

The Executive Opinion Survey: The Voice of the Business Community

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Since 1979 and its first report on the competitiveness of European industry, the World Economic Forum's annual survey has been a key ingredient of its research and benchmarking activities. The Executive Opinion Survey (the Survey) is the longest-running and most extensive survey of its kind. Box 1 retraces the history of this instrument, which is closely related to the history of the competitiveness report series. The Survey captures the opinions of business leaders around the world on a broad range of topics for which data sources are scarce or, frequently, nonexistent on a global scale. It helps to capture aspects of a particular domain—such as the extent of the skills gap, the level of corruption, or the intensity of market competition—that are more qualitative than hard data can provide. Thus it is an indispensable complement to the sources of data made available by international organizations and national statistical offices.

The indicators derived from the Survey are used in the calculation of the Global Competitiveness Index (GCI) and other Forum indexes, including the Networked Readiness Index, the Enabling Trade Index, the Travel & Tourism Competitiveness Index, and the Gender Gap Index, as well as in a number of regional studies.

A truly unique source of data, the Survey has also long been used by a number of international and nongovernmental organizations, think tanks, and academia for empirical and policy work. For example, Transparency International has been using the Survey data for the elaboration of their Corruption Perceptions Index and the Bribe Payers Index. Institutions such as the Organisation for Economic Co-operation and Development (OECD), the World Bank, and the International Monetary Fund (IMF) also refer to the Forum's Survey data in their publications, as do a number of academic publications. Finally, an increasing number of countries publish national competitiveness reports that draw on or refer to the Survey data.

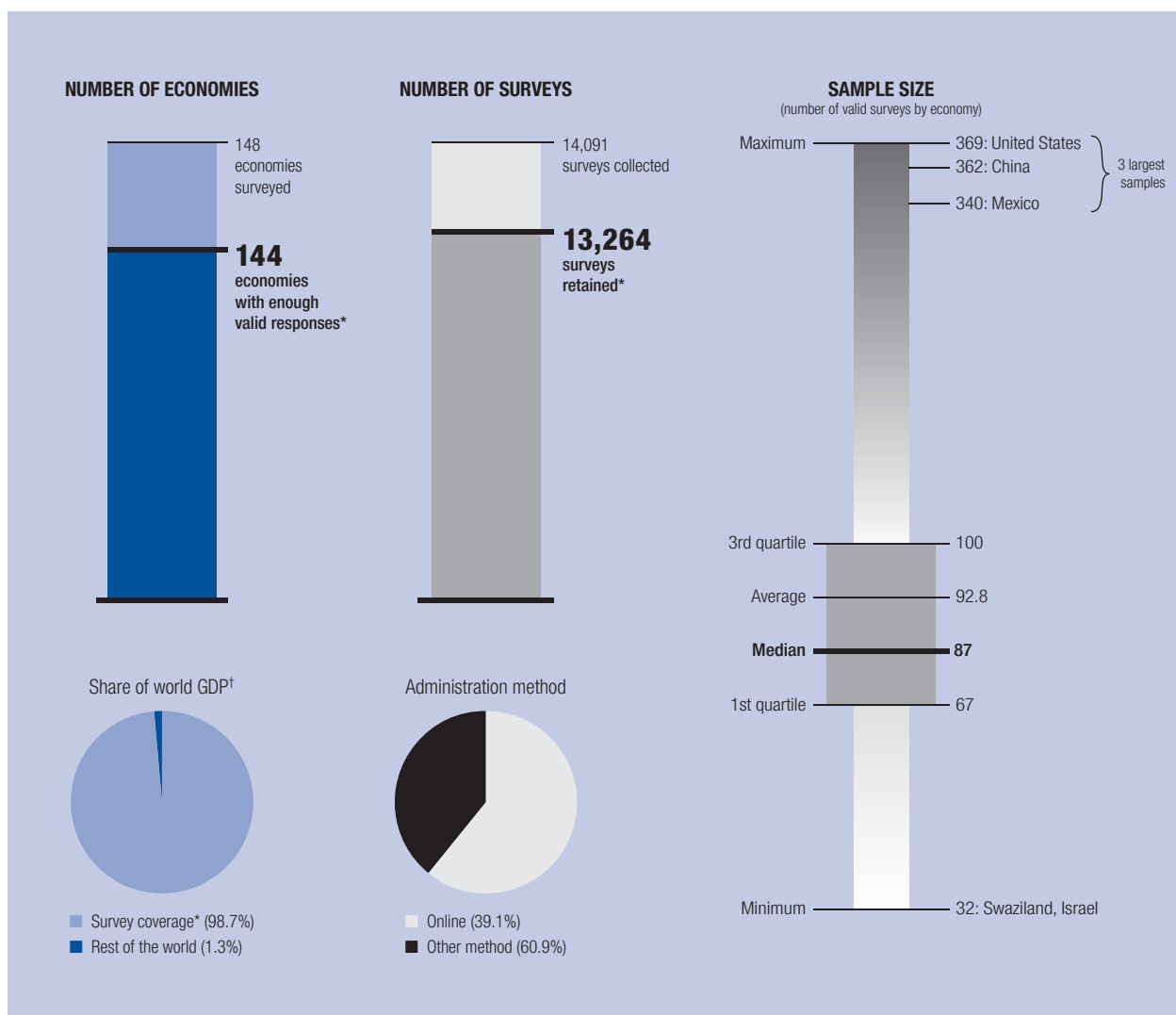
THE SURVEY IN NUMBERS

The 2014 edition of the Survey captured the opinions of over 14,000 business leaders in 148 economies between February and June 2014; because of data issues, out of the 148 economies surveyed, 144 are included in the GCI this year (please see the data treatment section below for further details). Figure 1 presents some key descriptive statistics. The Survey is available in 42 languages, of which 20 are available online (see Table 1). This year almost 40 percent of respondents took the Survey online. In 22 economies the Survey was administered entirely online, while in a further 16 over 90 percent of respondents completed the Survey online (see Table 2 for statistics about the administration approach).

Geographic coverage

Following a year of non-inclusion, Tajikistan is reinstated in the 2014 edition; however, no new economy is added

Figure 1: Descriptive statistics of the Executive Opinion Survey 2014



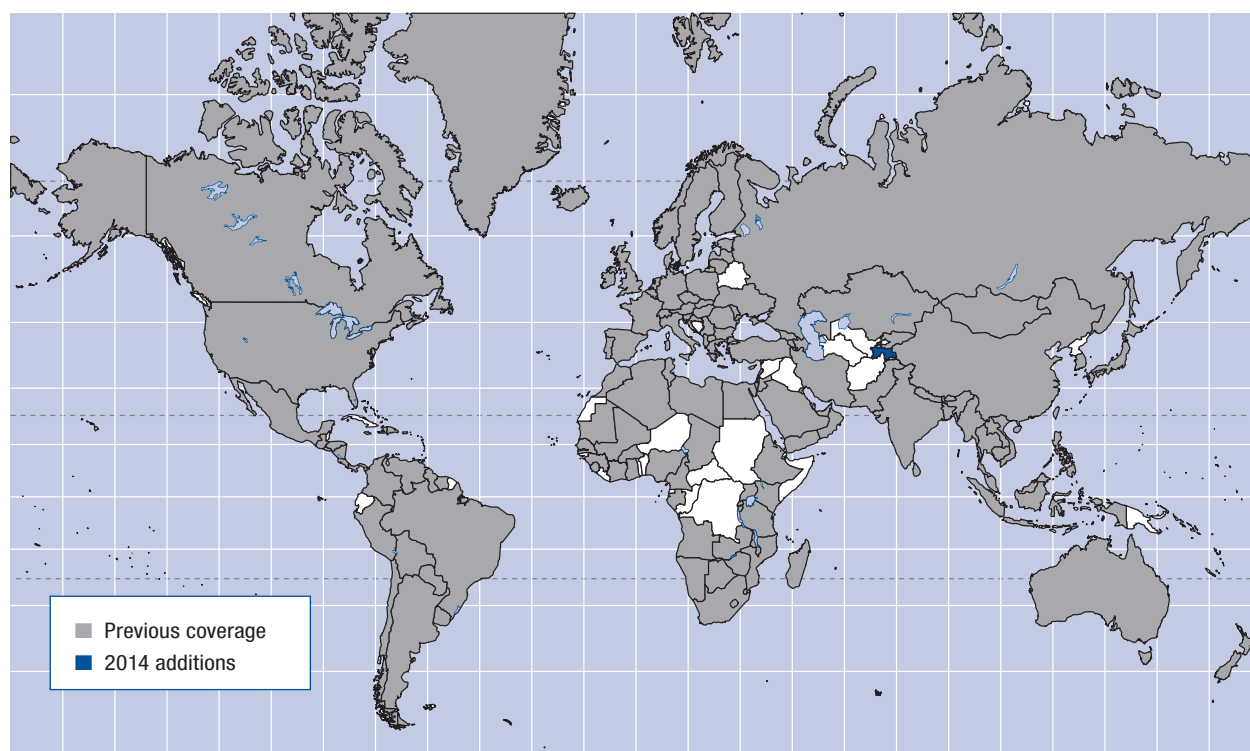
Source: International Monetary Fund, *World Economic Outlook* database, April 2014 edition.
 Note: Not all charts are drawn to scale.
 * Following data treatment. See text for details.
 † Based on purchasing power parity estimates.

Table 1: The 42 languages in which the 2014 Survey was available

Albanian	Croatian*	Hungarian*	Mongolian	Slovenian
Arabic*	Czech*	Italian	Montenegrin	Spanish*
Armenian	Danish	Japanese	Persian*	Thai
Azeri	Estonian*	Khmer	Polish*	Turkish*
Bosnian	English*	Korean	Portuguese*	Urdu
Brazilian Portuguese	French*	Laotian	Romanian	Vietnamese
Bulgarian	German*	Latvian*	Russian*	
Burmese	Greek*	Lithuanian*	Serbian	
Chinese*	Hebrew*	Macedonian	Slovak*	

* Language also available in the online Survey tool (20 languages).

Figure 2: Country/economy coverage of the Executive Opinion Survey



this year. The Survey was not completed to minimum requirements in Benin, Brunei Darussalam, or Liberia, and therefore those countries could not be included this year. Furthermore, Bosnia and Herzegovina and Ecuador are not included in this edition of the *Report* because of data quality concerns (see “Trend analysis and exceptions” below for more detail). The Forum’s Global Competitiveness and Benchmarking Network continues its efforts to increase country coverage year on year.

SURVEY STRUCTURE, ADMINISTRATION, AND METHODOLOGY

The Survey is divided into 14 sections:

- I. **About Your Company**
- II. **Overall Perceptions of Your Economy**
- III. **Infrastructure**
- IV. **Innovation and Technology Infrastructure**
- V. **Financial Environment**
- VI. **Foreign Trade and Investment**
- VII. **Domestic Competition**
- VIII. **Company Operations and Strategy**
- IX. **Government and Public Institutions**
- X. **Education and Human Capital**
- XI. **Corruption, Ethics and Social Responsibility**
- XII. **Travel & Tourism**
- XIII. **Environment**
- XIV. **Health**

Most questions in the Survey ask respondents to evaluate, on a scale of 1 to 7, one particular aspect of their operating environment. At one end of the scale, 1 represents the worst possible situation; at the other end of the scale, 7 represents the best (see Box 2 for an example).

The administration of the Survey could not be carried out without the network of over 160 Partner Institutes worldwide. Partner Institutes are recognized research or academic institutes, business organizations, national competitiveness councils, or other established professional entities and, in some cases, survey consultancies, that have the network and capacity to reach out to the business community, are reputable organizations, and have a firm commitment to improving the competitiveness conditions of their economies. The full list of Partner Institutes can be found at the beginning of this *Report*.¹

In administering the Survey, Partner Institutes are asked to follow detailed sampling guidelines to ensure that the sample of respondents is the most representative possible and is comparable across the globe and in a specific timeframe. The sampling guidelines have evolved over time and are based on best practices in the field of survey administration and on discussions with survey experts. The Survey sampling guidelines specify that the Partner Institute build a “sample frame”—that is, a list of potential business executives from small- and medium-sized enterprises and large companies—from the various

Table 2: Executive Opinion Survey: Descriptive statistics and weightings

Country/Economy	First component*			Second component: 2014 edition*		
	Survey edition	No. of respondents	Weight (%)*	No. of respondents	Online (%)	Weight (%)*
Albania	2013	81	45.3	79	—	54.7
Algeria	2013	65	40.1	97	—	59.9
Angola	2013	35	41.3	47	—	58.7
Argentina	2013	122	47.0	104	100.0	53.0
Armenia	2013	76	45.0	76	5.3	55.0
Australia	2013	57	43.2	66	100.0	56.8
Austria	2013	99	49.1	71	43.7	50.9
Azerbaijan	2013	85	44.6	88	—	55.4
Bahrain	2013	41	42.3	51	92.2	57.7
Bangladesh	2013	71	44.1	76	1.3	55.9
Barbados	2013	51	45.8	48	87.5	54.2
Belgium	2013	86	48.7	64	100.0	51.3
Bhutan	2013	85	46.9	73	—	53.1
Bolivia	2013	74	40.1	110	100.0	59.9
Botswana	2013	87	40.7	123	26.8	59.3
Brazil	2013	98	43.1	114	98.2	56.9
Bulgaria	2013	81	41.9	104	—	58.1
Burkina Faso	2013	57	50.6	36	—	49.4
Burundi	2013	110	47.0	94	—	53.0
Cambodia	2013	93	47.0	79	—	53.0
Cameroon	2013	81	44.8	82	—	55.2
Canada	2013	133	51.4	79	96.2	48.6
Cape Verde	2013	80	44.4	84	9.5	55.6
Chad	2013	102	50.0	68	—	50.0
Chile	2013	130	43.8	143	51.7	56.2
Colombia	2013	204	47.9	162	59.9	52.1
Costa Rica	2013	110	52.5	59	98.3	47.5
Côte d'Ivoire	2013	81	45.8	76	—	54.2
Croatia	2013	80	44.7	82	2.4	55.3
Cyprus	2013	63	47.4	52	—	52.6
Czech Republic	2013	50	39.7	77	100.0	60.3
Denmark	2013	173	53.0	89	1.1	47.0
Dominican Republic	2013	56	43.7	62	—	56.3
Timor-Leste	2013	34	43.0	40	—	57.0
Egypt	2013	60	38.8	100	—	61.3
El Salvador	2013	44	43.7	49	100.0	56.3
Estonia	2013	92	45.4	89	100.0	54.6
Ethiopia	2013	98	44.7	100	—	55.3
Finland	2013	40	42.5	49	100.0	57.5
Macedonia, FYR	2013	82	45.6	78	—	54.4
France	2013	80	35.2	184	80.4	64.8
Gabon	2013	59	49.8	40	20.0	50.2
Gambia, The	2013	76	43.6	85	—	56.4
Georgia	2013	74	49.6	51	98.0	50.4
Germany	2013	170	51.6	99	89.9	48.4
Ghana	2013	70	41.5	93	4.3	58.5
Greece	2013	91	45.9	85	91.8	54.1
Guatemala	2013	86	45.4	83	1.2	54.6
Guinea	2013	56	40.9	78	—	59.1
Guyana	2013	92	47.9	73	—	52.1
Haiti	2013	117	57.5	39	—	42.5
Honduras	2013	55	36.9	108	—	63.1
Hong Kong SAR	2013	60	44.4	63	65.1	55.6
Hungary	2013	88	43.5	99	82.8	56.5
Iceland	2013	91	45.9	85	100.0	54.1
India	2013	85	34.4	211	0.9	65.6
Indonesia	2013	87	44.6	90	—	55.4
Iran, Islamic Rep.	2013	121	42.2	152	100.0	57.8
Ireland	2013	55	45.7	52	100.0	54.3
Israel	2013	60	52.6	32	100.0	47.4
Italy	2013	85	44.7	87	1.1	55.3
Jamaica	2013	61	49.9	41	—	50.1
Japan	2013	115	52.1	64	6.3	47.9
Jordan†	2012	156	48.6	117	—	51.4
Kazakhstan	2013	107	43.2	124	10.5	56.8
Kenya	2013	100	43.5	113	—	56.5
Kuwait	2013	36	43.1	42	19.0	56.9
Kyrgyz Republic	2013	101	45.5	97	—	54.5
Lao PDR	2013	62	42.3	77	—	57.7
Latvia	2013	97	47.2	81	100.0	52.8
Lebanon	2013	39	44.7	40	97.5	55.3
Lesotho	2013	97	46.6	85	—	53.4
Libya	2013	63	50.6	40	15.0	49.4

(Cont'd.)

Table 2: Executive Opinion Survey: Descriptive statistics and weightings (cont'd.)

Country/Economy	First component*			Second component: 2014 edition*		
	Survey edition	No. of respondents	Weight (%)*	No. of respondents	Online (%)	Weight (%)*
Lithuania	2013	141	44.6	146	60.3	55.4
Luxembourg	2013	57	42.6	69	100.0	57.4
Madagascar	2013	157	50.7	99	—	49.3
Malawi	2013	55	44.3	58	22.4	55.7
Malaysia	2013	106	46.2	96	43.8	53.8
Mali	2013	94	46.3	85	—	53.7
Malta	2013	42	42.3	52	82.7	57.7
Mauritania	2013	88	43.7	98	—	56.3
Mauritius	2013	77	48.9	56	96.4	51.1
Mexico	2013	320	44.2	340	97.1	55.8
Moldova	2013	122	43.8	134	—	56.2
Mongolia	2013	86	45.7	81	—	54.3
Morocco	2013	82	51.8	47	80.9	48.2
Mozambique	2013	87	42.4	107	0.9	57.6
Myanmar	2013	79	43.9	86	1.2	56.1
Namibia	2013	79	45.3	77	—	54.7
Nepal	2013	93	46.3	84	1.2	53.7
Netherlands	2013	87	44.9	88	97.7	55.1
New Zealand	2013	37	43.7	41	100.0	56.3
Nicaragua	2013	69	52.9	36	91.7	47.1
Nigeria	2013	109	45.3	106	1.9	54.7
Norway	2013	68	42.1	86	100.0	57.9
Oman†	2012	78	42.5	95	31.6	57.5
Pakistan	2013	130	54.9	56	21.4	45.1
Panama	2013	130	44.9	131	38.9	55.1
Paraguay	2013	58	44.8	59	—	55.2
China	2013	364	45.1	362	0.3	54.9
Peru	2013	79	44.1	85	42.4	55.9
Philippines	2013	95	42.1	120	—	57.9
Poland	2013	208	45.5	200	98.0	54.5
Portugal	2013	100	40.8	140	76.4	59.2
Puerto Rico	2013	57	46.4	51	100.0	53.6
Qatar	2013	106	45.4	103	5.8	54.6
Korea, Rep.	2013	81	42.4	100	—	57.6
Montenegro	2013	78	42.5	95	—	57.5
Serbia	2013	100	45.0	100	—	55.0
Romania	2013	103	49.4	72	—	50.6
Russian Federation	2013	294	45.8	276	0.4	54.2
Rwanda‡	2013	81	100.0	n/a	n/a	n/a
Saudi Arabia	2013	139	41.7	181	72.4	58.3
Senegal	2013	98	44.7	100	—	55.3
Seychelles	2013	31	36.5	63	—	63.5
Sierra Leone	2013	99	45.9	92	—	54.1
Singapore	2013	150	44.0	163	60.7	56.0
Slovak Republic	2013	114	48.6	85	84.7	51.4
Slovenia	2013	98	46.9	84	1.2	53.1
South Africa	2013	47	42.4	58	96.6	57.6
Spain	2013	84	46.3	76	75.0	53.8
Sri Lanka	2013	100	45.4	97	—	54.6
Suriname	2013	50	49.1	36	100.0	50.9
Swaziland	2013	32	45.0	32	31.3	55.0
Sweden	2013	45	41.0	62	98.4	59.0
Switzerland	2013	71	44.7	73	100.0	55.3
Taiwan, China	2013	71	43.1	83	37.3	56.9
Tajikistan‡‡	—	—	—	97	—	100.0
Tanzania	2013	92	44.5	96	—	55.5
Thailand	2013	86	43.0	101	99.0	57.0
Trinidad and Tobago	2013	132	42.2	165	99.4	57.8
Tunisia	2013	84	44.9	85	76.5	55.1
Turkey	2013	94	45.8	88	47.7	54.2
Uganda	2013	93	45.4	90	—	54.6
Ukraine	2013	108	45.4	105	1.0	54.6
United Arab Emirates†	2012	169	45.9	157	21.0	54.1
United Kingdom	2013	118	49.9	79	100.0	50.1
United States	2013	598	50.9	369	100.0	49.1
Uruguay	2013	92	44.1	99	46.5	55.9
Venezuela	2013	54	48.7	40	100.0	51.3
Vietnam	2013	109	46.7	95	7.4	53.3
Yemen	2013	72	48.8	53	—	51.2
Zambia	2013	85	48.0	67	—	52.0
Zimbabwe	2013	57	47.7	46	56.5	52.3
Grand total/average				13,264	39.1	

Notes: Bold typeface identifies economies where the Survey was conducted entirely online. All statistics were computed following the edition of the data. See text for details.

Survey edition(s) used for the computation of economy scores: † 2012 and 2014; ‡ 2013; ‡‡ 2014. See Box 2 for details about exceptions.

* Weight applied to the country score in that edition of the Survey. See Box 4 for details.

Box 1: A brief history of the Executive Opinion Survey and *The Global Competitiveness Report*

The Global Competitiveness Report began as a research project by Professor Klaus Schwab in 1979. The report, entitled *The Competitiveness of European Industry*, would later become the annual *Global Competitiveness Report*. This first report was an analysis of the competitiveness of 16 European countries. The study was based on Schwab's innovative concept of competitiveness, which extended beyond the traditional notion of labor and capital productivity. *Competitiveness*, in that early report, was defined as the ability of one enterprise to do as well as, or outperform, another company or group of companies while taking into account the framework conditions in the country.

That year, of the 200 indicators selected for the Forum's first competitiveness index, 50 were derived from a survey. The survey was mailed out in English, French, and German to potential respondents throughout Europe, mainly Chief Executive or Chief Planning Officers of European companies; Managing Directors of subsidiaries of US companies operating in these 16 countries, leading representatives of industrial and employers' associations, labor unions, economic and social institutes; university faculties of economics or business administration; and the economic media. Median values were calculated for each question and by country. In parallel, Forum researchers visited statistical offices and ministries in order to gather relevant quantitative data. The report was finalized in November 1979. The Forum's work on competitiveness and its various indexes has therefore been including a mix of proprietary survey data and statistics from international organizations since its very inception.

The report was the first attempt to support policymakers and business leaders in their efforts to formulate improved economic policies and institutional reforms. In the minds of its authors, "an undertaking of this dimension can never be perfect, certainly not in its first publication. It will be enriched, in the future, by the comments and suggestions of its readers."¹

Thirty-five years later, as envisioned by Professor Schwab, *The Global Competitiveness Report* has grown to cover over 140 economies to assess the key drivers of development. The methodology underpinning the analysis has been improved over the years in order to reflect the newest thinking in matters of economic growth. Since 2005, the Global Competitiveness Index has provided the methodology used to conduct the assessment. This evolution has been achieved while keeping true to the original objective of supporting policymakers and business leaders in their efforts to formulate improved economic policies and institutional reforms.

In parallel to this development of the index, the original survey has evolved and is today known as the Executive Opinion Survey (the Survey). Over the years, it has undergone a number of revisions and audits, which have enabled an improved administration process and methodology. The Survey has grown in scope, too. It now includes over 140 questions distributed in 14 sections. And it largely influences the coverage of the Forum's global indexes: in most cases, an economy not included in the Survey cannot be covered by an index.

Note

1 European Management Forum 1979.

sectors of activity, as detailed below. It then applies a dual stratification procedure based on these two criteria of company size and sector. Specifically, the Partner Institutes are asked to carry out the following steps:

1. Prepare a "sample frame," or large list of potential respondents, which includes firms representing the main sectors of the economy (agriculture, manufacturing industry, non-manufacturing industry, and services).
2. Separate the frame into two lists: one that includes only large firms, and a second list that includes all other firms (both lists representing the various economic sectors).²
3. Based on these lists, and in view of reducing survey bias, choose a random selection of these firms from both lists to receive the Survey.

Furthermore, the sampling guidelines specify that the Partner Institute should aim to collect a combination of random respondents with some repeat respondents for further comparative analysis.³ The Survey is

administered in a variety of formats, including face-to-face or telephone interviews with business executives, mailed paper forms, and online surveys. For energy, time, and cost considerations, the Forum encourages the use of the online survey tool. However, deciding which of these differing methodologies to use may be based on the particular country's infrastructure, distance between cities, cultural preferences, and other such issues.

The Partner Institutes also play an active and essential role in disseminating the findings of *The Global Competitiveness Report* and other reports published by The Global Competitiveness and Benchmarking Network by holding press events and workshops to highlight the results at the national level to the business community, the public sector, and other stakeholders.

Striving for excellence

The Global Competitiveness and Benchmarking Network has, over the years, always given great importance to reflecting the newest thinking in matters of development and measurement of economic growth as well as to applying surveying best practices. To this end, it has

undertaken two audits since 2008 as well as yearly reviews of both the Index and the Survey.

An initial external audit by a team of survey experts from Gallup was performed in 2008. Four years after implementing the recommendations from the first audit, a second audit was conducted in 2012 by Gallup. During this second audit, the Survey instrument, the sampling guidelines, and the administration process underwent a thorough review. The review took a twofold approach, analyzing the recommendations and their impact on the process as well as keeping up to date on best practices in the field of surveying. Overall, the outcome of the review regarding the implementation of the 2008 recommendations was commendable; the review determined that the Executive Opinion Survey process followed best practices and made the improvements noted in both the Survey tool and translations as well as in sampling quality. Box 3 presents some statistics about the Survey's demographics and reveals that the sample of respondents is very diverse.

The 2012 audit addressed an important aspect related to the impact of national culture—the so-called cultural bias—that may impact interviewee responses. The Global Competitiveness and Benchmarking Network recognizes this as a possibility; nonetheless, following international best practices and upon Gallup's recommendation, the Forum decided not to re-weight the data using vignettes because of the limited effectiveness of such a procedure and to prevent introducing additional noise into the data that occurs with such an approach.

In the context of the GCI revision (see Chapter 1.1), the Survey will undergo a full review in the Fall of 2014. Along with updating some questions, following expert recommendations, the Survey will be shortened and its terminology simplified.

With such ongoing efforts in the realm of survey administration best practice, the Global Competitiveness and Benchmarking Network team continues to improve processes to achieve greater data accuracy and heightened comparability across economies.

DATA TREATMENT AND SCORE COMPUTATION

This section details the process whereby individual responses are edited and aggregated in order to produce the scores of each economy on each individual question of the Survey. These results, together with other indicators obtained from other sources, feed into the GCI and other research projects.⁴

Data editing

Prior to aggregation, the respondent-level data are subjected to a thorough editing process. A first series of tests is run to identify and exclude those surveys whose patterns of answers demonstrate a lack of sufficient focus on the part of the respondents. Surveys with a

Box 2: Example of a typical Survey question

In your country, how strong is the protection of intellectual property, including anti-counterfeiting measures?

Extremely weak < 1 2 3 4 5 6 7 > Extremely strong

Circling 1... means you agree completely with the answer on the left-hand side

Circling 2... means you largely agree with the left-hand side

Circling 3... means you somewhat agree with the left-hand side

Circling 4... means your opinion is indifferent between the two answers

Circling 5... means you somewhat agree with the right-hand side

Circling 6... means you largely agree with the right-hand side

Circling 7... means you agree completely with the answer on the right-hand side

completion rate inferior to 50 percent are excluded.⁵ Surveys with straight answers (e.g., only 4s or only 1s) are also excluded. The very few cases of duplicate surveys—which can occur, for example, when a survey is both completed online and mailed in—are also excluded in this phase.

In a second step, a multivariate test is applied to the data using the Mahalanobis distance method. This test estimates the probability that an individual survey in a specific country “belongs” to the sample of that country by comparing the pattern of answers of that survey against the average pattern of answers in the country sample.

More specifically, the Mahalanobis distance test estimates the likelihood that one particular point of N dimensions belongs to a set of such points. One single survey made up of N answers can be viewed as the point of N dimensions, while a particular country sample c is the set of points. The Mahalanobis distance is used to compute the probability that any individual survey i does not belong to the sample c . If the probability is high enough—we use 99.9 percent as the threshold—we conclude that the survey is a clear outlier and does not “belong” to the sample. The implementation of this test requires that the number of responses in a country be greater than the number of answers, N , used in the test. The test uses 52 questions, selected by their relevance and placement in the Survey instrument.

A univariate outlier test is then applied at the country level for each question of each survey. We use

Box 3: Insights from the Executive Opinion Survey 2014

The respondents of the Executive Opinion Survey largely reflect the characteristics and diversity of the economic fabric of the countries covered. They also demonstrate the efforts undertaken by the Partner Institutes to follow the sampling guidelines. Figure 1 presents selected statistics about the Survey’s demographics.

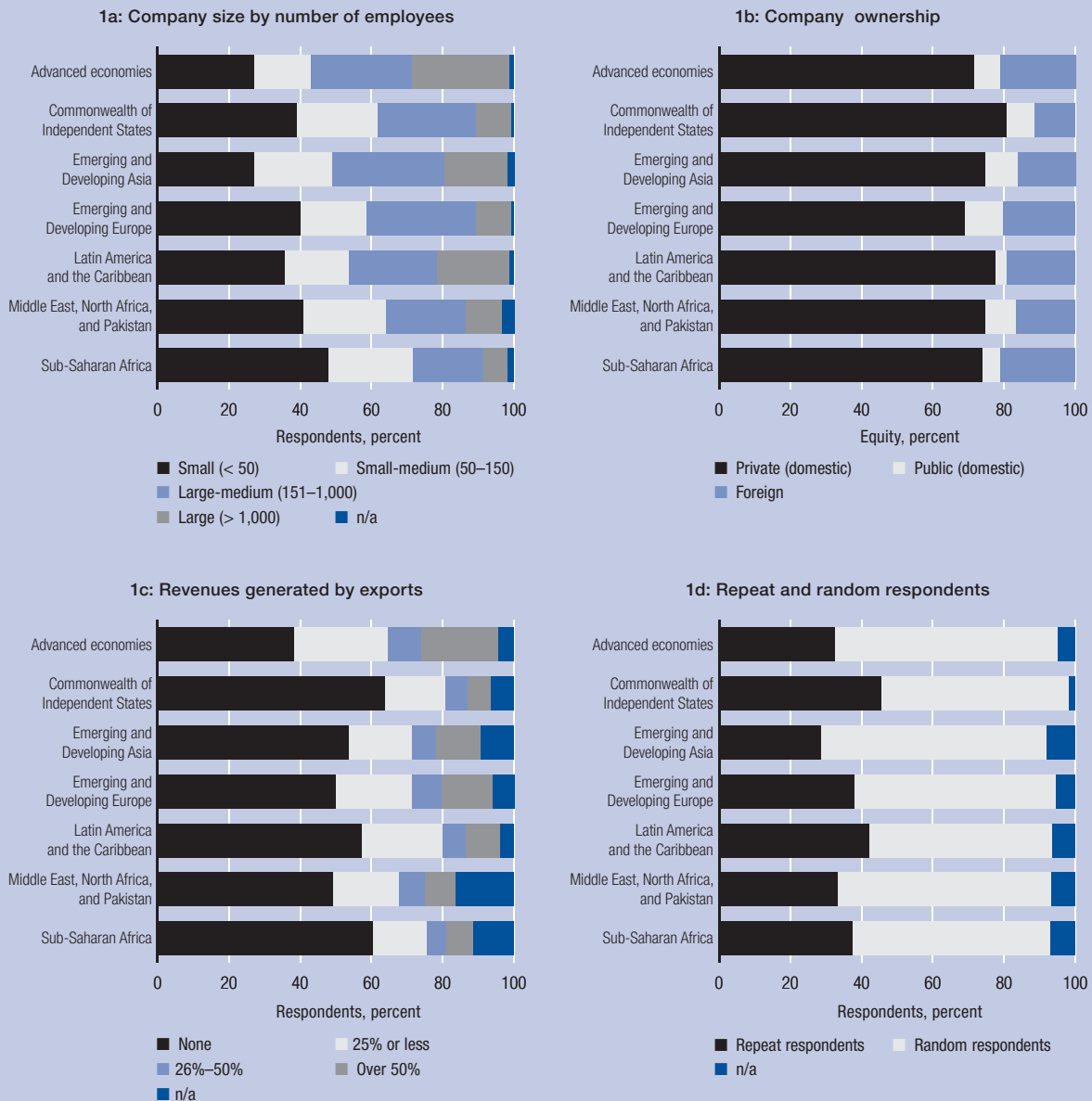
Because small- and medium-sized enterprises (SMEs) account for a large share of economic activities in most countries, the Survey aims to collect the opinion of executives from those smaller companies (Figure 1a). Indeed, small enterprises, defined here as those with fewer than 50 employees, account for 27 percent of the sample in *Advanced Economies* and *Emerging and Developing Asia* and for 48 percent in *Sub-Saharan Africa*, also reflecting the respective economic structure of these regions. The Partner Institutes are asked to collect a mix of SMEs and large companies.

The Survey also aims to capture the diversity of companies in terms of ownership (Figure 1b). On average, 19 percent of the surveyed companies’ equity is owned by foreigners (as either minority or majority shareholders).

Further, the Survey sampling also aims to ensure the coverage of a variety of non-exporting and exporting companies (Figure 1c). Regular exporters (companies for which exports account for more than 50 percent of revenues) account for just 6 percent of the sample in the *Commonwealth of Independent States* and as much as 22 percent in *Advanced Economies*.

Finally, in alignment with the Forum’s sampling guidelines, approximately a third of the 2014 Survey respondents are “repeat” respondents—that is to say, they are executives who have previously taken part in the Survey (Figure 1d). This improves the comparability of data across years.

Figure 1: Executive Opinion Survey: Respondent profile



the standardized score—or “z-score”—method, which indicates by how many standard deviations any one individual answer deviates from the mean of the country sample. Individual answers with a standardized score greater than 3 are dropped.

Aggregation and computation of country averages

Through 2013, the computation of country averages used a weighting by economic sector: averages of individual responses were computed for the four main economic sectors (agriculture, manufacturing industry, non-manufacturing industry, and services) in a given country. Country averages were then derived by taking a weighted average of the sector averages using the estimated contributions of each sector to a country's GDP as weights. The aim was to obtain a more representative average.

However, while appealing in theory, this approach presents a number of implementation challenges and limitations. First, in many countries covered by the Survey, information about economic structure is not reliable or is subject to significant revision. Special treatment is also required for 10 countries for which the breakdown of industry between manufacturing and non-manufacturing is not available. Second, the structure of the sample of responses might end up differing significantly from the actual structure of the economy, despite the efforts of our Partner Institutes, especially in challenging environments where the administration of the Survey is difficult. Third, in some major petroleum- and gas-producing countries, a handful of very large companies account for a sizeable share of the non-manufacturing sector. This means that attempting to mirror the structure of the economy would result in assigning a very high individual weight to the respondent from those companies. A related issue arises if none of those companies are surveyed, in which case the non-manufacturing sector is not represented at all in the country sample. Elsewhere, where agriculture still accounts for a large share of an economy, the agriculture sector tends to be under-represented in the Survey sample because of the difficulty of identifying respondents in that sector who have an international perspective. The issue of sectoral representation tends to be exacerbated when the sample of respondents is small.

In the presence of unbalanced samples, we used to limit the maximum implicit weight of an individual response in the sample to 10 percent.⁶ In some extreme cases, where a sample size was too small or the sectoral representation too different from the actual structure of the economy, this mechanism was not sufficient to prevent an individual response from receiving a disproportionate weight. In such a case, the economic sector stratification average was abandoned and a simple average of the surveys was applied.

For all these reasons, this year we decided to revert back to using a simple average to compute scores of all countries. Therefore, every individual response carries the same implicit weight, regardless the company's sector of activity. Yet, as explained above, we will continue to work with our Partner institutes to obtain samples of respondents that are as representative as possible.

Formally, the country average of a Survey indicator i for country c , denoted $q_{i,c}$, is computed as follows:

$$q_{i,c} = \frac{\sum_j^{N_{i,c}} q_{i,c,j}}{N_{i,c}}$$

where

$q_{i,c,j}$ is the answer to question i in country c from respondent j ; and

$N_{i,c}$ is the number of respondents to question i in country c .

Moving average and computation of country scores

As a final step, the country averages for 2014 are combined with the 2013 averages to produce the country scores that are used for the computation of the GCI 2014–2015 and for other projects.⁷

This moving average technique, introduced in 2007, consists of taking a weighted average of the most recent year's Survey results together with a discounted average of the previous year. There are several reasons for doing this. First, it makes results less sensitive to the specific point in time when the Survey is administered. Second, it increases the amount of available information by providing a larger sample size. Additionally, because the Survey is carried out during the first quarter of the year, the average of the responses in the first quarter of 2013 and first quarter of 2014 better aligns the Survey data with many of the data indicators from sources other than the Survey, which are often year-average data.

To calculate the moving average, we use a weighting scheme composed of two overlapping elements. On one hand, we want to give each response an equal weight and, therefore, place more weight on the year with the larger sample size. At the same time, we would like to give more weight to the most recent responses because they contain more updated information. That is, we also “discount the past.” Table 2 reports the exact weights used in the computation of the scores of each country, while Box 4 details the methodology and provides a clarifying example.

Trend analysis and exceptions

The two tests described above address variability issues among individual responses in a country. Yet they were not designed to track the evolution of country scores across time. We therefore carry out an analysis to assess the reliability and consistency of the Survey data over

Box 4: Country/economy score calculation

This box presents the method applied to compute the country scores for the vast majority of economies included in *The Global Competitiveness Report 2014–2015* (see text for exceptions).

For any given Survey question i , country c 's final score, $q_{i,c}^{2013-14}$, is given by:

$$q_{i,c}^{2013-14} = w_c^{2013} \times q_{i,c}^{2013} + w_c^{2014} \times q_{i,c}^{2014} \quad (1)$$

where

$q_{i,c}^t$ is country c 's score on question i in year t , with $t = 2013, 2014$, as computed following the approach described in the text; and

w_c^t is the weight applied to country c 's score in year t (see below).

The weights for each year are determined as follows:

$$w_c^{2013} = \frac{(1-\alpha) + \frac{N_c^{2013}}{N_c^{2013} + N_c^{2014}}}{2} \quad (2a) \quad \text{and} \quad w_c^{2014} = \frac{\alpha + \frac{N_c^{2014}}{N_c^{2013} + N_c^{2014}}}{2} \quad (2b)$$

where N_c^t is the sample size (i.e., the number of respondents) for country c in year t , with $t = 2013, 2014$. α is a discount factor. Its value is set at 0.6. That is, the 2013 score of country c is given 2/3 of the weight given to the 2014 score.

Plugging Equations (2a) and (2b) into (1) and rearranging yields:

$$q_{i,c}^{2013-14} = \frac{1}{2} \times (1-\alpha) \times q_{i,c}^{2013} + \frac{1}{2} \times \alpha \times q_{i,c}^{2014} + \frac{1}{2} \times \frac{N_c^{2013}}{N_c^{2013} + N_c^{2014}} \times q_{i,c}^{2013} + \frac{1}{2} \times \frac{N_c^{2014}}{N_c^{2013} + N_c^{2014}} \times q_{i,c}^{2014} \quad (3)$$

discounted-past weighted average
sample-size weighted average

In Equation (3), the first component of the weighting scheme is the discounted-past weighted average. The second component is the sample-size weighted average. The two components are given half-weight each. One additional characteristic of this approach is that it prevents a country sample that is much larger in one year from overwhelming the smaller sample from the other year.

(Cont'd.)

time. As part of this analysis, we run an inter-quartile range test, or IQR test, to identify large swings—positive and negative—in the country scores. More specifically, for each country we compute the year-on-year difference, d , in the average score of a core set of 62 Survey questions. We then compute the inter-quartile range (i.e., the difference between the 25th percentile and the 75th percentile), denoted IQR , of the sample of 146 economies.⁸ Any value d lying outside the range bounded by the 25th percentile minus 1.5 times IQR and the 75th percentile plus 1.5 times IQR is identified as a potential outlier. Formally, we have:

$$\begin{cases} \text{lower bound} = Q1 - 1.5 \times IQR \\ \text{upper bound} = Q3 + 1.5 \times IQR \end{cases}$$

where

$Q1$ and $Q3$ correspond to the 25th and 75th percentiles of the sample, respectively, and IQR is the difference between these two values.

This test allows for the identification of potentially problematic countries, which display large upward or downward swings or repeated and significant changes over several editions. The IQR test is complemented by a series of additional empirical tests, including an analysis of five-year trends and a comparison of changes in the Survey results with changes in other indicators capturing similar concepts. We also conduct interviews of local experts and consider the latest developments in a country in order to assess the plausibility of the Survey results.

Based on these quantitative and qualitative analyses, the 2014 Survey data collected in Bosnia and Herzegovina, Ecuador, and Rwanda deviate significantly from the historical trends, and recent developments in these countries do not seem to provide enough justification for the large swings observed. In the case of Rwanda, we use only the 2013 Survey data in the computation of the Survey scores (see the Exceptions section in Box 4). Rwanda therefore is still covered in the GCI 2014–2015. Although this remains a remedial

Box 4: Country/economy score calculation (cont'd.)

The formula is easily generalized. For any two consecutive editions t_1 and t_2 of the Survey, country c 's final score on question i is computed as follows:

$$q_{i,c}^{t_1-t_2} = \frac{1}{2} \times \left[(1-\alpha) \times q_{i,c}^{t_1} + \alpha \times q_{i,c}^{t_2} \right] + \frac{1}{2} \times \left[\frac{N_c^{t_1}}{N_c^{t_1} + N_c^{t_2}} \times q_{i,c}^{t_1} + \frac{N_c^{t_2}}{N_c^{t_1} + N_c^{t_2}} \times q_{i,c}^{t_2} \right]. \quad (4)$$

Exceptions

As described in the text, there are a number of exceptions to the approach described above. In describing them below, we use actual years—rather than letters—in equations for the sake of concreteness.

In the case of Survey questions that were introduced in 2014, where, by definition, no past data exist, the weight applied to the 2013 score is $w_c^{2013} = 0$ and the weight applied to the 2014 score is $w_c^{2014} = 1$. Equation (1) simply is $q_{i,c}^{2013-14} = q_{i,c}^{2014}$. The same is true for Tajikistan, which was reinstated in 2014. In this case, we have $q_{i,c}^{2013-14} = q_{i,c}^{2014}$.

In the case of countries that failed the inter-year robustness check, the weight applied is $w_c^{2013} = 1$ and $w_c^{2014} = 0$, so that Equation (1) simply becomes $q_{i,c}^{2013-14} = q_{i,c}^{2013}$. In the case of countries that failed the inter-year robustness check last year and for which the 2013 data were discarded, we use the Survey data from 2012 instead, and combine them with those of 2014 to compute the scores. Equation (1) then becomes $q_{i,c}^{2012-2014} = w_c^{2012} \times q_{i,c}^{2012} + w_c^{2014} \times q_{i,c}^{2014}$.

Example of score computation

For this example, we compute the score of Tanzania for indicator 5.08 Extent of staff training, which is derived from the following Survey question: "In your country, to what extent do companies invest in training and employee development? [1 = not at all; 7 = to a great extent]." This question is *not* a new Survey question and Tanzania did not fail the inter-year robustness test either this year or last year. Therefore, the general case of Equation (1) applies. Tanzania's score was 3.76 in 2013 and 3.31 in 2014. The weighting scheme described above indicates how the two scores are combined. In Tanzania, the size of the sample was 92 in 2013 and 96 in 2014. Using $\alpha = 0.6$ and applying Equations (2a) and (2b) yields weights of 44.5 percent for 2013 and 55.5 percent for 2014 (see Table 2). The final country score for this question is given by Equation (1):

$$\underbrace{0.445 \times 3.76}_{2013} + \underbrace{0.555 \times 3.31}_{2014} = 3.51.$$

This is the final score used in the computation of the GCI and reported in Table 5.08 (see page 463). Although numbers are rounded to two decimal places in this example and to one decimal place in the data tables, exact figures are used in all calculations.

measure, we will continue to investigate the situation over the coming months in an effort to improve the reliability of the Survey data in this country.

Last year, the same analysis resulted in the Survey data of four countries—Bosnia and Herzegovina, Jordan, Oman, and United Arab Emirates—being dismissed. This year, as an intermediate step toward the re-establishment of the standard computation method, we used a weighted average of the Survey data of 2012 and 2014 for these countries, with the exception of Bosnia and Herzegovina described further below.

In the case of Bosnia and Herzegovina, we observe a very high degree of volatility in the Survey results over the past four years. For Ecuador, the trend exhibited by the Survey results over the past four years is not corroborated by developments on the ground during that period. Therefore, as an exceptional measure, both countries are excluded from this year's coverage. We will work closely with the respective Partner Institutes to improve the administration process and the reliability of

the data, with the aim of reinstating both countries in the near future.

CONCLUSION

Since 1979, the World Economic Forum has been conducting a survey to gather perception data for its research on competitiveness. Over the years, the Executive Opinion Survey has become the largest poll of its kind, this year collecting the insight of more than 14,000 executives into critical drivers of their respective countries' development. This scale could not be achieved without the tremendous efforts of the Forum's network of over 160 Partner Institutes in carrying out the Survey at a national level. The Survey gathers valuable information on a broad range of variables for which data sources are scarce or nonexistent. For this reason, and for the integrity of our publication and related research, sampling thoroughness and comparability across the globe remain an essential and ongoing endeavor of The Global Competitiveness and Benchmarking Network.

NOTES

- 1 The World Economic Forum's Global Competitiveness and Benchmarking Network would like to acknowledge e-Rewards Market Research for carrying out the Executive Opinion Survey 2014 in the United States, following the detailed sampling guidelines. Furthermore, e-Rewards supplemented a sample in Germany and Sweden, as well as France.
- 2 *Company size* is defined as the number of employees of the firm in the country of the Survey respondent. The company size value used for delineating the large and small company sample frames varies across countries. The size value tracks closely with the overall size of the economy. Adjustments were made to the value based on searches in company directories and data gathered through the administration of the Survey in past years.
- 3 In order to reach the required number of surveys in each country (80 for most economies and 300 for the BRIC countries and the United States), a Partner Institute uses the response rate from previous years.
- 4 The *results* are the *scores* obtained by each economy in the various questions of the Survey. The two terms are used interchangeably throughout the text.
- 5 The *completion rate* is the proportion of answered questions among a subset of questions in the survey instrument. These 123 core questions are all numerical questions of sections II through XI.
- 6 Practically, under the old approach, when, for a particular country, the ratio of the weight of one sector in the economy to the percentage of surveys from that sector in the country sample exceeded 5, the sector weight used for the weighted average was capped at five times the percentage of surveys from that sector in the sample. The weights of the other sectors were then adjusted proportionally to their weight in the country's GDP.
- 7 The 2013 scores were computed using a sector-weighted average.
- 8 The Survey was conducted in 148 economies in 2014. However, in Brunei Darussalam and Liberia there were not enough responses collected for inclusion. Therefore, those two countries were excluded prior to carrying out the IQR test.

REFERENCE

European Management Forum. 1979. *The Competitiveness of European Industry*. Geneva: European Management Forum.