GOVERNANCE AND CORRUPTION INDEXES

AGGREGATION METHODS, NEW EMPIRICAL MEASURES, AND ECONOMETRIC CHALLENGES

Recent interest in the consequences of political economy factors, formal and informal institutions, rule of law, legal and judiciary capture, and corruption has been accompanied by a proliferation of data purporting to measure various aspects related to what may be broadly called governance. In this annex we summarize some recent research relating to methodological and empirical results on governance and corruption presented in the text of chapter 6. The first part of the annex summarizes the empirical challenges on governance indicators, while the second part summarizes the research project unbundling the measurement of corruption into administrative bribery, state capture (which includes legal and judiciary capture), and public procurement kickbacks.

Defining and Unbundling Governance

Inter alia, this report unbundles the concept of governance into six aggregate component indicators that were constructed by Kaufmann, Kraay, and Zoido-Lobatón (KKZ) (1999a,b). Details about these aggregates and the notion of governance underlying them are given in the chapter text.

The aggregate indicators are based on more than 300 measures produced by 13 different organizations. The sources include published and unpublished data from a number of private forecasting and business risk organizations, think tanks, and other NGOs, and the results of surveys carried out by multilateral and other organizations. The database covers 170 countries. Currently, the data are for only one period: 1997–98. The data and

further details on the econometric methodology are available at http://www.worldbank.org/wbi/governance.

Governance, or the manner of governing, encompasses the process of selecting, monitoring, and replacing governments, and refers to the government's capacity to formulate and implement sound policies and the respect of citizens and the state for its institutions. In chapter 6, we presented the following six component indexes of governance are measured: (a) voice and accountability, (b) political stability, (c) government effectiveness, (d) regulatory burden, (e) rule of law, and (f) control of corruption. For each of the six aspects of governance, a large number of individual indexes from different sources were identified as relevant and aggregated to form one of the six composite measures. The aggregation uses an unobserved components model. Advantages that derive from the method include

- A large number of single, and rather noisy, indicators is transformed into a smaller number of more reliable aggregate indicators. These aggregates reflect the statistical consensus of many different sources in a rigorous aggregation method that separates signal from noise. As a result, these aggregate indicators are more precise than more conventional indicators.
- This method computes statistically sound margins of error around the estimates of governance for individual countries; that is, one can be relatively confident about the degree of uncertainty associated with country-specific estimates of governance.

The methodology used emphasizes a limitation of current governance indicators: they are unable to produce precise measures. In view of the margins of error surrounding the estimated measures of governance, small differences in the estimates will not be statistically or practically significant. It would be misleading to offer very precise rankings of countries according to their level of governance. Instead, broad country groupings, along the lines of a traffic light approach, is statistically defensible and is presented in the chapter text.

The above summarizes some of the methodological issues addressed in "Aggregating Governance Indicators" (KKZ 1999a) and in their interpretation. Furthermore, in this paper KKZ organize the data so that within each one of the six governance clusters, each individual indicator measures a similar underlying basic concept of governance. There are considerable benefits from combining these related indicators into an aggregate governance indicator for each cluster, because (a) aggregate indicators span a much larger set of countries than any individual source, (b) aggregate indicators can provide more precise measures of governance than individual indicators, and (c) it is possible to construct quantitative measures of the precision of

both the aggregate governance estimates for each country, as well as their components. This allows formal testing of hypotheses regarding cross-country differences in governance.

For each of these clusters, KKZ combine the component indicators into an aggregate governance indicator using an unobserved components model. This model expresses the observed data in each cluster as a linear function of the unobserved common component of governance, plus a disturbance term capturing perception errors and/or sampling variation in each indicator. Estimates are then generated of each of the six governance measures for each country, as well as measures of their precision. The choice of units for governance ensures that the estimates of governance have a mean of zero, a standard deviation of 1, and range from around –2.5 to around 2.5. Higher values correspond to better outcomes. Since the distribution of governance conditional on the observed data is assumed to be independent across countries, it is possible to make probabilistic statements comparing governance in pairs of countries.

It is found that the underlying governance concepts in each cluster are not very precisely estimated, as depicted in figures 6.1 and 6.2 in chapter 6. The rather large size of these confidence intervals has important implications for the use of these aggregate governance indicators. Small differences in point estimates of governance across countries are not statistically significant. As a result, users of this data should focus on the *range* of possible governance for each country as summarized in the 90 percent confidence intervals shown in figure 6.1 in chapter 6. For two countries at opposite ends of the scale of governance, whose 90 percent confidence intervals do not overlap, it is reasonable to conclude that there are significant differences in governance. For pairs of countries that are closer together and whose 90 percent confidence intervals overlap, circumspection is in order and seemingly precise comparisons ought to be avoided.

Despite the imprecision of these aggregate indicators, they are very useful, for several reasons. First, since each of these aggregate indicators spans a much larger set of countries than any individual indicator, it is possible to make comparisons—however imprecise—across a much larger set of countries than would be possible with any single indicator. Second, each *aggregate* indicator provides a more precise signal of its corresponding broader governance concept than do any of its *individual* component indicators, as well as a consistent *summary* of the available evidence. Third, the measures of *precision* for each country are useful as well, because they enable formal statistical tests of cross-country differences in governance—instead of arbitrary comparisons. Fourth, it is possible to use information in the estimates of the precision of each aggregate to quantify the effect of measurement error in regression analyses that use governance indicators as right-hand-side (independent) variables.

In the companion paper ("Governance Matters," KKZ 1999b), the authors detail all external data sources, describe each individual variable, and analyze the relationship between the governance components and developmental variables. The cross-country data indicate a significant simple correlation between governance and socioeconomic outcomes (literacy, infant mortality, longevity, income per capita).

To explore the effect of governance or socioeconomic variables, controlling for other factors, specific econometric tests were done, based on a two-stage least squares regression of a particular socioeconomic dependent variable on a constant and on the governance component, using indicators of colonial heritage as instruments and following the approach of Hall and Jones (1999). The model is well-specified in the sense that (a) the instruments have strong predictive power for governance, and (b) the null hypotheses the these instruments affect incomes only through their effects on governance is not rejected. Concerns about measurement error and omitted variables are also addressed in detail in KKZ (1999b).

Measuring and Unbundling Corruption

Particular coverage to the challenge of addressing corruption was given in the text of chapter 6, given its importance within governance and the emergence of new empirical findings. Until recently, the measurement of corruption, where done, followed a unidimensional and generalized approach to this complex problem. Recent empirical advances in the study of corruption through improved survey techniques and approaches permit a more in-depth and multifaceted unbundling of corruption. In the chapter's text we reported on the interface between corporate strategies and national governance, and also showed that while on balance administrative bribery does not "pay" for business, "grander" forms of corruption such as state capture (figure 6.11) elicit significant private benefits to the captor firm (figure 6.6 in chapter 6), while resulting in large social costs. We detail below how such unbundling was carried out.

The Business Environment and Enterprise Performance Survey: Unbundling Corruption

The ability to distinguish between these various manifestations, causes, and consequences of different types of corruption stems from the concerted effort to conceptually and empirically unbundle the problem of corruption initiated within a large-scale survey of transition economies. The Business Environment and Enterprise Performance Survey (BEEPS) was conducted

on the basis of face-to-face interviews with firm managers or owners in site visits during June through August 1999 in 22 countries and covered about 3,000 enterprises.

In each country, between 125 and 150 firms were interviewed with the exception of three countries where larger samples were used: Poland (250), the Russian Federation (550), and Ukraine (250). The survey questions examine corruption from a number of different angles providing consistency checks on each firm's responses. Moreover, tests were conducted to detect any systematic positive or negative bias among the firms' responses in any given country.

In designing the survey, corruption was approached as a multifaceted phenomenon requiring rigorous unbundling, and on such a basis a typology of corruption to distiguish between the different country patterns and consequences was arrived at. Particular emphasis was given to three dimensions of corruption: administrative corruption, public procurement corruption, and state capture (Hellman, Jones, and Kaufmann 2000a ["Seize the State, Seize the Day"]; Hellman and others 2000 ["Measuring Governance, Corruption, and State Capture"])—recognizing that different dimensions of corruption might have unique origins and consequences.

Typology of Corruption: Definitions

Administrative corruption refers to the distorted or arbitrary application and implementation of existing laws, rules, and regulations for illicit private gain by a public office holder, and is subject to a variety of quantitative measures in BEEPS (such as the percentage of administrative bribes paid by the firm as a share of their total revenues). *Public procurement corruption*, an important dimension of corrupt allocation of public finances and public resources, is measured through the percentage bribe fee paid to secure contracts. *State capture* refers to the actions of economic agents or firms both in the public and private sectors to influence the formation and formulation of laws, regulations, decrees, and other government policies (that is, the basic rules of the game) to their own advantage—as a result of illegal payments from private agents to public officials. For instance, an influential oligarch at the head of a powerful financial-industrial group may purchase the votes of legislators to erect barriers to entry in the energy sector.

Unbundling State Capture and Calculating an Overall Capture Index

Within BEEPS, firms were asked about their propensity to purchase legislative capture influence, and they were asked in some detail to report on the

impact on the firm of different dimensions of state capture in the economy. For a selected group of transition economies (for full details and data, including measurement of margins of error, see Hellman, Jones, and Kaufmann 2000a; Hellman and others 2000), Table A6.1 presents the various dimensions of state capture that were measured, as well as the overall state capture index derived through the simple average of all subcomponents in the previous columns measuring the effects of the state capture component. In turn, the overall state capture index was used in the second panel of figure 6.6, while the measure of administrative corruption was used in the first panel of that figure. On the basis of the unbundled components of state capture, it is also possible to construct other subindexes of relevance. From table A6.1 a judiciary capture index can be calculated, for instance, based on the proportion of firms affected by the purchase of criminal and commercial court decisions (columns 4 and 5). The analysis of the causes (including absence of civil liberties and economic reforms) and consequences (on output and investment growth and property rights protection) of state capture is carried out through multivariate econometric analysis (including logit and ordinary least squares specifications). The in-depth analysis of the FDI links with state capture, public procurement kickbacks, and other forms of influence (including legal ones) is also based on the data from BEEPS and presented in detail in Hellman, Jones, and Kaufmann (2000b).

From Cross-Country Surveys to In-Depth Country Specific Diagnostics

For detailed action programming in a country, even much improved cross-country surveys cannot substitute for the need to carry out in-depth country diagnostics on governance and corruption within a particular setting. Such country-specific governance diagnostic tools are discussed in the text of the chapter, where further website references are also provided.

Table A6.1. Percentage of Firms Affected by Different Forms of State Capture, and Overall State Capture Index, Selected Countries, 1999

Country	Corporate purchase of: Parliamentary legislation (1)	Presidential decrees (2)	Central bank influence (3)	Criminal courts decisions (4)	Commercial courts decisions (5)	Political party finance (6)	Overall state capture index[b] (1 + ... + 6)
Azerbaijan	41	48	39	44	40	35	41
Bulgaria	28	26	28	28	19	42	28
Croatia	18	24	30	29	29	30	27
Estonia[a]	14	7	8	8	8	17	10
Georgia	29	24	32	18	20	21	24
Hungary[a]	12	7	8	5	5	4	7
Latvia	40	49	8	21	26	35	30
Moldova	43	30	40	33	34	42	37
Poland[a]	13	10	6	12	18	10	12
Romania	22	20	26	14	17	27	21
Russian Federation	35	32	47	24	27	24	32
Slovenia[a]	8	5	4	6	6	11	7
Ukraine	44	37	37	21	26	29	32

a. The state capture classification is *medium* for these countries. For all other countries listed the state capture classification is *high*.

b. The state capture index is the simple average of the measured subcomponents in columns 1 through 6. Subgrouping of such components also permits calculations of a judiciary or legal capture index (columns 1, 4, and 5, which under an extended interpretation could also encompass the purchase of presidential decrees in column 2), a stand-alone judiciary capture index (columns 4 and 5), or a legal capture index (columns 1 and 2).

Note: Individual estimates subject to margin of error. Such margins of error are significant, thus care ought to be exercised in the use of each individual estimate. Nonetheless, we have tested for country-specific respondent perception bias and did not find it to be significant (see Hellman and others 2000).

Sources: Hellman, Jones, and Kaufmann 2000a; see also http://www.worldbank.org/wbi/governance.