Background Paper to the

2003 Corruption Perceptions Index

Framework Document 2003

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The Corruption Perceptions Index is a composite index. The data used this year were compiled between 2001 and 2003. 17 surveys of businesspeople and assessments by country analysts from 13 independent institutions have been used.

All sources use a homogeneous definition of "levels of corruption". These perceptions enhance our understanding of real levels of corruption from one country to another.

Comparisons with last year's index should be based on scores. However, such comparisons can be misleading because of methodological changes between years.

Non-parametric statistics have been used for standardizing the data and for determining the precision of our results.

1. The methodology

Transparency International (TI) publishes its annual Corruption Perceptions Index (CPI) since 1995. This index has evolved into a leading indicator in social sciences. As in previous years, this framework document provides an in-depth explanation of the methodology and measurement precision.

The goal of the CPI is to provide data on extensive perceptions of corruption within countries. The CPI is a composite index, making use of surveys of business-people and assessments by country analysts. It consists of credible sources using diverse sampling frames and different methodologies. These perceptions enhance our understanding of real levels of corruption from one country to another.

As pointed out in previous framework documents, unbiased, hard data continue to be difficult to obtain and usually raise problematic questions with respect to validity. International surveys on perceptions therefore serve as the most credible means of compiling a ranking of nations.

Overall, 17 sources could be included in the 2003 CPI, originating from 13 independent institutions. The complete list of sources is presented in the appendix. All in all, the number of countries in the CPI increased from 102 last year to 133.

Sources in 2003

Prior to selecting sources guidelines have been set up which organize the underlying decision making process. These include the actual criteria that a source needs to meet in order to qualify for inclusion as well as organizational guidelines on how the final decision is reached with the help of the Transparency International Steering Committee. This process aimed at making the final decision as transparent and robust as possible. As a result of this it was decided that the 2003 CPI includes data from the following sources:

- Freedom House Nations in Transit (FH), 2003
- The Economist Intelligence Unit (EIU), 2003
- PricewaterhouseCoopers (PwC), the 2001 Opacity Index.
- The Institute for Management Development, Lausanne (IMD). We will use data for 2001-2003.
- The Political and Eonomic Risk Consultancy, Hong Kong (PERC). We will for the last time be using the data from 2001.
- The World Bank (WBES), 2001.
- The World Economic Forum (WEF). We will use data for 2001-2003.
- State Capacity Survey by Columbia University (CU), 2003
- Gallup International on behalf of Transparency International (GI/TI), BPI 2002.
- Information International (II), 2003.
- A Multilateral Development Bank (MDB), 2002.
- The Business Environment and Enterprise Performance Survey (BEEPS), 2002.
- The World Markets Research Centre (WMRC), 2002.

An essential condition for inclusion is that a source must provide a ranking of nations. This condition is not met if a source conducts surveys in a variety of countries but with varying methodologies. Comparison from one country to another is not feasible in this case and a ranking cannot be produced. Another condition is that sources must measure the overall level of corruption. This is violated if aspects of corruption are mixed with issues other than corruption such as political instability or nationalism or if changes are measured instead of levels of corruption.

For example, the index "Corruption in Government" from the International Country Risk Guide (ICRG), conducted by

the Political Risk Services (PRS), did not meet these requirements, albeit being widely used in research as a measure of levels of corruption. It does not determine a country's level of corruption but the political risk involved in corruption. As pointed out to us by the ICRG-editor, these two issues can differ considerably, depending on whether there exists a high or low tolerance towards corruption. Corruption only leads to political instability if it is not tolerated. Due to this, the data by PRS-ICRG did not qualify for inclusion in the CPI. However, TI hopes to include a modified set of data by PRS in the future.

The 2003 CPI combines assessments from the past three years to reduce abrupt variations in scoring that might arise due to random effects. Some sources, such as II, TI/GI, BEEPS, WBES and PwC, provided only one recent survey. Others such as WEF and IMD provided various surveys between 2001 and 2003, which are all included.

While this averaging is valuable for the inclusion of surveys, it is inappropriate for application to the data compiled by country experts. Such assessments as compiled by WMRC, FH, CU and EIU are conducted by a small number of country experts who regularly analyze a country's performance, counterchecking their conclusions with peer discussions. Following this systematic evaluation, they then consider a potential upgrading or downgrading. As a result, a country's score changes rather seldom and the data shows little year-to-year variation. Changing scores in this case are the result of a considered judgment by the organization in question. To then go back and average the assessments over a period of time would be inappropriate. On the other hand, in the case of elite surveys an averaging over various years produces a useful smoothing effect. While some annual data may contain random errors, these do not necessarily carry over into the next year.

Year-to-year comparisons

Comparisons with the results from previous years should be based on a country's score, not its rank. A country's rank can change simply because new countries enter the index and others drop out. A higher score is an indicator that respondents provided better ratings, while a lower score suggests that respondents revised their perception downwards. However, year-to-year comparisons of a country's score result not only from a changing perception of a country's performance but also from a changing sample and methodology. With differing respondents and slightly differing methodologies, a change in a country's score may also relate to the fact that different viewpoints have been collected and different questions been asked. The index primarily provides an annual snapshot of the views of businesspeople, with less of a focus on year-to-year trends.

However, to the extent that changes can be traced back to a change in the results from individual sources, trends can cautiously be identified. Noteworthy examples of a downward trend between 2002 and 2003 are Argentina, Belarus, Chile, Canada, Israel, Luxembourg, Poland, USA, and Zimbabwe. The considerable decline in their scores does not result from technical factors – actual changes in perceptions are therefore likely.

With the same caveats applied, on the basis of data from sources that have been consistently used for the index, improvements can be observed for Austria, Belgium, Colombia, France, Germany, Ireland, Malaysia, Norway, and Tunisia.

2. Validity

All sources generally apply a definition of corruption such as the misuse of public power for private benefit, for example bribing of public officials, kickbacks in public procurement, or embezzlement of public funds. Each of the sources also assesses the "extent" of corruption among public offi-

cials and politicians in the countries in question:

- The IMD asks respondents to assess whether "bribing and corruption prevail or do not prevail in the economy."
- The PERC asks "How do you rate corruption in terms of its quality or contribution to the overall living/working environment?" A slightly different question had been asked previously.
- The EIU defines corruption as the misuse of public office for personal (or party political) financial gain and aims at measuring the pervasiveness of corruption. Corruption is one of over 60 indicators used to measure "country risk" and "forecasting."
- PwC asks for the frequency of corruption in various contexts (e.g. obtaining import/export permits or subsidies, avoiding taxes).
- FH determines the "level of corruption" without providing further defining statements.
- The WBES asks two questions with respect to corruption, one determining the "Frequency of bribing" and another one relating to "corruption as a constraint to business".
- Columbia University asks for the severity of corruption within the state.
- WMRC assesses the amount of red tape likely to be encountered, as well as the likelihood of encountering corrupt officials and other such groups. The types of corruption covered range from small-scale bribes right through to larger-scale kickbacks
- BEEPS asks "Thinking about officials … It is common for firms in my line of business to have to pay some irregular 'additional payments' to get things done". (Always, Mostly, Frequently, Sometimes, Seldom, Never, Don't know)" and "Using this scale (No Obstacle=1 ; Minor Obstacle=2 ; Moderate Obstacle=3 ; Major Obstacle=4 ; Don't know/no answer=5) can you tell me how

problematic are these different factors for the operation and growth of your business: … corruption…"

- MDB asks its staff to assess multiple countries with respect to the following questions: "How widespread is the incidence of corruption? (Widespread; Somewhat widespread; Somewhat limited; Limited; No judgement).
- The WEF asks in its 2003 Global Competitiveness Report: 7. "In your industry, how commonly would you estimate that firms make undocumented extra payments or bribes connected with:"
  1 – exports and imports Common |1|2|3|4|5|6|7| Never occur
  2 - public utilities (e.g. telephone or electricity) Common |1|2|3|4|5|6|7| Never occur
  3 - annual tax payments Common |1|2|3|4|5|6|7| Never occur
  4 – public contracts Common |1|2|3|4|5|6|7| Never occur
  5 - loan applications Common |1|2|3|4|5|6|7| Never occur
  6 - influencing laws and policies, regulations, or decrees to favor selected business interests? Common |1|2|3|4|5|6|7| Never occur
  7 – getting favorable judicial decisions Common |1|2|3|4|5|6|7| Never occur.
  From these questions the simple average has been determined.
- Gallup International on behalf of Transparency International (TI/GI) and similarly Information International ask: 13. Which are the countries, besides this one, with which you have had the most business experience in the last 3-5 years? Please name up to five countries. 13a. In [country 1], how common are payments (e.g. bribes) to obtain or retain business or other improper advantages to senior public officials, like politicians, senior civil servants, and judges? In [country 1], how significant of an obstacle are the costs associated with such payments for doing business? From 'Very significant [1] to 'Insignificant' [4]. Don't know [88]. The questions

continue for countries 2-5. In [country 1], how frequently are public contracts awarded to business associates, friends and relatives rather than on a competitive bidding basis?" Scale for answers are from 'Very Common [01] to 'Very Uncommon / Never'[04]. Don't know [88].

The terms "prevalence", "commonness", "frequency", "constraint ", "contribution to working environment" and "severity" are closely related. They all refer to some kind of "degree" of corruption, which is also the aim of the CPI. This common feature of the various sources is particularly important in view of the fact that corruption comes in different forms. It has been suggested in numerous publications that distinctions should be made between these forms of corruption, e.g. between nepotism and corruption in the form of monetary transfers. Yet, none of the data included in the CPI emphasize one form of corruption at the expense of other forms. The sources can be said to aim at measuring the same phenomenon. As also emphasized in the framework documents of previous years, the sources do not distinguish between administrative and political corruption.

The term "degree of corruption" may imply different things. In particular, it may relate to the frequency of bribes or the size of bribes. But we know from the results of our sources that frequency and the size of bribes tend to correlate highly (as expounded in the framework documents of previous years). In countries where corruption is frequent it also amounts to a high fraction of firms' revenues. In sum, the term "degree of corruption" seems to equally reflect the two aspects, frequency of corruption and the total value of bribes paid.

3. Samples, perceptions and reality

While the sources all aim at measuring the degree of corruption, the sample design differs considerably. The data by IMD, WBES, BEEPS, PwC and WEF largely sample residents (sometimes also from multinational companies). In contrast, the data by PERC, FH, TI/GI, II, MDB, CU, WMRC, and EIU largely relate to expatriates. Whether this difference between samples may lead to different outcomes still requires scientific study. For the purposes of the CPI it added to the robustness of the resulting figures, because the data correlate well, irrespective of whether expatriates or residents had been polled. This correlation suggests that there being different samples makes no large difference to the results.

Interpreting perceptions

As the data collected relates to perceptions rather than to real phenomena, it has to be considered whether such perceptions improve our understanding of what real levels of corruption may be. Since actual levels of corruption cannot be determined directly, perceptions may be all we have to guide us. However, this approach is undermined, to at least some extent, if the perceptions gathered are biased. Such a potential bias might originate from the particular cultural background of respondents. Depending on whether the sample consist of locals or expatriates, this suggests two potential biases to be relevant.

Imagine that being asked to assess the level of corruption, a local estimates a high level of corruption in the country of residence. Such an assessment would be a valid contribution to the CPI only if the respondent makes the assessment as a result of comparisons with the levels of corruption perceived in other countries. But this is not necessarily the viewpoint taken by the respondent. A respondent may also assign high levels by comparing corruption to other (potentially less pressing) problems facing the country, or by evaluating it according to a high ethical standard (e.g. which assumes any kind of gift-giving to a public official to be corrupt and not culturally acceptable). In the case of such an outlook, a high degree of observed corruption may reflect a high standard of ethics rather than a high degree of real misbehavior. Per-

ceptions would be a misleading indicator for real levels of corruption. This bias can occur particularly if only locals are surveyed, each assessing only the level of perceived corruption in their own countries. If respondents are asked to assess foreign countries or to make comparisons between a variety of countries, this bias should not occur. Respondents will, in this case, compare a foreign country with their home country or with an even larger set of countries. They will be forced to apply the same definition of corruption and make use of the same ethical standard for all countries, which produces valid comparative assessments.

However, in this context a second type of bias might arise, originating from the potential dominance of a particular cultural heritage in the sample questioned or because expatriates lack a proper understanding of a country's culture. The results would be meaningless to locals if they have a different understanding and definition of corruption. While samples of expatriates are susceptible to this kind of bias, surveys that question local residents clearly avoid it.

The strength of the CPI rests with the idea that we include surveys that are not susceptible to the first type of bias, in particular EIU, WMRC, CU, FH and PERC. Because the data provided by these sources refer to assessments by expatriates, they are subject to a homogeneous definition of corruption and a consistent ethical standard. EIU, WMRC, CU and FH are assessments carried out by country analysts (mostly from North America and Western Europe). These assessments are discussed and reviewed by peers in order to guarantee consistency across countries.

The CPI also incorporates the data from the IMD, WEF, BEEPS, PwC and WBES. These ratings are less likely to represent the perception of a certain cultural heritage because they refer to assessments made by local residents. The second type of bias can clearly be rejected for these sources.

Because the data from the EIU, MDB, CU, FH and PERC correlate well with the other data, there seems to be no support for the suggestion that they might be influenced by the second type of bias. Similarly, the data by the IMD, WEF, BEEPS, PwC and WBES correlate well with data from the first group; the notion that the first type of bias might be present is clearly not supported. The validity of the sources is mutually confirmed and no hint is found for the existence of a bias in our data.

A third group of more recently included sources is less susceptible to both biases simultaneously: these are TI/GI, II and MDB. They survey either their staff members (in the case of MDB) or respondents from emerging economies and less developed countries (TI/GI and II). In the latter case respondents are asked to assess the performance of industrial countries and neighboring countries. Those polled are not asked to assess their home country or individual foreign countries, but to provide a comparative assessment of various foreign countries. This approach makes sure that a consistent ethical standard is applied to all countries, that only those countries are assessed where sufficient experience and cultural insights are available and that the viewpoint of less developed countries is well represented. Yet, as shown in the correlations, this different approach does not bring about noteworthy different results. Thus, the comparative assessments gathered in the CPI do not disproportionately reflect the perceptions of western businesspeople.

In sum, it seems that residents tend to have a consistent ethical standard with regard to assessments of corruption, while expatriates do not tend to impose an inappropriate ethical standard or to lack cultural insights. The approach suggests that the perceptions gathered are a helpful contribution to the understanding of real levels of corruption.[1]

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[1] As was also explained in detail in the 2001 framework document, the perceptions

4. The index

Standardizing

Each of the sources uses its own scaling system, requiring that the data be standardized before each country's mean value can be determined. This standardization is carried out in two steps.

For step 1 each source is standardized using matching percentiles. The *ranks* (and not the scores) of countries is the only information processed from our sources. For this technique the common sub-samples of a new source and the previous year's CPI are determined. Then, the largest value in the CPI is taken as the standardized value for the country ranked best by the new source. The second largest value is given to the country ranked second best, etc.[2] Imagine that a new source ranks only four countries: UK is best, followed by Singapore, Venezuela and Argentina respectively. In the 2002 CPI these countries obtained the

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gathered relate well to actual experience made and less to hearsay. See Lambsdorff, J. Graf (2001) "Framework Document", Background Paper 2001 Corruption Perceptions Index:
http://wwwuser.gwdg.de/~uwvw/downloads/2001_CPI_FD.pdf

[2] In case two countries share the same rank, their standardized value is the simple mean of the two respective scores in the CPI. The scores for countries where no CPI value was available are determined by referring to neighbor countries in the source's ranking. Linear interpolation is applied to their scores, suggesting that if a source assigns such a country a score close to the upper neighbor, also its standardized value is closer to that of this neighbor. If such a country is ranked best (or worst) by a source it would have only one neighbor, not two. The second neighbor is constructed by using the highest (or lowest) attainable score by the source and the CPI value 10 (or 0). This approach guarantees that all values remain within the range between 10 and 0.

scores 8.7, 9.3, 2.5 and 2.8. Matching percentiles would now assign UK the best score of 9.3, Singapore 8.7, Venezuela 2.8 and Argentina 2.5.

Matching percentiles is superior in combining indices that have different distributions. But, as it makes use of the ranks, and not the scores of sources, this method loses some of the information inherent in the sources. What tips the balance in favor of this techniques is its capacity to keep all reported values within the bounds from 0 to 10: All countries in the CPI obtain scores between 0 (very corrupt) and 10 (highly clean). This characteristic is not obtained by an alternative technique that standardizes the mean and standard deviation of the sub-samples. Matching percentiles, on the other hand, guarantees that all standardized values are within these bounds. This results because any standardized value is taken from the previous year's CPI, which by definition is restricted to the aforementioned range.

In sum, matching percentiles has the disadvantage of wasting some information by processing only the ranks reported by sources. Yet, this disadvantage is offset because 1) the approach is free of assumptions regarding the distribution of sources, and 2) all standardized values remain within the range from 0 to 10.

Step 2

Having obtained standardized values that are all within the reported range, a simple average from these standardized values can be determined. As already argued before, the resulting index has a standard deviation which is smaller than that of the CPI of previous years. Without a second adjustment there would be a trend towards a continuously smaller diversity of scores. If, e.g., Finland were to repeat its score from the previous year, it would have to score best in all sources listing this country. If it scores second to best in any source, the standardized value it obtains after using matching percentiles and aggregation would be lower than its current score. Thus, given

some heterogeneity among sources, it seems inevitable that Finland's score would deteriorate. The opposite would be true of Bangladesh, which would obtain a better score if it is not consistently rated worst by all its sources. A second standardization is required in order to avoid a continuous trend to less diversity among scores.

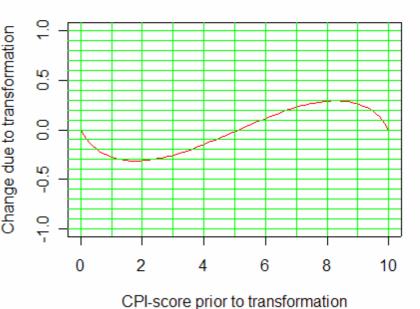However, applying a simple mean and standard deviation technique might again bring about values that range from 0 to 10. A more complicated standardization is required for the second step: A beta-transformation. The idea behind this monotonous transformation is to increase the standard deviation to its desired value, but to keep all values within the range from 0 to 10. Each value (X) is therefore transformed according to the following function:

$$10 * \int_0^1 (X/10)^{\alpha-1}(1-X/10)^{\beta-1}\,dX$$

This beta-transformation is available in standard statistics programs. The crucial task is to find the parameters α and β so that the resulting mean and standard deviation of the index have the desired values. An algorithm has been determined that carries out this task. Applying this approach to the 2003 CPI, the change in the scores is depicted by figure 1. The parameters are α= 1.24 and β=1.23. As shown in the figure, scores between 5 and 10 are increased slightly, while those between 0 and 5 are lowered.

This effect makes sure that the previous standard deviation is preserved. Yet, once a score of 10 has been reached, the score is not further increased. Equally, a

Figure 1: Beta Transformation

score of 0 is not further decreased. This guarantees that all values remain within the range.

The beta transformation is first applied to all values that were standardized in step 1. Afterwards the average of these are computed to determine a country's score. In our publication we also report the high-low range. This refers to all standardized values after carrying out the beta-transformation. This procedure ensured that the high-low range is consistently related to a country's mean value. All these values remain within the range from 0 to 10.

Reliability and Precision

A ranking of countries may easily be misunderstood as measuring the performance of a country with absolute precision. This is certainly not true. Since its start in 1995 TI has provided data on the standard deviation and the amount of sources contributing to the index. This data already serves to illustrate the inherent imprecision. Also the high-low range is provided in the main table. This depicts the highest and the lowest values provided by our sources, so as to portray the whole range of assessments. However, no quick conclusions should be derived from this range to the underlying

precision with which countries are measured. Countries which were assessed by 3 or 12 sources can have the same minimum and maximum values, but in the latter case we can feel much more confident about the country's score. In order to arrive at such measures of precision, other statistical methods are required.

The strength of the CPI is based on the concept that a combination of data sources combined into a single index increases the reliability of each individual figure. As in previous years, the 2003 CPI includes all countries for which at least

Table 1:[1] Pearson Correlation	IMD 2003	IMD 2001	IMD 2002	PERC 2001	GCR 2002	GCR 2003	GCR 2001	wBES 2001	EIU 2003	PwC 2001	FH 2003	TI/GI 2002	CU 2003	WMRC 2002	BEEPS02	Inf_Int2003	MDB 2002
IMD 2003	1.00	0.96	0.98	0.96	0.95	0.95	0.94	0.81	0.89	0.93	0.63	0.79	0.86	0.88	0.75	0.80	0.84
IMD 2001	0.96	1.00	0.98	0.91	0.96	0.96	0.94	0.84	0.91	0.87	0.54	0.77	0.83	0.89	0.68	0.69	0.73
IMD 2002	0.98	0.98	1.00	0.97	0.96	0.95	0.94	0.82	0.90	0.88	0.41	0.83	0.87	0.90	0.69	0.72	0.81
PERC 2001	0.96	0.91	0.97	1.00	0.90	0.89	0.97	0.94	0.84	0.97		0.82	0.91	0.97		0.67	0.84
GCR 2002	0.95	0.96	0.96	0.90	1.00	0.95	0.95	0.83	0.89	0.86	0.33	0.84	0.83	0.90	0.49	0.74	0.67
GCR 2003	0.95	0.96	0.95	0.89	0.95	1.00	0.93	0.80	0.89	0.88	0.74	0.80	0.79	0.89	0.81	0.83	0.71
GCR 2001	0.94	0.94	0.94	0.97	0.95	0.93	1.00	0.83	0.88	0.90	0.49	0.80	0.85	0.90	0.38	0.74	0.76
WBES 2001	0.81	0.84	0.82	0.94	0.83	0.80	0.83	1.00	0.81	0.80	0.61	0.58	0.83	0.79	0.94	0.75	0.54
EIU 2003	0.89	0.91	0.90	0.84	0.89	0.89	0.88	0.81	1.00	0.79	0.90	0.76	0.85	0.88	0.75	0.71	0.59
PwC 2001	0.93	0.87	0.88	0.97	0.86	0.88	0.90	0.80	0.79	1.00	0.65	0.70	0.83	0.76	0.44	0.73	0.63
FH 2003	0.63	0.54	0.41		0.33	0.74	0.49	0.61	0.90	0.65	1.00		0.77	0.82	0.60		0.80
TI/GI 2002	0.79	0.77	0.83	0.82	0.84	0.80	0.80	0.58	0.76	0.70		1.00	0.82	0.80		0.40	
CU 2003	0.86	0.83	0.87	0.91	0.83	0.79	0.85	0.83	0.85	0.83	0.77	0.82	1.00	0.76	0.72	0.70	0.75
WMRC 2002	0.88	0.89	0.90	0.97	0.90	0.89	0.90	0.79	0.88	0.76	0.82	0.80	0.76	1.00	0.45	0.77	0.64
BEEPS02	0.75	0.68	0.69		0.49	0.81	0.38	0.94	0.75	0.44	0.60		0.72	0.45	1.00		
Inf_Int2003	0.80	0.69	0.72	0.67	0.74	0.83	0.74	0.75	0.71	0.73		0.40	0.70	0.77		1.00	
MDB 2002	0.84	0.73	0.81	0.84	0.67	0.71	0.76	0.54	0.59	0.63	0.80		0.75	0.64			1.00

1) Only correlations that relate to at least 6 countries are reported

Table 2:[1] Kendall's Rank Correlation	IMD 2003	IMD 2001	IMD 2002	PERC 2001	WEF 2002	WEF 2003	WEF 2001	wBES 2001	EIU 2003	PwC 2001	FH 2003	TI/GI 2002	CU 2003	WMRC 2002	BEEPS02	II 2003	MDB 2002
IMD 2003	1.00	0.84	0.90	0.89	0.83	0.83	0.79	0.62	0.75	0.76	0.55	0.63	0.71	0.74	0.56	0.63	0.60
IMD 2001	0.84	1.00	0.88	0.79	0.85	0.82	0.79	0.66	0.79	0.67	0.49	0.60	0.69	0.76	0.64	0.50	0.37
IMD 2002	0.90	0.88	1.00	0.92	0.86	0.82	0.79	0.66	0.77	0.66	0.29	0.69	0.73	0.76	0.57	0.60	0.45
PERC 2001	0.89	0.79	0.92	1.00	0.80	0.75	0.92	0.62	0.65	0.89		0.76	0.70	0.91		0.59	0.59
WEF 2002	0.83	0.85	0.86	0.80	1.00	0.83	0.79	0.64	0.73	0.70	0.28	0.68	0.66	0.72	0.46	0.59	0.44
WEF 2003	0.83	0.82	0.82	0.75	0.83	1.00	0.75	0.59	0.69	0.68	0.55	0.58	0.57	0.70	0.71	0.60	0.47
WEF 2001	0.79	0.79	0.79	0.92	0.79	0.75	1.00	0.60	0.73	0.74	0.38	0.65	0.71	0.76	0.31	0.63	0.60
WBES 2001	0.62	0.66	0.66	0.62	0.64	0.59	0.60	1.00	0.63	0.39	0.45	0.53	0.53	0.56	0.87	0.70	0.32
EIU 2003	0.75	0.79	0.77	0.65	0.73	0.69	0.73	0.63	1.00	0.61	0.82	0.70	0.71	0.76	0.60	0.56	0.51
PwC 2001	0.76	0.67	0.66	0.89	0.70	0.68	0.74	0.39	0.61	1.00	0.69	0.67	0.69	0.56	0.24	0.42	0.47
FH 2003	0.55	0.49	0.29		0.28	0.55	0.38	0.45	0.82	0.69	1.00		0.64	0.61	0.46		0.69
TI/GI 2002	0.63	0.60	0.69	0.76	0.68	0.58	0.65	0.53	0.70	0.67		1.00	0.73	0.74		0.33	
CU 2003	0.71	0.69	0.73	0.70	0.66	0.57	0.71	0.53	0.71	0.69	0.64	0.73	1.00	0.53	0.53	0.51	0.56
WMRC 2002	0.74	0.76	0.76	0.91	0.72	0.70	0.76	0.56	0.76	0.56	0.61	0.74	0.53	1.00	0.35	0.62	0.54
BEEPS02	0.56	0.64	0.57		0.46	0.71	0.31	0.87	0.60	0.24	0.46		0.53	0.35	1.00		
II 2003	0.63	0.50	0.60	0.59	0.59	0.60	0.63	0.70	0.56	0.42		0.33	0.51	0.62		1.00	
MDB 2002	0.60	0.37	0.45	0.59	0.44	0.47	0.60	0.32	0.51	0.47	0.69		0.56	0.54			1.00

1) Only correlations that relate to at least 6 countries are reported

three sources had been available. The idea of combining data is that the nonperformance of one source can be balanced out by the inclusion of at least two other sources. This way, the probability of misrepresenting a country is seriously lowered. This is valid even in case the sources are not totally independent of each other. Such partial dependency may arise if some respondents are aware of other people's perception of the level of corruption, or of other sources contributing to the CPI.

An indicator for the overall reliability of the 2003 CPI can be drawn from the high correlation between the sources. This can be depicted from the standard Pearson correlation and Kendall's rank correlation, provided in tables 1 and 2. These data refer to all countries, even those not included in the CPI.[3] The correlations on average are 0.80 for the Pearson correlation and 0.65 for Kendall's rank correlation. The sources do not differ considerably in their assessment of levels of corruption.

In addition to these correlations, the reliability of each individual country score can be determined. The larger the number of sources and the lower the standard deviation between the sources, the more reliable is the value for a country. The relatively large standard deviation for Lithuania of 1.6 signifies that 95% of the sources range be-

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[3] Abbreviations are: BEEPS: Business Environment and Enterprise Performance Survey; CU: Columbia University; EIU: Economist Intelligence Unit; FH: Freedom House, Nations in Transit; II: Information International; IMD: World Competitiveness Report of the Institute for Management Development; MDB: A Multinational Development Bank; PERC: Political and Economic Risk Consultancy, Hong Kong; PwC: PricewaterhouseCoopers, Opacity Index; TI/GI: Gallup International on behalf of Transparency International; WBES: World Business Environment Survey of the World Bank; WEF: Global Competitiveness Report of the World Economic Forum; WMRC: World Markets Research Centre

tween a value of 1.7 and 7.7. In contrast, the low standard deviation for Luxembourg of 0.4 means that 95% of the scores range between 7.9 and 9.5.

Confidence range

We have been providing readers with the information on the confidence range for some years now. Up to 2001 this was based on the determination of the standard error for a country's average score and a resulting parametric assessment of a 95% confidence range. This approach required the assumption that there is no imprecision associated with the source's values and that these values are independent of each other. Another strong assumption required is that errors are normally distributed. While it is statistically difficult to relax the first two assumptions, one can relax the assumption of a normal distribution and apply tests which are valid throughout any type of distribution. Another drawback of the older confidence ranges was, again, that they sometimes violated the given range from 0 to 10. For example, while in 2001 Bangladesh had a score of 0.4, its 95% confidence range was between -3.6 and 4.4. For Finland, on the other hand, the range went as high as 10.4. This type of a range is confusing even to an expert. Since it is in contradiction to the official range reported, the public is equally disoriented.

In order to restrict the confidence range to our pre-specified limits, since 2002 we apply a different methodology: a nonparametric approach applying the bootstrap methodology. The principal idea of such a bootstrap confidence range is to resample the sources of a country with replacement. If five source values (3, 5, 4, 4.5, 4.2) had been given, an example of such a sample would be (5, 5, 4.2, 3, 3). A sufficiently large number of such samples (in our case 10,000) are drawn from the available vector of sources and the sample mean is determined in each case. Based on the distribution of the resulting means, inferences on the underlying precision can be drawn. The lower (upper) bound of a 90% confidence

range is then determined as the value where 5% of the sample's means are below (above) this critical value. In addition to the "percentile" method just described, more complicated approaches exist. First, the confidence levels can be adjusted if (on average) the mean of a bootstrap sample is smaller than the observed mean. The relevant parameter is called z_0. Another adjustment is to assume the standard deviation also to be dependent on the mean of the bootstrap sample. The relevant parameter is a. If both these adjustments are considered, the resulting approach is called a bootstrap-BC_a-method (bias-corrected-accelerated). A precise description of this approach can be obtained from Efron and Tibshirani (1993, chap. 14.3, 22.4 and 22.5).[4] One concern with the BC_a approach is that it is throwing a lot of machinery at very few observations. Due to statistical considerations, a simple method might prove superior. Brad Efron had therefore suggested the use of a BC-approach for our purpose. In this case, z_0 is determined endogenously from the bootstrap sample but a is set equal to zero. There are two interesting characteristics of the resulting confidence range.
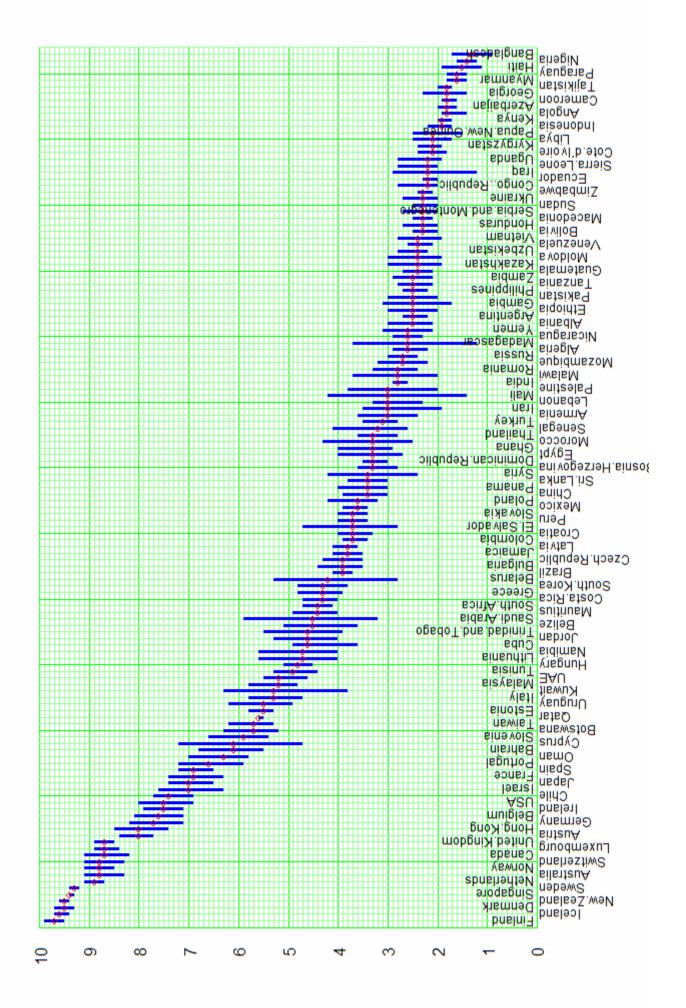
1) When requiring a 90% confidence range (which allows with 5% probability that the true value is below and with 5% probability that the value is above the determined confidence range) the upper (lower) bound will not be higher (lower) than the highest (lowest) value provided by a source. This implies that our range from 0 to 10 will never be violated.

2) The confidence range remains valid even if the data (i.e. the standardized values for a given country) are not normally distributed. The range is even free of assumptions with regard to the distribution of these data.

It should not be ignored that confidence ranges cannot be very solid when only very few sources are available. This is true for any methodology applied. Regardless of whether a normal distribution is assumed or a bootstrap approach is taken, the confidence range must not be overrated when few sources exist. It serves only as a rough guide in this case. Above that, there can arise boundary effects when only 3 or 4 sources exist. Since only 10 different combinations are possible in the case of 3 sources, a 5% confidence point can "hit" one resulting boundary. If this is the case, the BC-approach could produce at random two different values for the upper (or the lower) confidence point. These boundary effects have been identified and, if existent, the more conservative range is reported in the table.

The resulting confidence range is reported in our publications. It is also graphically illustrated in figure 2. On the web-sites www.gwdg.de/~uwvw and www.transparency.org we provide the complete data for each country: the score, amount of sources contributing, standard deviation, high-low range, the confidence range and the amount of independent institutions that contributed to an average value.

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[4] See Efron, B. and R. Tibshirani (1993), *An Introduction to the Bootstrap*, Chapman & Hall: New York and London: 202-219.

Figure 2: 2003 CPI and 90% confidence intervals

Survey sources for the TI Corruption Perceptions Index (CPI) 2003

Number	1	2	3
Source	World Economic Forum		
Name	Global Competitiveness Report		
Year	2001	2002	2003
Internet address	www.weforum.org		
Who was surveyed?	Senior business leaders; domestic and international companies		
Subject asked	Undocumented extra payments connected with import and export permits, public utilities and contracts, business licenses, tax payments or loan applications are common/not common.	In addition to questions mentioned on the left: payments connected to favorable regulations and judicial decisions	
Number of replies	4,022	ca. 4,600	7,741
Coverage	59 countries	76 countries	102 countries

Number	4	5	6
Source	Institute for Management Development, IMD, Switzerland		
Name	World Competitiveness Yearbook		
Year	2001	2002	2003
Internet address	www.imd.ch		
Who was surveyed?	Executives in top and middle management; domestic and international companies		
Subject asked	Bribing and corruption exist in the public sphere	Bribing and corruption exist in the economy	
Number of replies	3,678	3,532	> 4,000
Coverage	49 countries		51 countries

Number	7	8
Source	Information International	World Bank
Name	Survey of Middle Eastern Businesspeople	World Business Environment Survey
Year	2003	2001
Internet address	www.information-international.com	info.worldbank.org/governance/wbes/index 1.html
Who was surveyed?	Senior businesspeople from Bahrain, Lebanon and UAE	Senior managers
Subject asked	How common are bribes, how costly are they for doing business and how frequently are public contracts awarded to friends and relatives in neighboring countries	"Frequency of bribing" and "corruption as a constraint to business"
Number of replies	382 assessments from 165 respondents	10,090
Coverage	31 countries	79 countries[5]

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[5] The survey was carried out in 81 countries, but data for two countries was insufficient.

Number	9	10	11
Source	Economist Intelligence Unit	Freedom House	World Markets Research Centre
Name	Country Risk Service and Country Forecast	Nations in Transit	Risk Ratings
Year	2003	2003	2002
Internet address	www.eiu.com	www.freedomhouse.org	www.wmrc.com
Who was surveyed?	Expert staff assessment (expatriate)	Assessment by US academic experts and FH staff	Assessment by staff
Subject asked	Assessment of the pervasiveness of corruption (the misuse of public office for private or political party gain) among public officials (politicians and civil servants)	Perception of corruption in the civil service, the business interests of top policy makers, laws on financial disclosure and conflict of interest, and anticorruption initiatives.	Red tape and the likelihood of encountering corrupt officials. This includes small-scale bribes, larger-scale kickbacks and corporate fraud.
Number of replies	Not applicable	Not applicable	Not applicable
Coverage	139 countries	27 transition economies	186 countries

Number	12	13	14
Source	Columbia University (CU)	Political & Economic Risk Consultancy	PricewaterhouseCoopers
Name	State Capacity Survey	Asian Intelligence Issue	Opacity Index
Year	2002	2001	2001
Internet address		http://www.asiarisk.com/	www.opacityindex.com/
Who was surveyed?	US-resident country experts (policy analysts, academics and journalists)	Expatriate business executives	CFOs, equity analysts, bankers and PwC staff
Subject asked	Severity of corruption within the state	How do you rate corruption in terms of its quality or contribution to the overall living/working environment?	Frequency of corruption in various contexts (e.g. obtaining import/export permits or subsidies, avoiding taxes)
Number of replies	224	ca. 1,000	1,357
Coverage	95 countries	14 countries	34 countries

Number	15	16
Source	A Multilateral Development Bank	Gallup International on behalf of Transparency International
Name	Survey	Corruption Survey
Year	2002	2002
Internet address		www.transparency.org/surveys/index.html#bpi
Who was surveyed?	Experts within the bank were identified and multiple questionnaires (each relating to a different country) were sent out to them. Roughly 40% of the questionnaires were returned.	Senior businesspeople from 15 emerging market economies
Subject asked	How widespread is the incidence of corruption? (Widespread; Somewhat widespread; Somewhat limited; Limited; No judgment)	"How common are bribes to politicians, senior civil servants, and judges" and "how significant of an obstacle are the costs associated with such payments for doing business?"
Number of replies	398	835
Coverage	47 countries	21 countries

Number	17
Source	World Bank and the EBRD
Name	Business Environment and Enterprise Performance Survey
Year	2002
Internet address	info.worldbank.org/governance/beeps2002/
Who was surveyed?	Senior businesspeople
Subject asked	Frequency of irregular "additional payments"; how is corruption for the operation and growth of your business?
Number of replies	6500
Coverage	25 transition countries