though the sub-indices structure this relationship. Figure 4 illustrates this conceptualization.

Figure 4: Accountability path diagram
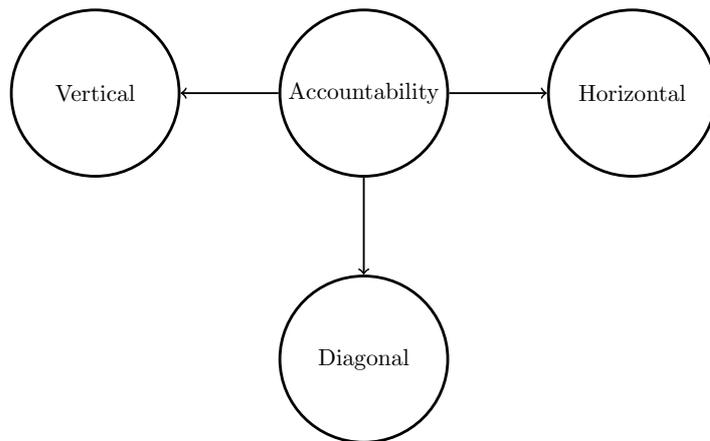
2.2. The data

2.2.1 Summary Statistics

Our validation strategy for the indices is twofold: first, we look at key summary descriptive statistics of our indices, including in three specific countries, and second, we demonstrate the utility of these measures by investigating the effect of different types of accountability on multiple governance outcomes related to human development. Development outcomes are of interest to us both because of their substantive importance, and the wide literature that has linked accountability to development.

The four new accountability indices we propose have unprecedented coverage over space and time with a total of 66,484 observations from 1900 to 2015 for up to 173 countries and territories.

Figure 5 illustrates the global average development of accountability over time. We see three different phases of accountability evolvement in the world - similar to the well-known waves of democratization (Huntington 1992). From relatively low average levels in the early 20st century, accountability levels decline in the 1930s and 1940s. After World War II, accountability improves on global average to levels unparalleled before the War. Finally, with the fall of the Iron Curtain governments became more accountable across the world.

Figure 5: Global Average of our Accountability Indices 1900-2012
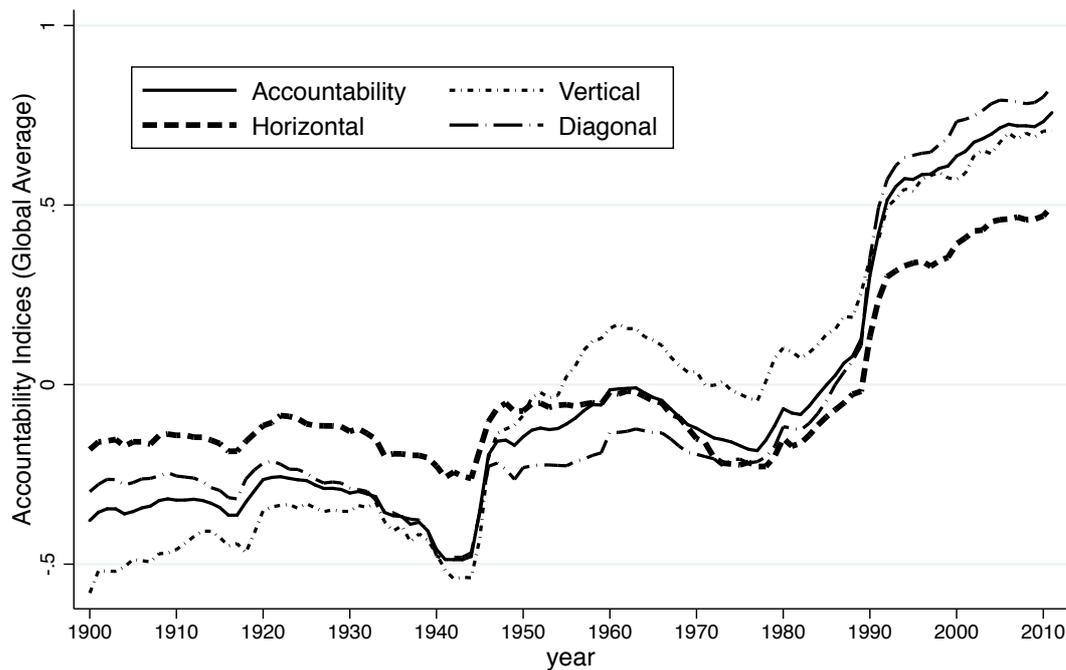
Our sub-indices of accountability evolve differently over time. As a global average, horizontal accountability is the least volatile sub-index. In the 20s, the yearly global average of horizontal accountability almost reaches its all-time average. This relatively high early average could be a function of the development of legislatures and courts in many Western countries in the late 19th and early 20st century. In the subsequent decades, the horizontal accountability index fluctuates slightly and improves drastically only after the fall of Communist regimes in Eastern Europe. However, this surge is less pronounced than the changes in social and vertical accountability occurring at the same time. The global average of vertical accountability changes quickly from very low levels until World War II to medium levels in the 1960s, which reflects the extension of suffrage and democratic rights in Western states such as the United States, as well as the starting processes of decolonization in Asia and Africa at the time. Diagonal accountability evolves in a similar pattern as vertical accountability until the end of World War II, at which point vertical accountability improves more rapidly than diagonal accountability. This trend suggests that during this period the quality of elections was improved more comprehensively than diagonal mechanisms of accountability such as media oversight and citizen's participation.

Table 1: Correlation Matrix of Accountability Indices 1900-2012

	Accountability	Vertical Accountability	Horizontal Accountability	Diagonal Accountability
Accountability	1.0000			
Vertical Accountability	0.917	1.0000		
Horizontal Accountability	0.879	0.724	1.0000	
Diagonal Accountability	0.964	0.824	0.810	1.0000

Table 1 depicts the correlation matrix for the four accountability indices we have designed. The table shows that vertical and horizontal accountability are the least correlated sub-indices, whereas diagonal accountability correlates the most with the other two sub-indices. Consequently, the aggregate accountability index evinces great similarity with diagonal accountability, which can also be seen in Figure 1. This reflects the nature of institutions of diagonal accountability as intermediary mechanisms, which help to reinforce other types of accountability (Mechkova, Lührmann, Lindberg 2017). For instance, investigative reports in free and critical media can help parliamentarians to uncover and combat corrupt practices.

Figure 6 illustrates the relationship between vertical and horizontal accountability in the year 2012. Appendix 1 provides similar figures for the other indices (Figures A.1 and A.2). Recall that the measure of vertical accountability heavily discounts countries that have never had elections or where there are interruptions in the electoral cycle. Therefore, countries without an electoral regime in place are at the bottom of the vertical accountability scale, such as Eritrea and Saudi Arabia. Countries that hold severely flawed elections, such as Syria or Turkmenistan, have higher vertical accountability than states without electoral regimes, though they have much lower values than countries that have better-quality elections.

Figure 6: Vertical and Horizontal Accountability in 2012
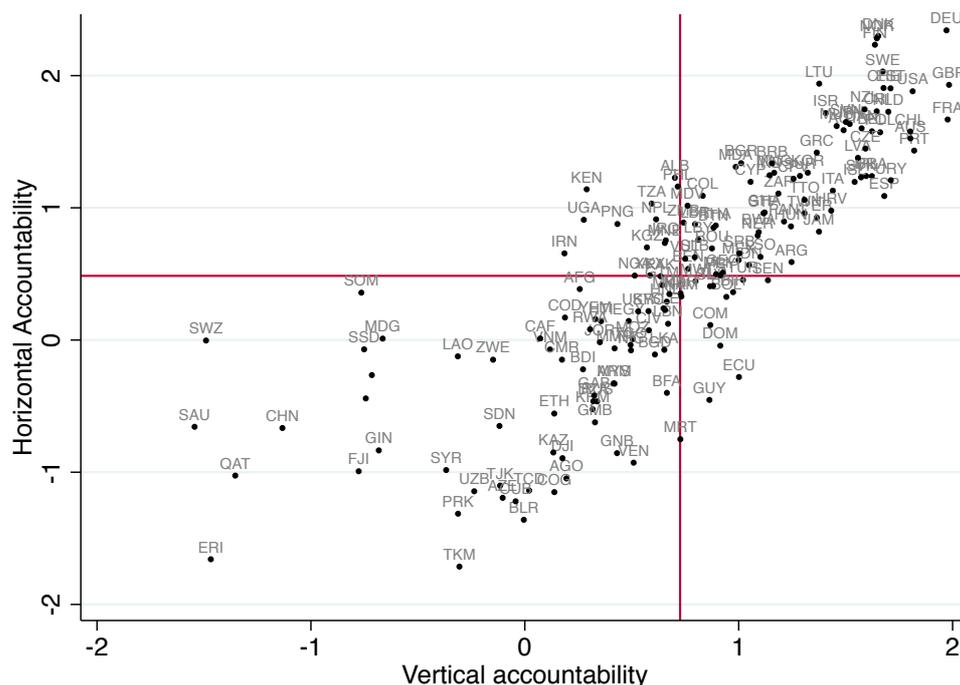
Note: The red lines represent the global average of the indices in 2012.

The red lines on Figure 6 give the global average of the depicted indices in 2012. Countries in the right hand quadrant have above-average ratings of both vertical and horizontal accountability and those in lower left-hand quadrant score below-average for both indices. Countries in the lower right-hand quadrant score above average on vertical accountability, but below average on horizontal. For example, Ecuador and Guyana have quite developed electoral institutions but exhibit weaknesses in parliamentary and judicial oversight. Countries in the upper left-hand quadrant score below average on vertical accountability while maintaining above-average horizontal oversight institutions. For example, flawed elections impeded vertical accountability in Kenya and Uganda, while judicial and parliamentary systems had the ability to check other state bodies. OECD countries are concentrated at the top of both indices (see Table A.1 in Appendix), which suggests face validity of the measure.

As discussed above, few existing indicators aim to capture the same concepts as the accountability indices offered in this paper. The existing index conceptually closest to our indices is the World Bank's Voice and Accountability from the World Governance Indicator (WGI) data set. It correlates strongly with our accountability measure (Table 2). The WGI Voice and Accountability index is a composite index of various other indicators mainly in the realm of

election quality, media freedom and civil and political rights. The WGI Voice and Accountability index does not incorporate measures of horizontal accountability. It is therefore not surprising that the table shows that this measure correlates more strongly with our vertical and diagonal accountability indices than with our horizontal accountability index. The comparison with Freedom House (FH) indicators confirms this analysis. The FH Political Rights score – which is often used as an indicator for electoral democracy – correlates strongly with our overall accountability index and the indicator of vertical accountability, whereas the correlation with diagonal and horizontal accountability is weaker. The FH Electoral Process correlates even stronger with vertical accountability and less with horizontal and diagonal accountability. Finally, the FH Freedom of the Press indicator correlates the strongest with diagonal accountability, which includes our measures of media freedom.

Table 2: Correlation of our Accountability Indices with Existing Indices

	Accountability	Vertical Accountability	Horizontal Accountability	Diagonal Accountability
WGI Voice and Accountability	0.9206	0.8712	0.8440	0.8738
FH Political Rights	-0.8656	-0.8495	-0.7699	-0.8377
FH Electoral Process	0.8636	0.8690	0.7473	0.8286
FH Freedom of the Press	-0.8598	-0.8013	-0.7560	-0.8353

Note: For the Freedom House indices Political Rights and Freedom of the Press higher values indicate less freedom. Therefore the correlation is negative. The WGI Voice and Accountability covers 1996-2014, the FH Political Rights 1972-2014, the FH Electoral Process 2005-2015 and the FH Freedom of the Press 1993-2014.

Overall, our measures correlate highly with existing indicators that cover similar concepts. In particular, the sub-indices that are the conceptually the most related to an existing index correlate the strongest. This enhances our confidence in the reliability of our indices.

Next, we present line graphs for three sample countries from 1900 to 2014 to illustrate the differences between the indices. Furthermore, the trends outlined in the figures reflect the history of the countries, which supports the face validity of our measures.

Figure 7 illustrates our accountability indices for Spain. All indices have extremely low scores during the authoritarian regime established by Franco. Some opening of the space for vertical accountability is shown in 1967 when the first elections are held. With the democratization of Spain in the late 1970s, the scores for all accountability indices rise significantly. Notably, the scores for horizontal accountability are somewhat lower, indicating that in Spain the extent to which the legislature, the judiciary and other oversight agencies hold the executive to account could be expanded.

Figure 7: Development of accountability indices in Spain

Finally, looking at Figure 9 for Uganda, the data indicates greatest repression in terms of horizontal and diagonal accountability during Idi Amin's military dictatorship (1971-79). In the decades after there is an upward trend across all indices apart from vertical accountability, which spikes down due to the coup in 1985 until parliamentary elections take place in 1989. Nevertheless the space for accountability remains quite limited. Particularly, vertical accountability shows the low scores compared to the other indices. Starting from 2006 the space for civil society organizations and the media to hold the government to account is restricted even further as the decline in the diagonal accountability index illustrates.

Figure 9: Development of accountability indices in Uganda

Accountability indices
Uganda, 1900 - 2014
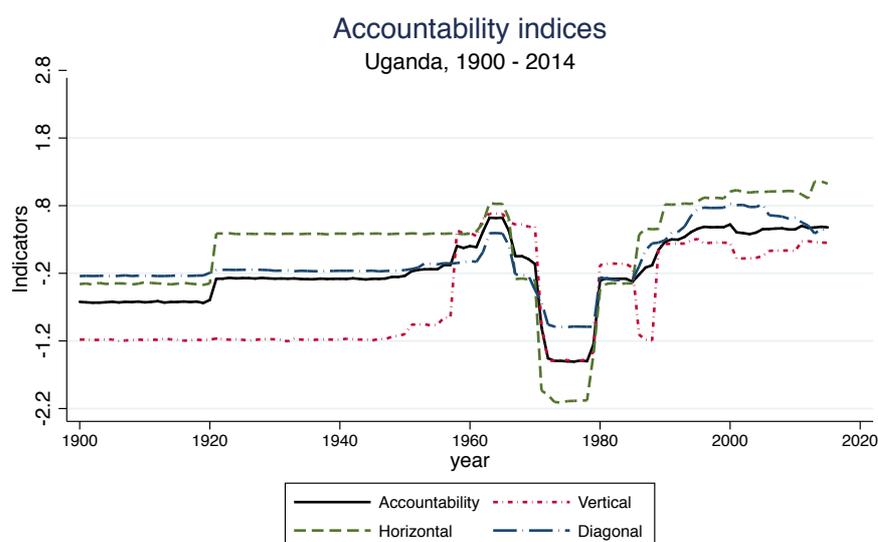
Part 3: Empirical Application: Is Accountability Developmental?

Demonstrating theoretically-expected effects in regression analysis is a key method to validate indices (Schmotz 2015). Based on prior research, we expect human development to improve as a government becomes more accountable (Gerring et al 2012, World Bank Institute 2005, Miller 2015). Therefore, we explore how our accountability indices are related to key human development outcomes such as health and education.

More specifically, researchers have argued that the accountability mechanisms in democratic regimes enhance human development (Adam et al., 2011; Biser et al., 2012; Harding et al., 2010; Gerring et al., 2012). In particular, vertical accountability gives politicians incentives to promote policies that are in interest of a wider group of citizens in order to excel at the next election (Adserà et al 2003, Miller 2015, Norris 2012, Besley and Kudamatsu 2006, Bueno de Mesquita et al. 2003). Since we assume that human development is in the interest of a large group of citizens, effective vertical accountability should increase pressure for effective public policies in this area and therefore improve human welfare. This establishes a mechanism that induces accountability based on incentives for leaders who want to gain and keep power by meeting citizens' demands (Skaaning 2015, p. 5). However, the causal mechanism for holding politicians accountable for their actions works in practice better if citizens receive reliable and

impartial information about the government performance (Adserà et al 2013). By empowering citizens and actively involving them in the monitoring of government performance, diagonal accountability mechanisms can enhance government transparency and exert sanction power via "naming and shaming", thus potentially serving as powerful tools to ensure that government agencies serve the interest of the people in a better way (World Bank 2005: 7). We therefore also expect diagonal accountability to have a positive relationship to development outcomes. Finally, horizontal checks between institutions prevent abuse of power by demanding information, questioning officials and possibly, punishing improper behavior (Rose-Ackerman 1996; O'Donnel 1998). We therefore expect that horizontal accountability will also enhance human development.

3.1 Data and Research Strategy

In the following, we test these arguments using a data set adapted from Miller (2015). Miller (2015) has shown that democracies achieve better development outcomes than autocracies and that even in the authoritarian regime spectrum countries with elections perform better. Miller relies on categorical indicators of regime type in order to essentially proxy the effects of accountability. Our continuous indices allow both to 1) model the effects of accountability directly and 2) to provide nuanced assessments of the effects of gradual improvements of accountability. Therefore, this analysis serves two aims. First, we expect to provide similar findings as Miller – in the sense of a positive relationship between accountability and human development, which will enhances the confidence in our measures. Second, we will demonstrate the added value of our indices by departing from coarse regime categories to a more gradual assessment.

Therefore, we follow Miller's (2015) choice of variables for the empirical analysis. As dependent variables, we use the following proxies for human development: infant mortality (per 1,000 live births), child mortality under the age of 5 (per 1,000 live births), life expectancy, literacy and school enrollment (the percentage of age-appropriate children enrolled in primary and secondary education).[6] Mirroring Miller (2015, p.1542), the models include a set of control variables that is common in the literature. First, we add the regional average for each outcome variable to account for the specific regional characteristics, as well as certain shock events particular for that region and time that could affect our outcome variables. Second, we include a

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[6] Miller has taken the data these variables from World Bank (2011).

measure for foreign aid, whether the country is a communist state, and a control for Political Violence (a 0-10 rating of domestic civil and ethnic violence. Third, four variables account for the economic situation in a country as the amount of economic resources available to the government and the distribution of income directly affect any aspect of human development (logged Gross Domestic Product (GDP) per capita, Economic Growth, Resource Dependence (fuel and metal revenues as a percentage of GDP), Economic Inequality (Gini coefficient). Fourth, two variables on socioeconomic characteristics are included to account for the ease of delivering public services: Population and Urbanization (the percentage living in cities of 100,000+). We also add a dichotomous indicator of electoral regimes (i.e. did the regime hold elections, which goes to 0 if elected bodies are removed from office due to a coup, war or similar events) in order to account for the argument that elections in their own right are associated with better human development outcomes.

3.2 Empirical Results

For each of the five development outcomes as dependent variable we run ordinary least squares (OLS) with year fixed effects to account for variation across time and country fixed effects to account for country-level omitted variables. Table 3 reports the results of the OLS regression predicting infant mortality and main results for the other outcome variables are displayed in the Appendix on Table A2-6. Models 1, 2 and 3 test the effect of vertical, horizontal and diagonal accountability separately. As expected, all three indices correlate negatively at a statistically significant level with infant mortality.

Model 4 includes the three sub-types of accountability together into one model. Out of the three, diagonal accountability loses its statistical significance, whereas vertical and horizontal continue to show statistically significant negative effects on infant mortality. Given that these measures are highly correlated, such a weakening of some results is expected. Model 5 tests the relationship between the overall accountability measure and infant mortality. It shows that improvements in overall accountability correlate with lower infant mortality. Infant mortality is predicted to decrease from an average of 65 deaths per 1000 live births at the lower end of the accountability spectrum to an average of about 50 deaths per 1000 live births at the higher end of the spectrum (Figure 7).

Figure 7: Predicted Margins Infant Mortality (Model 5 - Accountability)
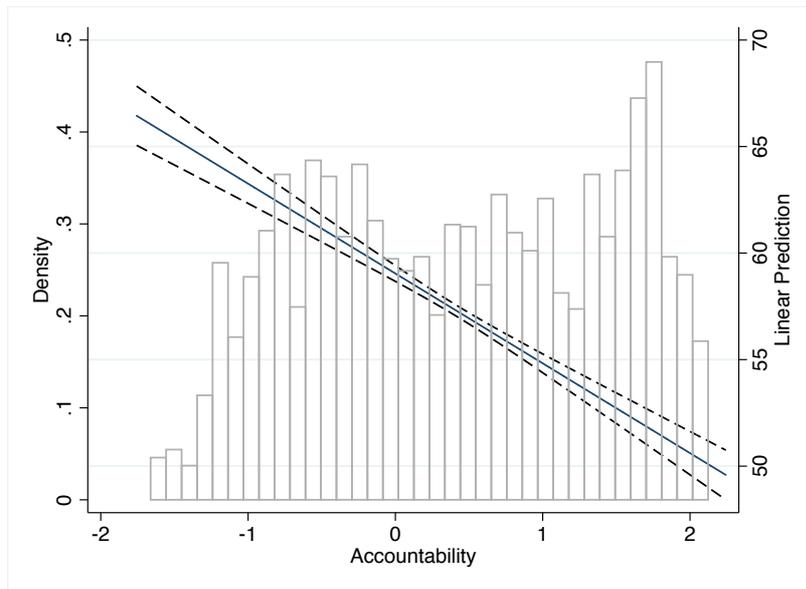
Note: Dashed lines give 95%- confidence intervals.

The results for the control variables included in the models reflect Miller (2015) findings. However, holding elections, as captured by the electoral regime variable, is associated with higher mortality rates, and this relationship is statistically significant.

Table 3: OLS regression with Infant Mortality as Outcome.

	(1)	(2)	(3)	(4)	(5)
Vertical accountability	-7.042***			-5.496***	
	(0.522)			(0.850)	
Horizontal accountability		-3.705***		-1.664***	
		(0.299)		(0.538)	
Diagonal accountability			-3.670***	0.306	
			(0.315)	(0.594)	
Accountability					-4.216***
					(0.319)
Foreign aid	-0.0529*	-0.0567*	-0.0533*	-0.0495	-0.0500
	(0.0306)	(0.0307)	(0.0309)	(0.0306)	(0.0307)
GDP/capita (ln)	-10.52***	-10.53***	-10.53***	-10.60***	-10.50***
	(0.770)	(0.772)	(0.774)	(0.769)	(0.770)
Economic growth	0.0339	0.0361	0.0342	0.0337	0.0339
	(0.0233)	(0.0234)	(0.0235)	(0.0233)	(0.0234)
Resource dependence	0.0371*	0.0428**	0.0462**	0.0379*	0.0444**
	(0.0214)	(0.0215)	(0.0216)	(0.0214)	(0.0215)
Economic inequality	-0.0377	-0.0626**	-0.0720**	-0.0387	-0.0627**
	(0.0306)	(0.0305)	(0.0306)	(0.0307)	(0.0304)
Population (ln)	-19.60***	-19.15***	-17.84***	-19.71***	-18.30***
	(1.580)	(1.580)	(1.590)	(1.599)	(1.579)
Urbanization	-0.115***	-0.117***	-0.135***	-0.114***	-0.121***
	(0.0278)	(0.0279)	(0.0280)	(0.0279)	(0.0279)
Political violence	0.373***	0.351***	0.283**	0.360***	0.307**
	(0.127)	(0.127)	(0.129)	(0.128)	(0.127)
Communist	2.105	1.934	1.127	1.299	1.324
	(1.516)	(1.539)	(1.575)	(1.574)	(1.541)
Infant mortality, regional average	0.645***	0.642***	0.658***	0.645***	0.649***
	(0.0198)	(0.0198)	(0.0200)	(0.0199)	(0.0198)
Electoral regime	7.671***			6.530***	
	(0.867)			(1.060)	
Constant	285.4***	287.1***	275.2***	287.4***	279.5***
	(17.90)	(17.95)	(18.04)	(17.99)	(17.92)
R-squared	0.817	0.815	0.814	0.817	0.816
Adjusted R-squared	0.808	0.806	0.805	0.808	0.807

OLS regressions; fixed country and year effects; time coverage: 1961 – 2006; 147 countries; 4,355 observations; standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$.

In the Appendix we display the summary results for the regressions for the other four outcome variables. These models mirror the ones from Table 3, where Models 1-3 explore the effect of vertical, horizontal and diagonal accountability separately on the outcome variables and Model 4 adds the sub-types of accountability into one model; and finally, Model 5 tests the effect of the composite measure of overall accountability in a country on the outcome variables. Furthermore, scholars have single-out corruption as an explanation for lacking human development (Diamond, 2007; Holmberg & Rothstein, 2010; Lewis, 2006; Rothstein, 2011). Therefore, in Table A.6 we also report the results of regression analysis when including corruption in a state (v2x_corr) as confounder and the results do not change substantially.

In sum, our empirical analysis suggests that all three sub-types of accountability and the composite accountability index are strongly associated with better development outcomes: Higher levels of accountability and its sub-types tends to be correlated with higher life expectancy, literacy, school enrollment and lower mortality of children under the age of five. This is in-line with prior findings in the literature and supports the validity of our measures. Furthermore, our indices open new avenues to assess the role of accountability for human development in a more nuances way.

Conclusion

Accountable institutions have long been viewed as key to effective and good governance. However, researchers and policy-makers lack cross-national measures capturing the core dimensions of government accountability over long time periods and for most countries of the world. This article refines the concept of accountability and its core dimensions, and offers a novel way to operationalize and measure it.

Based on V-Dem data, we develop four new indices of accountability and its sub-types for virtually all countries spanning from 1900 until today. Our main accountability index captures the extent to which citizens, legislatures, judges, civil society and media are able to de-facto oversee and constrain the government. Sub-indices focus on individual actor groups – voters and political parties (*vertical accountability*), legislatures,

judiciary and other oversight institutions (*horizontal accountability*) and civil society and media (*diagonal accountability*).

Our indices of accountability closely reflect our conceptual notion as we demonstrate in empirical analysis. In line with earlier research, our indices show a positive relationship to human development, which further points to the importance of accountability and the validity of our indices. The indices will allow researchers and policy makers alike to gain a better understanding of the state, the historical development and the effects of accountability and its sub-types. In particular, we envision that our indices will allow scholars to shed more light on the specific effects different types of accountability. Furthermore, our indices enable new insights on the pathways to more accountable governments.

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Appendix

Table A.1. Indicators part of Vertical accountability

Indicator	Question text	Answer categories
Elected executive (HoEel)	Is the chief executive (Head of State or Head of Government) directly elected in multi-party elections, or by directly elected parliament?	0: No. 1. HOS and HOG have relative equal power, and only one of them is elected. 2: Yes.
Percent Suffrage (v2elsuffrage)	What percentage (%) of adult citizens (as defined by statute) has the legal right to vote in national elections?	Percent.
Electoral regime index (v2x_elecreg)	At this time, are regularly scheduled national elections on course, as stipulated by election law or well-established precedent?	0: No. 1: Yes.
Clean elections		
EMB autonomy (v2elembaut)	Does the Election Management Body (EMB) have autonomy from government to apply election laws and administrative rules impartially in national elections?	0: No. The EMB is controlled by the incumbent government, the military, or other de facto ruling body. 1: Somewhat. The EMB has some autonomy on some issues but on critical issues that influence the outcome of elections, the EMB is partial to the de facto ruling body. 2: Ambiguous. The EMB has some autonomy but is also partial, and it is unclear to what extent this influences the outcome of the election. 3: Almost. The EMB has autonomy and acts impartially almost all the time. It may be influenced by the de facto ruling body in some minor ways that do not influence the outcome of elections. 4: Yes. The EMB is autonomous and impartially applies elections laws and administrative rules.

EMB capacity (v2elembcap)	Does the Election Management Body (EMB) have sufficient staff and resources to administer a well-run national election?	0: No. There are glaring deficits in staff, financial, or other resources affecting the organization across the territory. 1: Not really. Deficits are not glaring but they nonetheless seriously compromised the organization of administratively well-run elections in many parts of the country. 2: Ambiguous. There might be serious deficiencies compromising the organization of the election but it could also be a product of human errors and co-incidence or other factors outside the control of the EMB. 3: Mostly. There are partial deficits in resources but these are neither serious nor widespread. 4: Yes. The EMB has adequate staff and other resources to administer a well-run election.
Election voter registry (v2elrgstry)	In this national election, was there a reasonably accurate voter registry in place and was it used?	0: No. There was no registry, or the registry was not used. 1: No. There was a registry but it was fundamentally flawed (meaning 20% or more of eligible voters could have been disenfranchised or the outcome could have been affected significantly by double-voting and impersonation). 2: Uncertain. There was a registry but it is unclear whether potential flaws in the registry had much impact on electoral outcomes. 3: Yes, somewhat. The registry was imperfect but less than 10% of eligible voters may have been disenfranchised, and double-voting and impersonation could not have affected the results significantly. 4: Yes. The voter registry was reasonably accurate (less than 1% of voters were affected by any flaws) and it was applied in a reasonable fashion.

Election other voting irregularities (v2elirreg)	In this national election, was there evidence of other intentional irregularities by incumbent and/or opposition parties, and/or vote fraud?	0: Yes. There were systematic and almost nationwide other irregularities. 1: Yes, some. There were non-systematic, but rather common other irregularities, even if only in some parts of the country. 2: Sporadic. There were a limited number of sporadic other irregularities, and it is not clear whether they were intentional or disfavored particular groups. 3: Almost none. There were only a limited number of irregularities, and many were probably unintentional or did not disfavor particular groups' access to participation. 4: None. There was no evidence of intentional other irregularities. Unintentional irregularities resulting from human error and/or natural conditions may still have occurred.
Election government intimidation (v2elintim)	In this national election, were opposition candidates/parties/campaign workers subjected to repression, intimidation, violence, or harassment by the government, the ruling party, or their agents?	0: Yes. The repression and intimidation by the government or its agents was so strong that the entire period was quiet. 1: Yes, frequent: There was systematic, frequent and violent harassment and intimidation of the opposition by the government or its agents during the election period. 2: Yes, some. There was periodic, not systematic, but possibly centrally coordinated – harassment and intimidation of the opposition by the government or its agents. 3: Restrained. There were sporadic instances of violent harassment and intimidation by the government or its agents, in at least one part of the country, and directed at only one or two local branches of opposition groups. 4: None. There was no harassment or intimidation of opposition by the government or its agents, during the election campaign period and polling day.

Election free and fair (v2elfrfair)	Taking all aspects of the pre-election period, election day, and the post-electionprocess into account, would you consider this national election to be free and fair?	0: No, not at all. The elections were fundamentally flawed and the official results had little if anything to do with the 'will of the people' (i.e., who became president; or who won the legislative majority). 1: Not really. While the elections allowed for some competition, the irregularities in the end affected the outcome of the election (i.e., who became president; or who won the legislative majority). 2: Ambiguous. There was substantial competition and freedom of participation but there were also significant irregularities. It is hard to determine whether the irregularities affected the outcome or not (as defined above). 3: Yes, somewhat. There were deficiencies and some degree of fraud and irregularities but these did not in the end affect the outcome (as defined above). 4: Yes. There was some amount of human error and logistical restrictions but these were largely unintentional and without significant consequences.
Elections multiparty (v2elmulpar)	Was this national election multiparty?	0: No. No-party or single-party and there is no meaningful competition (includes situations where a few parties are legal but they are all de facto controlled by the dominant party). 1: Not really. No-party or single-party (defined as above) but multiple candidates from the same party and/or independents contest legislative seats or the presidency. 2: Constrained. At least one real opposition party is allowed to contest but competition is highly constrained – legally or informally. 3: Almost. Elections are multiparty in principle but either one main opposition party is prevented (de jure or de facto) from contesting, or conditions such as civil unrest (excluding natural disasters) prevent competition in a portion of the territory. 4: Yes. Elections are multiparty, even though a few marginal parties may not be permitted to contest (e.g. far-right/left extremist parties, anti-democratic religious or ethnic parties).

Political parties

Party ban (v2psparban)	Are any parties banned?	0: Yes. All parties except the state-sponsored party (and closely allied parties) are banned. 1: Yes. Elections are non-partisan or there are no officially recognized parties. 2: Yes. Many parties are banned. 3: Yes. But only a few parties are banned. 4: No. No parties are officially banned.
Barriers to parties (v2psbars)	How restrictive are the barriers to forming a party?	0: Parties are not allowed. 1: It is impossible, or virtually impossible, for parties not affiliated with the government to form (legally). 2: There are significant obstacles (e.g. party leaders face high levels of regular political harassment by authorities). 3: There are modest barriers (e.g. party leaders face occasional political harassment by authorities). 4: There are no substantial barriers.
Opposition parties autonomy (v2psoppaut)	Are opposition parties independent and autonomous of the ruling regime?	0: Opposition parties are not allowed.1: There are no autonomous, independent opposition parties. Opposition parties areeither selected or co-opted by the ruling regime.2: At least some opposition parties are autonomous and independent of the rulingregime.3: Most significant opposition parties are autonomous and independent of the rulingregime.4: All opposition parties are autonomous and independent of the ruling regime.

Table A.2. Indicators part of Horizontal accountability

Indicator	Question text	Answer categories
Executive oversight (v2lgotovst)	If executive branch officials were engaged in unconstitutional, illegal, or unethical activity, how likely is it that a body other than the legislature, such as a comptroller general, general prosecutor, or ombudsman, would question or investigate them and issue an unfavorable decision or report?	0: Extremely unlikely. 1: Unlikely. 2: As likely as not. 3: Likely. 4: Certain or nearly certain.

Judiciary

Indicator	Question text	Answer categories
Executive respects constitution (v2exrescon)	Do members of the executive (the head of state, the head of government, and cabinet ministers) respect the constitution?	0: Members of the executive violate the constitution whenever they want to, without legal consequences. 1: Members of the executive violate most provisions of the constitution without legal consequences, but still must respect certain provisions. 2: Somewhere in between (1) and (3). 3: Members of the executive rarely violate the constitution, and when it happens they face legal charges. 4: Members of the executive never violate the constitution.
Compliance with judiciary (v2jucomp)	How often would you say the government complies with important decisions by other courts with which it disagrees?	0: Never. 1: Seldom. 2: About half of the time. 3: Usually. 4: Always.
Compliance with high court (v2juhccomp)	How often would you say the government complies with important decisions of the high court with which it disagrees?	0: Never. 1: Seldom. 2: About half of the time. 3: Usually. 4: Always.

High court independence (v2juhcind)	When the high court in the judicial system is ruling in cases that are salient to the government, how often would you say that it makes decisions that merely reflect government wishes regardless of its sincere view of the legal record?	0: Always. 1: Usually. 2: About half of the time. 3: Seldom. 4: Never.

Legislature

Lower court independence (v2juncind)	When judges not on the high court are ruling in cases that are salient to the government, how often would you say that their decisions merely reflect government wishes regardless of their sincere view of the legal record?	0: Always. 1: Usually. 2: About half of the time. 3: Seldom. 4: Never.
Legislature questions officials in practice (v2lgqstexp)	In practice, does the legislature routinely question executive branch officials?	0: No - never or very rarely. 1: Yes - routinely.
Legislature investigates in practice (v2lginvstp)	If the executive were engaged in unconstitutional, illegal, or unethical activity, how likely is it that a legislative body (perhaps a whole chamber, perhaps a committee, whether aligned with government or opposition) would conduct an investigation that would result in a decision or report that is unfavorable to the executive?	0: Extremely unlikely. 1: Unlikely. 2: As likely as not. 3: Likely. 4: Certain or nearly certain.

Table A.3. Indicators part of Diagonal accountability

Indicator	Question text	Answer categories
Engaged society (v2dlengage)	When important policy changes are being considered, how wide and how independent are public deliberations?	0: Public deliberation is never, or almost never allowed. 1: Some limited public deliberations are allowed bu the public below the elite levels is almost always either unaware of major policy debates or unable to take part in them. 2: Public deliberation is not repressed but nevertheless infrequent and non-elite actors are typically controlled and/or constrained by the elites. 3: Public deliberation is actively encouraged and some autonomous non-elite groups participate, bu it is confined to a small slice of specialized groups that tends to be the same across issue-areas. 4: Public deliberation is actively encouraged and a relatively broad segment of non-elite groups often participate and vary with different issue-areas. 5: Large numbers of non-elite groups as well as ordinary people tend to discuss major policies among themselves, in the media, in associations or neighborhoods, or in the streets. Grass-roots deliberation is common and unconstrained.

Civil society

Indicator	Question text	Answer categories
CSO entry and exit (v2cseeorgs)	To what extent does the government achieve control over entry and exit by civil society organizations (CSOs) into public life?	0: Monopolistic control. 1: Substantial control. 2: Moderate control. 3: Minimal control. 4: Unconstrained.
CSO repression (v2csreprss)	Does the government attempt to repress civil society organizations (CSOs)?	0:Severely. 1:Substantially. 2:Moderately. 3:Weakly. 4: No.

CSO participatory environment (v2csprtcpt)	Which of these best describes the involvement of people in civil society organizations (CSOs)?	0: Most associations are state-sponsored, and although a large number of people may be active in them, their participation is not purely voluntary. 1: Voluntary CSOs exist but few people are active in them. 2: There are many diverse CSOs, but popular involvement is minimal. 3: There are many diverse CSOs and it is considered normal for people to be at least occasionally active in at least one of them.

Media freedom

Media bias (v2mebias)	Is there media bias against opposition parties or candidates?	0: The print and broadcast media cover only the official party or candidates, or have no political coverage, or there are no opposition parties or candidates to cover. 1: The print and broadcast media cover more than just the official party or candidates but all the opposition parties or candidates receive only negative coverage. 2: The print and broadcast media cover some opposition parties or candidates more or less impartially, but they give only negative or no coverage to at least one newsworthy party or candidate. 3: The print and broadcast media cover opposition parties or candidates more or less impartially, but they give an exaggerated amount of coverage to the governing party or candidates. 4: The print and broadcast media cover all newsworthy parties and candidates more or less impartially and in proportion to their newsworthiness.
Print/broad cast media critical (v2mecrit)	Of the major print and broadcast outlets, how many routinely criticize the government?	0: None. 1: Only a few marginal outlets. 2: Some important outlets routinely criticize the government but there are other important outlets that never do. 3: All major media outlets criticize the government at least occasionally.

Print/broad cast media perspectives (v2merange)	Do the major print and broadcast media represent a wide range of political perspectives?	0: The major media represent only the government's perspective. 1: The major media represent only the perspectives of the government and a government-approved, semi-official opposition party. 2: The major media represent a variety of political perspectives but they systematically ignore at least one political perspective that is important in this society. 3: All perspectives that are important in this society are represented in at least one of the major media.
Government censorship effort - Media (v2mecenefm)	Does the government directly or indirectly attempt to censor the print or broadcast media?	0: Attempts to censor are direct and routine. 1: Attempts to censor are indirect but nevertheless routine. 2: Attempts to censor are direct but limited to especially sensitive issues. 3: Attempts to censor are indirect and limited to especially sensitive issues. 4: The government rarely attempts to censor major media in any way, and when such exceptional attempts are discovered, the responsible officials are usually punished.
Harassment of journalists (v2meharjrn)	Are individual journalists harassed - i.e., threatened with libel, arrested, imprisoned, beaten, or killed -- by governmental or powerful nongovernmental actors while engaged in legitimate journalistic activities?	0: No journalists dare to engage in journalistic activities that would offend powerful actors because harassment or worse would be certain to occur. 1: Some journalists occasionally offend powerful actors but they are almost always harassed or worse and eventually are forced to stop. 2: Some journalists who offend powerful actors are forced to stop but others manage to continue practicing journalism freely for long periods of time. 3: It is rare for any journalist to be harassed for offending powerful actors, and if this were to happen, those responsible for the harassment would be identified and punished. 4: Journalists are never harassed by governmental or powerful nongovernmental actors while engaged in legitimate journalistic activities.

Media self-censorship (v2meslfcen)	Is there self-censorship among journalists when reporting on issues that the government considers politically sensitive?	0: Self-censorship is complete and thorough. 1: Self-censorship is common but incomplete. 2: There is self-censorship on a few highly sensitive political issues but not on moderately sensitive issues. 3: There is little or no self-censorship among journalists.
Internet censorship (v2mecenefi)	Does the government attempt to censor information (text, audio, or visuals) on the Internet?	0: This country has no Internet access at all. [This value is excluded from datasets. Values of 0 are set to missing before this variable is estimated by the measurement model so that the remaining 1-4 values form an ordinal scale.] 1: The government successfully blocks Internet access except to sites that are pro- government or devoid of political content. 2: The government attempts to block Internet access except to sites that are pro- government or devoid of political content, but many users are able to circumvent such controls. 3: The government allows Internet access, including to some sites that are critical of the government, but blocks selected sites that deal with especially politically sensitive issues. 4: The government allows Internet access that is unrestricted, with the exceptions mentioned above.

Freedom of discussion and expression

Freedom of discussion for men (v2cldiscm)	Are men able to openly discuss political issues in private homes and in public spaces?	0: Not respected. Hardly any freedom of expression exists for men. Men are subject to immediate and harsh intervention and harassment for expression of political opinion. 1: Weakly respected. Expressions of political opinions by men are frequently exposed to intervention and harassment. 2: Somewhat respected. Expressions of political opinions by men are occasionally exposed to intervention and harassment. 3: Mostly respected. There are minor restraints on the freedom of expression in the private sphere, predominantly limited to a few isolated cases or only linked to soft sanctions. But as a rule there is no intervention or harassment if

		men make political statements. 4: Fully respected. Freedom of speech for men in their homes and in public spaces is not restricted.
Freedom of discussion for women(v2cl discw)	Are women able to openly discuss political issues in private homes and in public spaces?	0: Not respected. Hardly any freedom of expression exists for women. Women are subject to immediate and harsh intervention and harassment for expression of political opinion. 1: Weakly respected. Expressions of political opinions by women are frequently exposed to intervention and harassment. 2: Somewhat respected. Expressions of political opinions by women are occasionally exposed to intervention and harassment. 3: Mostly respected. There are minor restraints on the freedom of expression in the private sphere, predominantly limited to a few isolated cases or only linked to soft sanctions. But as a rule there is no intervention or harassment if women make political statements. 4: Fully respected. Freedom of speech by women in their homes and in public spaces is not restricted.
Freedom of academic and cultural expression (v2clacfree)	Is there academic freedom and freedom of cultural expression related to political issues?	0: Not respected by public authorities. Censorship and intimidation are frequent. Academic activities and cultural expressions are severely restricted or controlled by the government. 1: Weakly respected by public authorities. Academic freedom and freedom of cultural expression are practiced occasionally, but direct criticism of the government is mostly met with repression. 2: Somewhat respected by public authorities. Academic freedom and freedom of cultural expression are practiced routinely, but strong criticism of the government is sometimes met with repression. 3: Mostly respected by public authorities. There are few limitations on academic freedom and freedom of cultural expression, and resulting sanctions tend to be infrequent and soft.

4: Fully respected by public authorities. There
are no restrictions on academic freedom or
cultural expression.

Figure A.1: Vertical and Diagonal Accountability in 2012
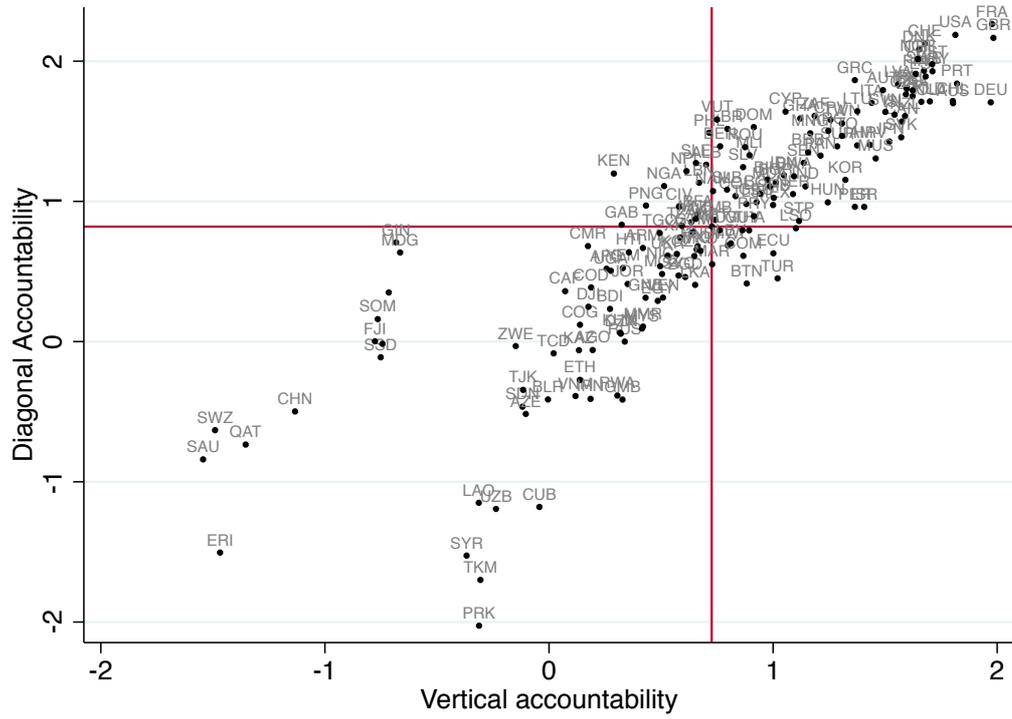
Note: Red line gives global average of index in 2012.

Figure A.2: Horizontal and Diagonal Accountability in 2012
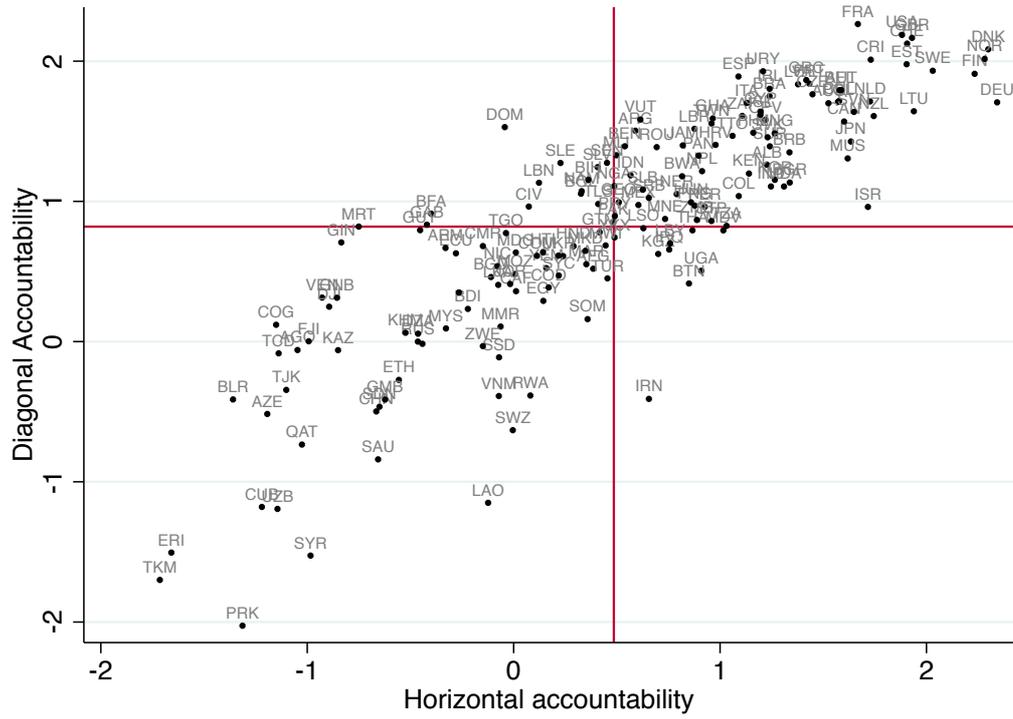
Note: Red line gives global average of index in 2012.

Table A.1: Accountability Ratings in 2012

	Accountability	Vertical	Horizontal	Diagonal
United Kingdom	2.256719	1.983383	1.930028	2.165875
France	2.205386	1.977112	1.667692	2.264556
United States	2.159707	1.813332	1.88149	2.18718
Germany	2.149646	1.971375	2.342532	1.706282
Denmark	2.103737	1.652441	2.299462	2.084181
Norway	2.076946	1.645922	2.28206	2.016071
Switzerland	2.05035	1.67739	1.906238	2.124782
Finland	2.01688	1.636873	2.233441	1.909486
Estonia	2.007001	1.709972	1.903967	1.977809
Sweden	2.005106	1.673535	2.030601	1.931355
Costa Rica	1.965592	1.645405	1.730271	2.010357
Portugal	1.909099	1.820445	1.432795	1.839545
Chile	1.894907	1.801976	1.577295	1.715747
Australia	1.89254	1.802955	1.525148	1.700055
Netherlands	1.881817	1.699696	1.726525	1.712734
Uruguay	1.850401	1.711356	1.20835	1.927668
Poland	1.834624	1.66162	1.571338	1.710001
Belgium	1.819792	1.622798	1.578915	1.791832
Spain	1.78597	1.680806	1.089166	1.890557
Czech Republic	1.784716	1.592806	1.447862	1.763453
New Zealand	1.782606	1.588947	1.744785	1.608272
Brazil	1.766413	1.622661	1.239803	1.749839
Latvia	1.763743	1.55754	1.377794	1.834917
Austria	1.751645	1.490415	1.587071	1.793077
Canada	1.744595	1.574738	1.601135	1.569694
Lithuania	1.728626	1.376222	1.939051	1.64268
Ireland	1.727181	1.59607	1.240137	1.802915
Slovenia	1.719734	1.501125	1.648893	1.638012
Greece	1.676579	1.365015	1.41779	1.864789
Japan	1.650978	1.519176	1.634001	1.42683
Iceland	1.615632	1.542182	1.195928	1.617966
Slovakia	1.613563	1.571984	1.230283	1.456984
Italy	1.588618	1.440006	1.129588	1.702428
Mauritius	1.583969	1.457965	1.618542	1.30619
Cape Verde	1.475654	1.256156	1.219629	1.581674
Croatia	1.452995	1.432513	.9783483	1.402884
Israel	1.443706	1.406877	1.7165	.9605066

Taiwan	1.432183	1.307481	.9587735	1.555222
Suriname	1.417588	1.286299	1.241109	1.392451
Trinidad and Tobago	1.414144	1.307667	1.060154	1.467281
South Africa	1.41219	1.185623	1.107592	1.609615
Mongolia	1.394019	1.165878	1.264949	1.485339
Jamaica	1.379249	1.375323	.8195664	1.398984
Korea, South	1.364614	1.322885	1.265425	1.153607
Ghana	1.351372	1.121259	.9648499	1.591345
Cyprus	1.350069	1.055479	1.196355	1.639911
Barbados	1.33962	1.156176	1.336314	1.349469
Panama	1.303756	1.211918	.8963057	1.326173
Argentina	1.291681	1.24687	.5896984	1.503918
India	1.263034	1.144262	1.246545	1.106361
Peru	1.254746	1.365033	.925853	.9610239
Bulgaria	1.208061	1.011446	1.337786	1.134189
Hungary	1.180781	1.244326	.859391	.9929111
Moldova	1.173798	.9859954	1.309978	1.106142
Philippines	1.134709	.7151128	1.160816	1.489777
Botswana	1.121686	1.093657	.8162767	1.17902
Senegal	1.11066	1.136618	.4522361	1.274483
Liberia	1.109064	.7960982	.8761973	1.517278
Niger	1.08875	1.088775	.7902133	1.05198
Indonesia	1.077613	1.048169	.5667545	1.185915
Romania	1.06282	.87507	.6931194	1.386796
Vanuatu	1.05968	.7500737	.6140817	1.583424
Albania	1.056621	.7016287	1.227061	1.261332
Sao Tome and Principe	1.046568	1.115873	.9583482	.8597239
Colombia	1.037709	.832157	1.090493	1.037577
Mali	1.016986	.8946864	.4977945	1.329006
Serbia	.9978588	1.003014	.6552965	1.02508
Benin	.9941922	.7638472	.5385865	1.39274
Mexico	.9833013	1.000008	.6044188	.9739489
Dominican Republic	.9758316	.9140632	-.0428796	1.529554
El Salvador	.9685434	.8662312	.4069796	1.24401
Bosnia and Herzegovina	.9664104	.9738635	.3621077	1.154269
Lesotho	.9413638	1.101798	.6286752	.8084049
Nepal	.9366262	.6137849	.912799	1.215202

Thailand	.9225168	.8930007	.8663402	.7934682
Bolivia	.917517	.9424518	.3262235	1.05438
Solomon Islands	.9019089	.794479	.6260801	1.083322
Georgia	.8968034	.9263522	.5096246	.9937654
Paraguay	.8787293	.9148239	.490151	.8948128
Zambia	.849508	.7420493	.8879574	.8676477
East Timor	.8494895	.880778	.4095792	.9811881
Maldives	.846177	.7610122	1.016142	.7932304
Libya	.8114861	.8116474	.7584879	.7004821
Namibia	.7937923	.7321095	.3293813	1.072944
Kenya	.7895644	.2892986	1.140067	1.198293
Sierra Leone	.7843323	.6559599	.2268475	1.273682
Tanzania	.7712532	.5931983	1.031544	.8251649
Montenegro	.7619107	.6545026	.7337776	.8747467
Bhutan	.7540334	.8823258	.849415	.4142169
Turkey	.7481744	1.020129	.4545811	.4508386
Lebanon	.7265971	.6699591	.1227084	1.132609
Malawi	.7259338	.7980219	.4455167	.6855249
Nigeria	.7105715	.5137636	.4872458	1.109071
Papua New Guinea	.6998324	.4328994	.8773781	.9699246
Pakistan	.698709	.6346892	.4825584	.8515686
Iraq	.6901807	.659158	.7538412	.656235
Guatemala	.6666402	.6414091	.4165136	.7796012
Comoros	.6496317	.8673068	.1132467	.6115815
Kosovo	.6432922	.5848332	.4890528	.7425785
Ecuador	.6326891	1.001244	-.2796699	.6296235
Kyrgyzstan	.6191225	.5708647	.7004138	.6248592
Macedonia	.6141759	.6759813	.3473171	.6471739
Honduras	.613443	.6636538	.2902194	.6804669
Ivory Coast	.6022954	.5799782	.0734754	.9629326
Morocco	.6010362	.7283337	.3520933	.5518447
Guyana	.5994015	.8631864	-.4532099	.7946123
Somaliland	.555912	.6484241	.2396215	.609805
Burkina Faso	.5392075	.6643335	-.39976	.912518
Ukraine	.4879106	.5297371	.2167405	.6130166
Uganda	.4713447	.2758242	.9090964	.5050273
Togo	.4695655	.4943479	-.0372851	.7738894
Mauritania	.4491804	.7272083	-.7504839	.8201423
Seychelles	.4457958	.5782098	.2187697	.4709575

Sri Lanka	.4167575	.652256	-.0745687	.4044311
Bangladesh	.3980929	.6081384	-.109567	.4602002
Haiti	.3850971	.3563892	.1424936	.6368608
Nicaragua	.3800928	.4963594	-.0783772	.5377845
Mozambique	.3749985	.5048084	.0071568	.4817724
Afghanistan	.3483813	.2569441	.3853396	.5196213
Gabon	.3174373	.3244172	-.4203949	.8336171
Egypt	.316803	.4856493	.143876	.2902603
Armenia	.3086547	.4192041	-.3301623	.6675158
Yemen	.3080069	.3296458	.1583278	.5241848
Madagascar	.2711609	-.6644965	.0106954	.6353177
Jordan	.2365718	.3509743	-.0170271	.410737
Cameroon	.2302906	.1738266	-.1489159	.6810926
Congo, Democratic Republic of	.2117698	.1879554	.1698327	.3863473
Guinea-Bissau	.1852902	.4311731	-.8559822	.3126581
Burma/Myanmar	.1713521	.419507	-.0631333	.1072071
Guinea	.1538703	-.6825464	-.8350927	.7071195
Malaysia	.1136809	.4153577	-.3279857	.0936365
Venezuela	.1045436	.5087989	-.9279492	.3137486
Burundi	.1041986	.2722109	-.2217376	.2329275
Somalia	.0938098	-.7641887	.3581284	.1601481
Central African Republic	.0801736	.0722635	.0115732	.3592453
Palestine/West Bank	.0216729	-.7151959	-.2651898	.350068
Iran	.0049533	.1854137	.6553085	-.4086827
Algeria	.002067	.3203232	-.4633434	.0560664
Cambodia	-.0068085	.3172324	-.5239765	.0630235
Russia	-.0082632	.3380481	-.4641716	-.0002563
Rwanda	-.058541	.3050322	.080896	-.3847405
Djibouti	-.100187	.1759678	-.8937818	.2487804
South Sudan	-.1544922	-.7511868	-.0707719	-.112256
Zimbabwe	-.1701093	-.1483414	-.149042	-.0323351
Gambia	-.1858844	.3281617	-.6229769	-.4137043
Congo, Republic of the	-.1976249	.1382465	-1.150701	.1197717

Angola	-.2180768	.1946787	-1.047025	-.060203
Ethiopia	-.2203837	.1378597	-.5562736	-.27321
Palestine/Gaza	-.2293176	-.7434354	-.441998	-.0159841
Vietnam, Democratic Republic of	-.2572227	.1181057	-.0717237	-.3882079
Kazakhstan	-.2599667	.133565	-.8506579	-.0611205
Fiji	-.3433228	-.7765577	-.9929068	.0020776
Chad	-.3500893	.0205421	-1.138609	-.0841078
Sudan	-.4562148	-.1184495	-.6501495	-.4645475
Tajikistan	-.5493929	-.1154971	-1.101538	-.3446582
Belarus	-.551443	-.0045472	-1.359657	-.4127811
Azerbaijan	-.6035962	-.1034556	-1.19374	-.5162739
Swaziland	-.6892647	-1.49025	-.0039222	-.6320114
China	-.7276527	-1.133348	-.6655288	-.4982739
Laos	-.7970429	-.3131931	-.1235447	-1.149782
Cuba	-.8748889	-.042906	-1.219874	-1.179316
Uzbekistan	-.9604028	-.2364942	-1.144101	-1.193438
Saudi Arabia	-1.011338	-1.543722	-.656721	-.8399763
Qatar	-1.026849	-1.353785	-1.025666	-.7343224
Syria	-1.112128	-.3676028	-.9839083	-1.52629
Turkmenistan	-1.309396	-.3057897	-1.714085	-1.699764
Korea, North	-1.341522	-.3121561	-1.313877	-2.0263
Eritrea	-1.62752	-1.467963	-1.658429	-1.504683

Table A.2. Effects of Accountability on Life Expectancy.

	(1)	(2)	(3)	(4)	(5)
Vertical accountability	1.140***			1.755***	
	(0.138)			(0.212)	
Horizontal accountability		0.331***		-0.160	
		(0.0773)		(0.118)	
Diagonal accountability			0.339***	-0.343***	
			(0.0772)	(0.128)	
Accountability					0.416***
					(0.0775)
Foreign aid	-0.0344***	-0.0334***	-0.0341***	-0.0324***	-0.0346***
	(0.00704)	(0.00710)	(0.00711)	(0.00705)	(0.00710)
GDP/capita (ln)	0.889***	0.909***	0.910***	0.883***	0.898***
	(0.187)	(0.187)	(0.187)	(0.186)	(0.187)
Economic growth	0.00467	0.00442	0.00448	0.00395	0.00466
	(0.00556)	(0.00560)	(0.00560)	(0.00555)	(0.00559)
Resource dependence	0.0237***	0.0223***	0.0222***	0.0246***	0.0222***
	(0.00515)	(0.00518)	(0.00518)	(0.00515)	(0.00517)
Economic inequality	0.0283***	0.0326***	0.0324***	0.0263***	0.0323***
	(0.00737)	(0.00739)	(0.00738)	(0.00738)	(0.00738)
Population (ln)	1.890***	1.986***	1.871***	1.968***	1.845***
	(0.339)	(0.338)	(0.340)	(0.340)	(0.339)
Urbanization	0.00744	0.00951	0.00961	0.00662	0.00921
	(0.00666)	(0.00670)	(0.00670)	(0.00665)	(0.00669)
Political violence	-0.279***	-0.287***	-0.276***	-0.297***	-0.273***
	(0.0301)	(0.0304)	(0.0306)	(0.0305)	(0.0306)
Communist	1.723***	1.130***	1.064***	1.532***	1.221***
	(0.387)	(0.389)	(0.383)	(0.392)	(0.385)
Life expectancy, regional average	0.820***	0.810***	0.816***	0.813***	0.817***
	(0.0235)	(0.0237)	(0.0238)	(0.0236)	(0.0237)
Electoral regime	-1.216***			-1.872***	
	(0.232)			(0.289)	
Constant	-13.24***	-14.61***	-13.90***	-12.96***	-13.69***
	(3.556)	(3.563)	(3.564)	(3.558)	(3.560)
Observations	4,431	4,431	4,431	4,431	4,431
R-squared	0.769	0.766	0.766	0.770	0.767
Number of countries	146	146	146	146	146
Adjusted R-squared	0.758	0.755	0.755	0.759	0.755

OLS regressions; fixed country and year effects; time coverage: 1961 – 2006; standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1.

Table A.3. Effects of Accountability on Literacy.

	(1)	(2)	(3)	(4)	(5)
Vertical accountability	1.515***			1.086***	
	(0.263)			(0.405)	
Horizontal accountability		0.533***		0.0669	
		(0.145)		(0.223)	
Diagonal accountability			0.605***	0.277	
			(0.145)	(0.242)	
Accountability					0.565***
					(0.146)
Foreign aid	-0.0270**	-0.0287**	-0.0305**	-0.0287**	-0.0300**
	(0.0136)	(0.0137)	(0.0137)	(0.0137)	(0.0137)
GDP/capita (ln)	0.295	0.162	0.171	0.296	0.156
	(0.337)	(0.337)	(0.337)	(0.337)	(0.337)
Economic growth	-0.00411	-0.00389	-0.00344	-0.00359	-0.00361
	(0.0109)	(0.0110)	(0.0110)	(0.0109)	(0.0110)
Resource dependence	-0.00166	-0.00553	-0.00561	-0.00226	-0.00563
	(0.00983)	(0.00983)	(0.00983)	(0.00983)	(0.00983)
Economic inequality	-0.119***	-0.111***	-0.111***	-0.118***	-0.111***
	(0.0140)	(0.0139)	(0.0139)	(0.0140)	(0.0139)
Population (ln)	18.44***	18.38***	18.16***	18.40***	18.17***
	(0.826)	(0.821)	(0.825)	(0.828)	(0.826)
Urbanization	0.127***	0.126***	0.127***	0.128***	0.126***
	(0.0126)	(0.0126)	(0.0126)	(0.0126)	(0.0126)
Political violence	-0.0877	-0.0694	-0.0487	-0.0740	-0.0540
	(0.0573)	(0.0574)	(0.0579)	(0.0581)	(0.0578)
Communist	1.145	0.507	0.539	1.264*	0.515
	(0.720)	(0.715)	(0.705)	(0.730)	(0.710)
Literacy, regional average	0.506***	0.497***	0.499***	0.506***	0.499***
	(0.0203)	(0.0202)	(0.0202)	(0.0203)	(0.0203)
Electoral regime	-2.726***			-2.270***	
	(0.440)			(0.549)	
Constant	-126.7***	-126.3***	-124.8***	-126.6***	-124.7***
	(7.635)	(7.603)	(7.622)	(7.645)	(7.630)
Observations	4,454	4,454	4,454	4,454	4,454
R-squared	0.809	0.808	0.808	0.809	0.808
Number of countries	148	148	148	148	148
Adjusted R-squared	0.800	0.799	0.799	0.800	0.799

OLS regressions; fixed country and year effects; time coverage: 1961 – 2006; standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1.

Table A.4. Effects of Accountability on School Enrollment.

	(1)	(2)	(3)	(4)	(5)
Vertical accountability	1.023**			-2.387***	
	(0.431)			(0.649)	
Horizontal accountability		1.444***		0.727**	
		(0.241)		(0.362)	
Diagonal accountability			1.822***	2.147***	
			(0.243)	(0.393)	
Accountability					1.839***
					(0.244)
Foreign aid	0.0528**	0.0497**	0.0450**	0.0432**	0.0451**
	(0.0209)	(0.0209)	(0.0209)	(0.0208)	(0.0209)
GDP/capita (ln)	7.615***	7.783***	8.037***	7.982***	7.965***
	(0.603)	(0.601)	(0.602)	(0.601)	(0.601)
Economic growth	-0.0487***	-0.0467***	-0.0468***	-0.0467***	-0.0468***
	(0.0174)	(0.0174)	(0.0173)	(0.0173)	(0.0173)
Resource dependence	-0.0749***	-0.0793***	-0.0817***	-0.0868***	-0.0812***
	(0.0176)	(0.0176)	(0.0176)	(0.0176)	(0.0176)
Economic inequality	-0.0626***	-0.0657***	-0.0641***	-0.0539**	-0.0646***
	(0.0234)	(0.0233)	(0.0232)	(0.0233)	(0.0232)
Population (ln)	9.340***	9.514***	9.124***	8.511***	9.003***
	(1.180)	(1.169)	(1.169)	(1.178)	(1.171)
Urbanization	-0.0850***	-0.0790***	-0.0861***	-0.0840***	-0.0855***
	(0.0232)	(0.0232)	(0.0231)	(0.0231)	(0.0231)
Political violence	-0.190**	-0.185**	-0.113	-0.0732	-0.122
	(0.0926)	(0.0924)	(0.0931)	(0.0936)	(0.0929)
Communist	2.461**	3.767***	3.931***	3.419***	4.111***
	(1.252)	(1.250)	(1.230)	(1.257)	(1.236)
Schooling, regional average	0.375***	0.400***	0.407***	0.400***	0.409***
	(0.0452)	(0.0452)	(0.0450)	(0.0451)	(0.0450)
Electoral regime	0.199			3.827***	
	(0.724)			(0.886)	
Constant	-106.6***	-110.6***	-109.6***	-106.4***	-108.1***
	(12.81)	(12.71)	(12.67)	(12.72)	(12.68)
Observations	3,703	3,703	3,703	3,703	3,703
R-squared	0.626	0.627	0.629	0.631	0.629
Number of countries	144	144	144	144	144
Adjusted R-squared	0.605	0.607	0.609	0.611	0.609

OLS regressions; fixed country and year effects; time coverage: 1971 – 2006; standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1.

Table A.5. Effects of Accountability on Under-5 Mortality.

	(1)	(2)	(3)	(4)	(5)
Vertical accountability	-10.70***			-8.623***	
	(0.982)			(1.520)	
Horizontal accountability		-5.511***		-1.887**	
		(0.547)		(0.838)	
Diagonal accountability			-5.255***	0.107	
			(0.548)	(0.913)	
Accountability					-5.900***
					(0.550)
Foreign aid	0.0517	0.0533	0.0615	0.0572	0.0662
	(0.0504)	(0.0507)	(0.0508)	(0.0505)	(0.0507)
GDP/capita (ln)	-8.878***	-8.941***	-9.111***	-8.871***	-8.973***
	(1.280)	(1.284)	(1.285)	(1.280)	(1.282)
Economic growth	-0.0104	-0.0147	-0.0145	-0.0128	-0.0154
	(0.0395)	(0.0397)	(0.0397)	(0.0395)	(0.0396)
Resource dependence	-0.0177	-0.00507	-0.00370	-0.0148	-0.00303
	(0.0368)	(0.0369)	(0.0370)	(0.0368)	(0.0369)
Economic inequality	-0.0251	-0.0623	-0.0632	-0.0324	-0.0623
	(0.0525)	(0.0525)	(0.0525)	(0.0526)	(0.0524)
Population (ln)	-38.56***	-39.85***	-37.69***	-38.68***	-37.45***
	(2.940)	(2.938)	(2.959)	(2.958)	(2.950)
Urbanization	-0.137***	-0.152***	-0.155***	-0.139***	-0.151***
	(0.0475)	(0.0477)	(0.0477)	(0.0475)	(0.0476)
Political violence	0.422*	0.408*	0.267	0.397*	0.252
	(0.218)	(0.219)	(0.221)	(0.221)	(0.220)
Communist	-4.168	-2.748	-1.289	-5.209*	-2.792
	(2.719)	(2.717)	(2.684)	(2.752)	(2.693)
Under-5 mortality, regional average	0.586***	0.581***	0.590***	0.587***	0.591***
	(0.0220)	(0.0220)	(0.0222)	(0.0220)	(0.0221)
	(4.423)	(4.419)	(4.437)	(4.428)	(4.420)
Electoral regime	11.00***			8.745***	
	(1.650)			(2.068)	
Constant	463.1***	484.1***	465.6***	465.7***	462.4***
	(32.39)	(32.41)	(32.58)	(32.48)	(32.49)
Observations	4,415	4,415	4,415	4,415	4,415
R-squared	0.786	0.784	0.783	0.786	0.784
Number of countries	148	148	148	148	148
Adjusted R-squared	0.775	0.773	0.773	0.776	0.774

OLS regressions; fixed country and year effects; time coverage: 1961 – 2006; standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table A.6. Effects of Accountability on Infant Mortality, controlling for corruption.

	(1)	(2)	(3)	(4)	(5)
Vertical accountability		-9.110***			-7.562***
		(0.599)			(0.884)
Foreign aid	-0.0403	-0.0395	-0.0479	-0.0475	-0.0337
	(0.0307)	(0.0305)	(0.0307)	(0.0309)	(0.0305)
GDP/capita (ln)	-10.40***	-10.43***	-10.44***	-10.47***	-10.51***
	(0.768)	(0.766)	(0.770)	(0.773)	(0.764)
Economic growth	0.0350	0.0351	0.0375	0.0350	0.0353
	(0.0233)	(0.0232)	(0.0234)	(0.0235)	(0.0231)
Resource dependence	0.0399*	0.0284	0.0382*	0.0434**	0.0274
	(0.0214)	(0.0214)	(0.0215)	(0.0216)	(0.0213)
Economic inequality	-0.0820***	-0.0548*	-0.0811***	-0.0858***	-0.0566*
	(0.0305)	(0.0305)	(0.0306)	(0.0308)	(0.0305)
Population (ln)	-16.93***	-18.18***	-17.95***	-16.88***	-18.33***
	(1.595)	(1.585)	(1.593)	(1.611)	(1.598)
Urbanization	-0.130***	-0.126***	-0.125***	-0.142***	-0.124***
	(0.0278)	(0.0277)	(0.0279)	(0.0280)	(0.0277)
Political violence	0.350***	0.450***	0.398***	0.310**	0.459***
	(0.127)	(0.127)	(0.127)	(0.129)	(0.128)
Communist	-1.250	-1.357	-0.569	-0.553	-2.762*
	(1.611)	(1.588)	(1.611)	(1.642)	(1.648)
Political corruption	-9.731***	-13.17***	-9.485***	-6.392***	-15.16***
	(1.838)	(1.906)	(1.856)	(1.792)	(1.949)
Infant mortality, regional average	0.640***	0.632***	0.631***	0.652***	0.628***
	(0.0198)	(0.0197)	(0.0199)	(0.0200)	(0.0199)
Accountability	-5.024***				
	(0.353)				
Horizontal accountability			-4.465***		-2.600***
			(0.334)		(0.547)
Diagonal accountability				-4.113***	0.933
				(0.338)	(0.595)
Constant	273.2***	278.9***	282.3***	270.6***	282.5***
	(17.91)	(17.83)	(17.92)	(18.06)	(17.88)
Observations	4,355	4,355	4,355	4,355	4,355
R-squared	0.817	0.819	0.816	0.815	0.820
Number of country_id	147	147	147	147	147
Adjusted R-squared	0.808	0.810	0.807	0.806	0.811

OLS regressions; fixed country and year effects; time coverage: 1961 – 2006; standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1.

Constraining Governments: Methodological appendix

To develop sub-indices representing vertical, horizontal and diagonal accountability we employ Bayesian structural equation models. We also aggregate these sub-indices using a hierarchical Bayesian analysis to create an overall measure of accountability.

We construct all indices using indicators from the V-Dem dataset v6.2. Continuous indicators represent aggregated expert-coded data using the V-Dem measurement model. At present, we use only the median estimates across iterations of an MCMC algorithm, though we may incorporate posterior uncertainty about these estimates in future iterations of the project. We use the statistical software JAGS (Plummer, 2012), implemented in R with *runjags* (Denwood, 2016), to estimate all quantities.

1 Sub-indices

We conceptualize accountability as being an aggregation of three conceptually-distinct forms of accountability: vertical, horizontal, and diagonal. Each of these forms of accountability are themselves functions of multiple indicators, which are often hierarchically clustered and contingent upon the presence of institutions. As a result, we cannot measure any of these latent variables using a standard factor analysis. This section provides a detailed description of the construction of the accountability sub-indices.

1.1 Vertical accountability

Measuring vertical accountability in our framework presents five main conceptual concerns. First, citizens living in a country which does not have an electoral regime have no opportunity—even in theory—to hold their leadership accountable through the practice of elections. As a result, non-electoral country-years should have a much lower level of vertical accountability than country-years in an electoral regime. Second, the quality of elections is of clear importance to vertical accountability, with the caveat that even the worst elections are better than none. Third, the percentage of a country's population which has the franchise is of clear relevance to its degree of vertical accountability: a government that is only accountable to 10 percent of its population is not accountable to 90 percent of its population, regardless of how free and fair its elections are for the chosen 10 percent. Fourth, vertical accountability is strongest in a political regime where the head of executive is elected, since such a structure allows citizens to hold even the most powerful official accountable. Fifth, parties provide structure by which citizens can hold political officials accountable within a regime, both in the presence and absence of elections.

As a result, an accurate measure of vertical accountability would take into account 1) the effect of being an electoral regime, 2) the quality of elections, 3) the percentage of the population to which the franchise has been extended, 4) whether or not the executive is elected and 5) the ability of opposition parties to challenge a regime.

Our measure of vertical accountability incorporates each of these five elements into its estimation procedure. We estimate vertical accountability as directly being a function of 1) having an electoral regime (i.e. elections), 2) the proportion of the population that has suffrage, 3) whether or not the head of executive is elected. We measure the influence of quality of elections and parties indirectly: quality of elections is a function of electoral regime (i.e. we assume non-electoral regimes have lower vertical accountability) and the activity of opposition parties is hierarchically nested within the overall measure of vertical accountability. We discuss each of these procedures in

turn.

First, the equation for the estimated probability of having an electoral regime is $\Pr(y_i) = \phi(\zeta_i)$, where $\zeta_i = \beta_1 + \beta_2 \xi_i^{Vertical}$. In this equation, ϕ is the CDF of a normal distribution, $\xi^{Vertical}$ the estimated level of vertical accountability for country-year i, which we assume to be distributed $N(0,1)$. Accordingly, y is distributed according to a Bernoulli distribution. We model the nine indicators of election quality—the degree to which elections actually facilitate vertical accountability—as a function of the linear predictor for having elections. In mathematical form $z_{ij} \sim N(\gamma_{ij}, \omega_j)$, where $\gamma_{ij} = \kappa_{j1} + \kappa_{j2}\zeta_i$, where ζ_i is the linear predictor of being a electoral regime (the CDF-transformed probability of having elections).[1]

This parameterization essentially restricts estimates of non-electoral regimes to having a lower level of vertical accountability than electoral regimes,[2] while allowing election quality to determine the level of vertical accountability within electoral regimes (conditional on the other nodes in the model, such as percent suffrage).

We model the enfranchised proportion of population as being a direct function of $\xi^{Vertical}$. More precisely, it follows a beta distribution, where $y_i \sim B(\mu_i\tau, [1 - \mu_i]\tau)$, where $\mu_i = \alpha_1 + \alpha_2\xi_i^{Vertical}$ and τ a variance parameter with a vague $\Gamma(1,1)$ prior. Since beta distributions are bounded $(0,1)$, we set country-years with 100 percent suffrage at 0.999 and country-years without electoral regimes at 0.001. In effect, this procedure serves to further decrease the level of vertical accountability of countries with low suffrage by positioning them in relative proximity to countries without elections. At the same time, the often-weak correlation between suffrage and measures of election quality and party strength means that this variable does not overwhelm the

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[1]We interpolate the values of election-quality variables from the previous election for years in which no election was held. Non-electoral regimes receive NAs for all election-quality variables, as there is no information about the quality of their (non-existent) elections, save that it is lower than those of electoral regimes. This strategy necessitates the use of relatively strong priors on parameter values for β and κ, which we derived through trial and error.

[2]The one caveat to this claim is that, if we measured party quality such that this concept was not correlated with the presence of electoral regimes, this parameterization would yield incoherent estimates.

other data in the model in practice.

We directly link the presence of an elected head of executive to $\xi^{Vertical}$. Given that there are unclear cases where an unelected official shares power with an elected head of executive—and such regimes generally have lower levels of vertical accountability than those in which an elected head of executive has unambiguous power—we model this variable as a standard ordinal probit model with three levels: head of executive not elected, shared power, and elected head of executive. The linear predictor is thus $\theta_i = \lambda \xi_i^{Vertical}$, where λ is a scale parameter. Thresholds are distributed according to a $N(0, 1)$ prior distribution.

Finally, we model the presence and capabilities of political parties as a separate latent variable that is nested within vertical accountability. This approach means that individual measures of party activities impact vertical accountability in aggregate (though the hierarchical parameterization privileges indicators with higher correlation with the underlying concept), preventing individual measures from overwhelming suffrage, elections and elected head of state in determining the value of a country-year's vertical accountability score. In practice, this strategy means that non-electoral regimes have lower estimated levels of vertical accountability than electoral regimes, regardless of the activities of parties.[3] More precisely, we model the $J = 3$ party variables as being distributed $N(\chi_{ij}, \sigma_j)$, where $\chi_{ij} = \pi_{j1} + \pi_{j2} \eta_i^{Parties}$ and $\eta_i^{Parties} \sim N(\xi_i^{Vertical}, o)$. Here o represents a uniform prior that allows the model to determine the degree to which the party latent variable correlates with $\xi^{Vertical}$.

Figure 1 presents a path diagram for this index.

1.2 Horizontal accountability

We conceptualize horizontal accountability as a function of four institutions: an independent investigative body, an executive who respects the constitutions, an independent judiciary, and a legislature that can counter the execu-

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[3]In principle, if there were many non-electoral regimes that allowed opposition parties to form and operate freely, then there would be more overlap between electoral and non-electoral regimes in their vertical accountability scores.

Figure 1: Vertical accountability path diagram
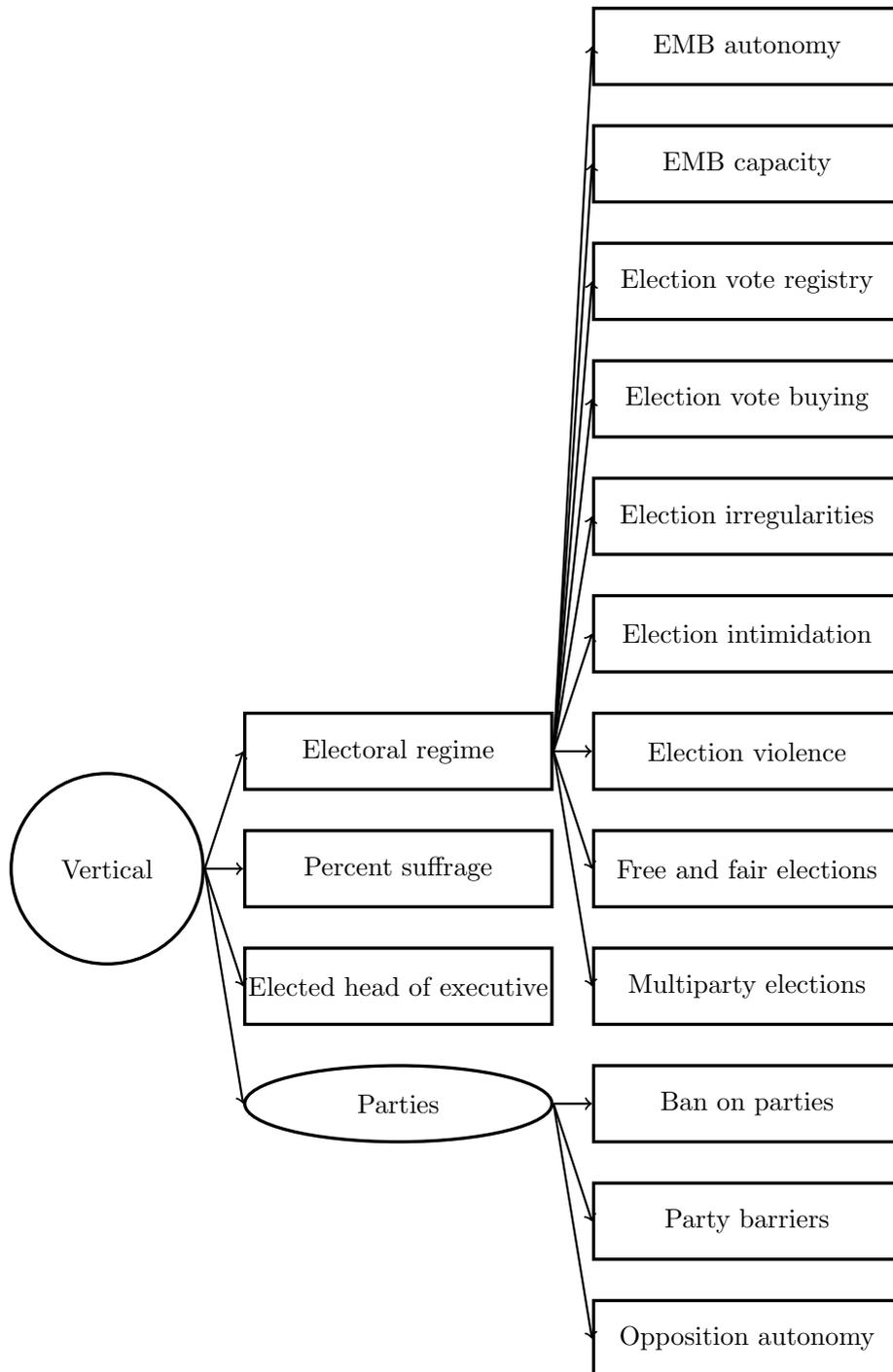
tive. We model both the activities of the independent investigative body and the degree to which an executive respects the constitution as directly influencing horizontal accountability; the activities of a legislature is a function of the presence of a legislature. the activities of the judiciary are a nested latent variable.

We use standard models to parameterize the direct measures: $y_{ij} \sim N(\mu_{ij}, \tau_j)$, where $\mu_{ij} = \epsilon_{j1} + \epsilon_{j2}\xi_i^{Horizontal}$, $\xi^{Horizontal}$ representing horizontal accountability in country-year i. τ and ϵ are precision and loading parameters for $j = 2$ manifest variables. In this parameterization, the assumption is that a country that does not have an external investigative body is exchangeable with countries that do–that is, any countries with missing values for this variable will have values imputed based on the degree to which they have independent courts, active legislatures and executives who respect the constitution.

Our model for the activities of a legislature follows a similar pattern as that for the quality of elections. More precisely, we model the degree to which a legislature 1) investigates in practice and 2) questions the executive as functions of the linear predictor for the presence of the legislature. This parameterization implies that countries that do not have legislatures have lower values of horizontal accountability than countries that do, though in principle the other elements of this model could overwhelm this general restriction. In mathematical form, $Pr(y_i) = \phi(\zeta_i)$, where $\zeta_i = \beta_1 + \beta_2\xi_i^{Horizontal}$. In this equation, ϕ is the CDF of a normal distribution, $\xi^{Horizontal}$ the $N(0,1)$ estimated level of horizontal accountability for country-year i, and y is distributed according to a Bernoulli distribution. In turn, the degree to which a legislature investigates the executive is $z_{ij} \sim N(\gamma_{ij}, \omega_j)$, where $\gamma_{ij} = \kappa_{j1} + \kappa_{j2}\zeta_i$, where ζ_i in the linear predictor of a legislature existing and $j = 2$ κ and ω parameters for both variables reflecting the activities of a legislature.

Finally, we model judicial accountability as being a latent variable $\eta_i^{Judiciary} \sim N(\xi_i^{Horizontal}, o)$, with its variables following a standard latent variable form, i.e. $y_{ij} \sim N(\xi_{ij}, \sigma_j)$, where $\xi_{ij} = \pi_{j1} + \pi_{j2}\eta_i^{Judiciary}$. As with parties in vertical accountability, this approach treats judiciary variables as having a

Figure 2: Horizontal accountability path diagram
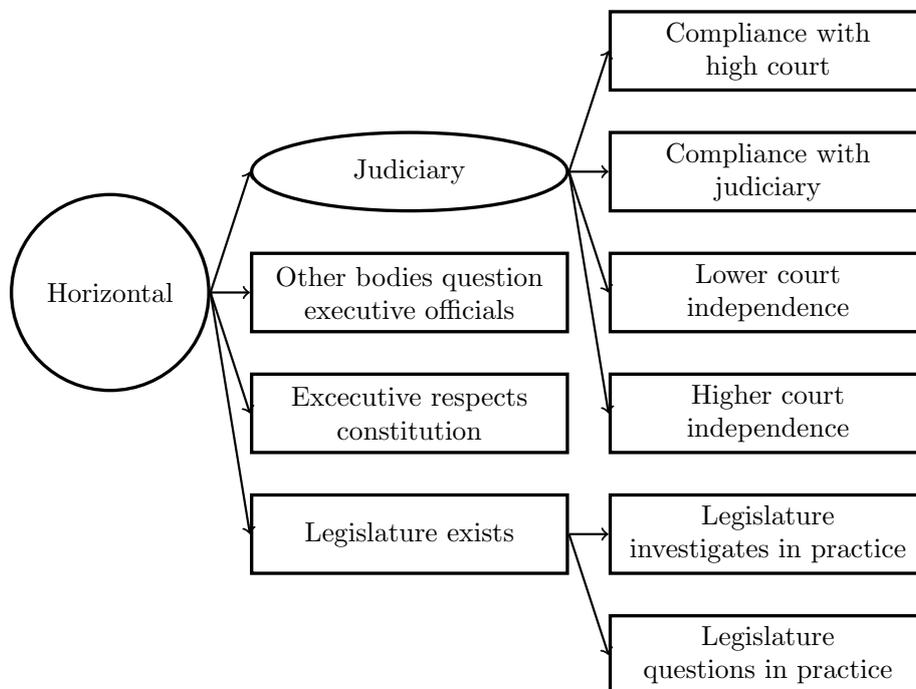
largely cumulative impact on horizontal accountability, though the model weights individual judiciary variables with regard to the overall horizontal measure.

Figure 2 presents the path diagram for horizontal accountability.

1.3 Diagonal accountability

We conceptualize diagonal accountability as a hierarchical latent variable model. Specifically, we argue that diagonal accountability is a function of four institutions: media freedom, freedom of expression, civil society organizations, and an engaged society. All of these institutions, save an engaged society, are themselves latent variables that manifest in 3-6 variables each. More precisely, $y_{ijk} \sim N(\xi_{ijk}, \sigma_{jk})$, where $\xi_{ijk} = \pi_{jk1} + \pi_{jk2}\eta_i^j$. Here, y represents the manifest variable for country-year i, institution j (j representing civil society, freedom of expression or media freedom) and institution-variable

k ($k = 1, 2, 3$ for civil society, $k = 1, ..., 4$ for freedom of expression, and $k = 1, ..., 6$ and media freedom), and σ precision parameters for each manifest variable with a vague prior distribution. Each η for country-year i and institution j is distributed $N(\xi_i^{Diagonal}, o_j)$, where $\xi^{Diagonal}$ is the degree of diagonal accountability in country-year i and o an institution-specific precision parameter. Engaged society is the only institution with a single manifest variable, and we therefore model it as a standard latent variable manifest variable, i.e. $y_i \sim (\mu_i, \tau)$ where $y_i = \eta_1 + \eta_2 \xi_i^{Diagonal}$ and τ a precision parameter with a vague prior distribution. Figure 3 presents the path diagram for this latent variable.

2 Aggregate indices

To create an aggregate measure of accountability, we conduct a hierarchical analysis using the sub-index models from the preceding section. This measure simply involves estimating $\xi_i^j \sim N(\iota_i, \rho_j)$, where ξ represents sub-index $j = Vertical, Horizontal, Diagonal$ and observation i, ι representing the measure of overall accountability, and ρ a sub-index-specific measure of precision. This strategy assumes that overall accountability is a function of all variables included in the model, though the sub-indices structure this relationship. Figure 4 illustrates this conceptualization.

3 Analysis of loadings and uniqueness

Table 1 presents the factor loadings and uniqueness parameters for different forms of accountability. Bold text denotes different forms of accountability and models, plain text nodes of a given form of accountability and italicized text variables that are functions of the linear predictor of another factor. All quantities are 95 percent HPD intervals across MCMC draws. Λ represents factor loadings, with Λ_1 the loading for a vector of ones and Λ_2 the loading for the latent variable. Ψ represents uniqueness parameters in the form of a precision parameter (i.e. the inverse of the estimated standard deviation):

Figure 3: Diagonal accountability path diagram
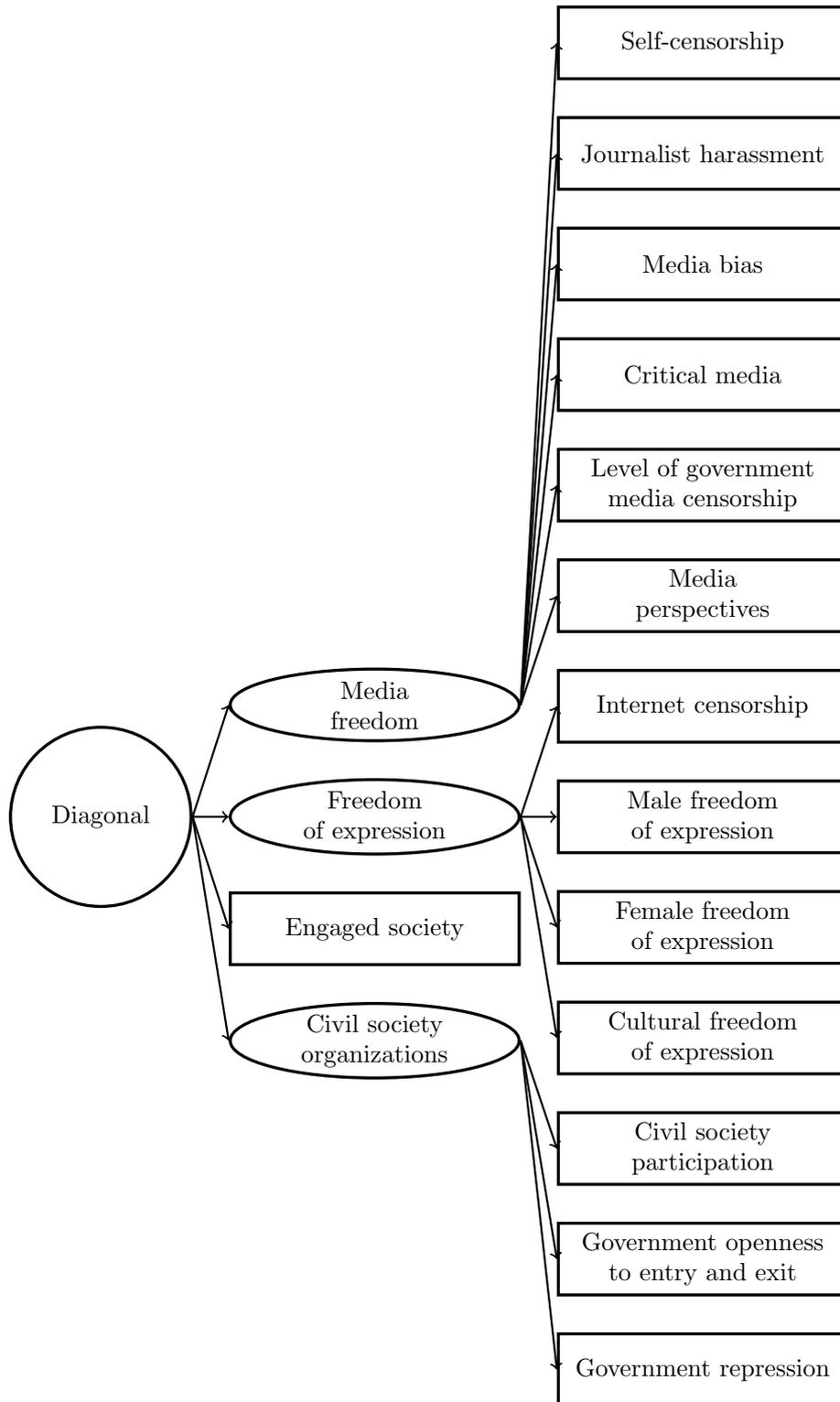
Figure 4: Accountability path diagram
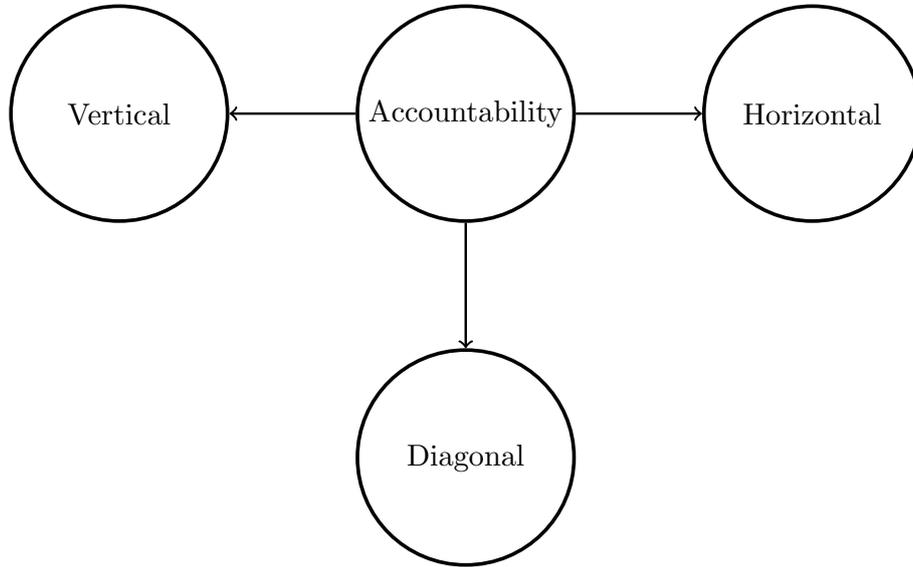
higher values represent a higher degree of correlation.

The table indicates that all indicators have relatively high loadings, though the multiplicative relationship between the structural equation models must be accounted for interpreting the reported loadings. The case of Vertical accountability is illustrative. While the loadings for electoral regime downstream variables have small λ_2 values, this result is a function of the paramaterization of the model: Electoral regime has extremely high loading values which, when multiplied by the downstream values of Λ_2, yield high loadings. A similar pattern holds true for Horizontal accountability: the high loading for Legislature investigates compensates for the relatively low loading of Legislature exists is relatively. Equally importantly, the generally high values of the uniqueness parameters indicate that the relevant latent variables explain a great deal of variation.

Table 2 presents the factor loadings from the full hierarchical model. Note that all three sub-indices—especially social and vertical—have very high precision parameters, indicating strong correlation. In general the factor loadings of individual indicators do not change greatly, with the exception of

Table 1: Factor loadings and uniqueness parameters for forms of accountability

	Λ_1	Λ_2	Ψ
Vertical			
Percent suffrage	(0.08, 0.11)	(0.61, 0.64)	(0.59, 0.61)[a]
Elected head of executive	τ_1: (-0.16, -0.08) τ_2:(-0.10, -0.02)[b]	(1.54, 1.63)	[c]
Electoral regime	(4.01, 5.10)	(8.75,11.00)	[c]
EMB autonomy	(-2.17, -2.10)	(0.21, 0.26)	(2.18, 2.35)
EMB capacity	(-1.38, -1.30)	(0.15. 0.19)	(1.06, 1.13)
Election voter registry	(-1.52, -1.44)	(0.16, 0.20)	(1.22, 1.30)
Election vote buying	(-1.01, -0.90)	(0.11, 0.14)	(0.58, 0.61)
Election irregularities	(-1.69, -1.61)	(0.17, 0.21)	(1.07, 1.14)
Election intimidation	(-1.83, -1.75)	(0.18, 0.23)	(1.63, 1.74)
Electoral violence	(-0.51, -0.43)	(0.10, 0.12)	(0.87, 0.92)
Election free and fair	(-2.20, -2.12)	(0.21, 0.26)	(2.17, 2.33)
Election multiparty	(-1.88, -1.79)	(0.18, 0.23)	(1.17. 1.24)
Parties ($\Psi = (2.11, 2.32)$)			
Party ban	(-0.10, -0.05)	(1.21, 1.25)	(1.70, 1.81)
Barriers to parties	(-0.00, 0.05)	(1.31, 1.35)	(2.55, 2.78)
Opposition autonomy	(0.08, 0.13)	(1.28, 1.32)	(1.92, 2.06)
Horizontal			
Executive respects constitution	(0.14, 0.18)	(1.07, 1.10)	(1.36, 1.44)
Other bodies question	(-0.40, -0.35)	(1.25, 1.29)	(2.54, 2.72)
Judiciary ($\Psi=(1.69, 1.88)$)			
Compliance with judiciary	(0.09, 0.13)	(0.96, 0.99)	(2.29, 2.55)
Compliance with high court	(0.23, 0.27)	(0.94, 0.98)	(1.95, 2.15)
Higher court independence	(-0.03, 0.01)	(0.85, 0.89)	(1.51, 1.64)
Lower court independence	(0.07, 0.12)	(0.85, 0.89)	(1.38, 1.50)
Legislature exists	(0.71, 0.75)	(0.43, 0.49)	[c]
Legislature investigates	(-2.67, -2.42)	(2.87, 3.22)	(3.62, 3.98)
Legislature questions	(-1.82, -1.61)	(2.26, 2.55)	(1.45, 1.53)
Diagonal			
Engaged society	(-0.38, -0.34)	(1.25, 1.28)	(1.88, 1.97)
Freedom of discussion ($\Psi = (9.37, 10.37)$)			
Freedom of discussion (men)	(-0.02, 0.03)	(1.48, 1.52)	(6.59, 7.14)
Freedom of discussion (women)	(-0.16, -0.11)	(1.41, 1.44)	(4.03, 4.26)
Academic and cultural expression	(0.03, 0.08)	(1.33, 1.37)	(1.97, 2.07)
Internet censorship	(-0.29, -0.22)	(1.15, 1.21)	(2.06, 2.28)
Media freedom ($\Psi = (13.94, 15.60)$)			
Media bias	(-0.27, -0.22)	(1.46, 1.50)	(2.70, 2.84)
Critical media	(-0.21, -0.16)	(1.47, 1.51)	(2.73, 2.88)
Media perspectives	(-0.26, -0.22)	(1.38, 1.42)	(2.80, 2.95)
Media censorship	(-0.11, -0.06)	(1.31, 1.34)	(2.25, 2.36)
Journalist harassment	(-0.29, -0.24)	(1.34, 1.38)	(1.78, 1.86)
Media self-censorship	(-0.23, -0.19)	(1.26, 1.29)	(2.01, 2.11)
Civil society ($\Psi = (28.83, 36.74)$)			
Government repression	(0.08, 0.13)	(1.32, 1.35)	(2.67, 2.82)
Popular participation	(-0.07, -0.03)	(1.19, 1.23)	(1.51, 1.58)
Openness to entry and exit	(-0.03, 0.02)	(1.45, 1.49)	(3.74, 4.00)

[a]Variance parameter for a gamma-distributed manifest variable. [b]Thresholds for ordinal probit model. [c]Probit models without uniqueness parameter. Italics represents variables in original model, bold structural portions of model.

those in vertical accountability. Since parties correlate strongly with other measures of accountability (i.e. parties in some sense perform a similar role as civil society and other measures of diagonal accountability), their relative impact on vertical accountability scores increase, while the overall impact of elections decreases.

References

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Table 2: Factor loadings and uniqueness parameters for hierarchical accountability

	Ψ		
Vertical	(13.91, 16.69)		
Horizontal	(7.19, 8.18)		
Diagonal	(9.74, 11.13)		
	Λ_1	Λ_2	Ψ
Vertical			
Percent suffrage	(0.06, 0.09)	(0.44, 0.46)	(0.47, 0.49)[a]
Elected head of executive	1: (-0.23, -0.17) 2: (-0.18, -0.12)[b]	(1.10, 1.17)	[c]
Electoral regime	(0.79, 0.88)	(1.45, 1.56)	[c]
EMB autonomy	(-1.48, -1.40)	(1.09, 1.17)	(2.50, 2.68)
EMB capacity	(-0.81, -0.74)	(0.75, 0.81)	(0.97, 1.03)
Election voter registry	(-0.91, -0.84)	(0.79, 0.85)	(1.11, 1.17)
Election vote buying	(-0.49, -0.40)	(0.52, 0.57)	(0.53, 0.56)
Election irregularities	(-1.04, -0.96)	(0.81, 0.87)	(0.93, 0.98)
Election intimidation	(-1.19, -1.12)	(0.93, 1.01)	(1.65, 1.76)
Electoral violence	(-0.09, -0.02)	(0.45, 0.50)	(0.81, 0.85)
Election free and fair	(-1.48, -1.41)	(1.07, 1.15)	(2.25, 2.40)
Election multiparty	(-1.31, -1.24)	(0.95, 1.03)	(1.40, 1.49)
Parties (Ψ=(4.78, 5.30))			
Party ban	(-0.10, -0.05)	(1.30, 1.34)	(1.69, 1.79)
Barriers to parties	(-0.00, 0.05)	(1.40, 1.44)	(2.38, 2.55)
Opposition autonomy	(0.08, 0.13)	(1.37, 1.42)	(2.08, 2.22)
Horizontal			
Executive respects constitution	(0.13, 0.18)	(0.95, 0.99)	(1.17, 1.23)
Other bodies question	(-0.54, -0.49)	(1.18, 1.22)	(2.17, 2.30)
Judiciary (Ψ=(1.52, 1.68))			
Compliance with judiciary	(0.09, 0.13)	(0.85, 0.89)	(1.69, 1.91)
Compliance with high court	(0.23, 0.27)	(0.84, 0.88)	(1.52, 1.69)
Higher court independence	(-0.03, 0.01)	(0.85, 0.89)	(1.89, 2.14)
Lower court independence	(0.07, 0.12)	(0.85, 0.89)	(1.72, 1.94)
Legislature exists	(0.93, 1.00)	(0.86, 0.95)	[c]
Legislature investigates	(-1.93, -1.84)	(1.40, 1.53)	(3.09, 3.34)
Legislature questions	(-1.29, -1.20)	(1.15, 1.26)	(1.59, 1.68)
Diagonal			
Engaged society	(-0.38, -0.34)	(1.20, 1.24)	(2.00, 2.10)
Freedom of discussion (Ψ = (8.68, 9.58))			
Freedom of discussion (men)	(-0.02, 0.03)	(1.41, 1.45)	(6.42, 6.96)
Freedom of discussion (women)	(-0.16, -0.11)	(1.35, 1.38)	(4.11, 4.36)
Academic and cultural expression	(0.03, 0.07)	(1.27, 1.31)	(1.97, 2.07)
Internet censorship	(-0.29, -0.22)	(1.10, 1.16)	(2.05, 2.28)
Media freedom (Ψ = (13.14, 14.72))			
Media bias	(-0.28, -0.23)	(1.39, 1.43)	(2.70, 2.85)
Critical media	(-0.21, -0.16)	(1.41, 1.45)	(2.75, 2.89)
Media perspectives	(-0.26, -0.22)	(1.32, 1.36)	(2.79, 2.94)
Media censorship	(-0.11, -0.07)	(1.25, 1.29)	(2.27, 2.38)
Journalist harassment	(-0.29, -0.24)	(1.28, 1.32)	(1.78, 1.87)
Media self-censorship	(-0.23, -0.19)	(1.20, 1.24)	(1.99, 2.08)
Civil society (Ψ = (19.71, 23.45))			
Government repression	(0.08, 0.13)	(1.25, 1.28)	(2.64, 2.78)
Popular participation in civil society	(-0.07, -0.03)	(1.13, 1.17)	(1.53, 1.60)
Openness to entry and exit	(-0.03, 0.02)	(1.38, 1.42)	(3.73, 3.99)

[a]Variance parameter for a gamma-distributed manifest variable. [b]Thresholds for ordinal probit model. [c]Probit models without uniqueness parameter.

Table 3: Additional statistics for accountability

	Correlation	SE	R2
Vertical	0.99	0.00	0.98
Horizontal	0.97	0.00	0.95
Diagonal	0.98	0.00	0.96
Vertical			
Electoral regime			
EMB autonomy	0.76	0.01	0.47
EMB capacity	0.62	0.01	0.32
Election voter registry	0.65	0.01	0.35
Election vote buying	0.44	0.01	0.16
Election irregularities	0.64	0.01	0.34
Election intimidation	0.71	0.01	0.42
Electoral violence	0.46	0.01	0.17
Election free and fair	0.74	0.01	0.47
Election multiparty	0.67	0.01	0.37
Parties	0.88	0.00	0.77
Party ban	0.92	0.00	0.84
Barriers to parties	0.96	0.00	0.92
Opposition autonomy	0.95	0.00	0.87
Horizontal			
Executive respects constitution	0.83	0.00	0.69
Other bodies question	0.88	0.00	0.83
Judiciary	0.86	0.00	0.74
Compliance with judiciary	0.92	0.00	0.85
Compliance with high court	0.90	0.00	0.81
Higher court independence	0.84	0.00	0.71
Lower court independence	0.83	0.00	0.68
Legislature exists			
Legislature investigates	0.92	0.00	0.90
Legislature questions	0.78	0.01	0.66
Diagonal			
Engaged society	0.88	0.00	0.78
Freedom of discussion	0.97	0.00	0.95
Freedom of discussion (men)	0.98	0.00	0.97
Freedom of discussion (women)	0.96	0.00	0.93
Academic and cultural expression	0.91	0.00	0.82
Internet censorship	0.53	0.01	0.40
Media freedom	0.98	0.00	0.97
Media bias	0.94	0.00	0.89
Critical media	0.94	0.00	0.89
Media perspectives	0.94	0.00	0.88
Media censorship	0.55	0.01	0.40
Journalist harassment	0.90	0.00	0.80
Media self-censorship	0.89	0.00	0.80
Civil society	1.00	0.00	0.99
Government repression	0.93	0.00	0.86
Popular participation in civil society	0.85	0.00	0.72
Openness to entry and exit	0.96	0.00	0.93

Results report the correlation between a variable and the the latent variable to which it directly corresponds. For example, election variable results correspond to vertical accountability and the relevant manifest variable, while party variable results correspond to the parties latent variable and the relevant manifest variable. All results correspond to independently -estimated latent variables, save for the component latent variables, which related to the overall hierarchical model.