

## Executive Opinion Survey: Capturing the Voice of the Business Community

**CIARA BROWNE**, World Economic Forum

**RICHARD BRYDEN**, Institute for Strategy and Competitiveness,  
Harvard Business School

**MERCEDES DELGADO**, Institute for Strategy and Competitiveness,  
Harvard Business School, and Fox School of Business, Temple  
University

**THIERRY GEIGER**, World Economic Forum

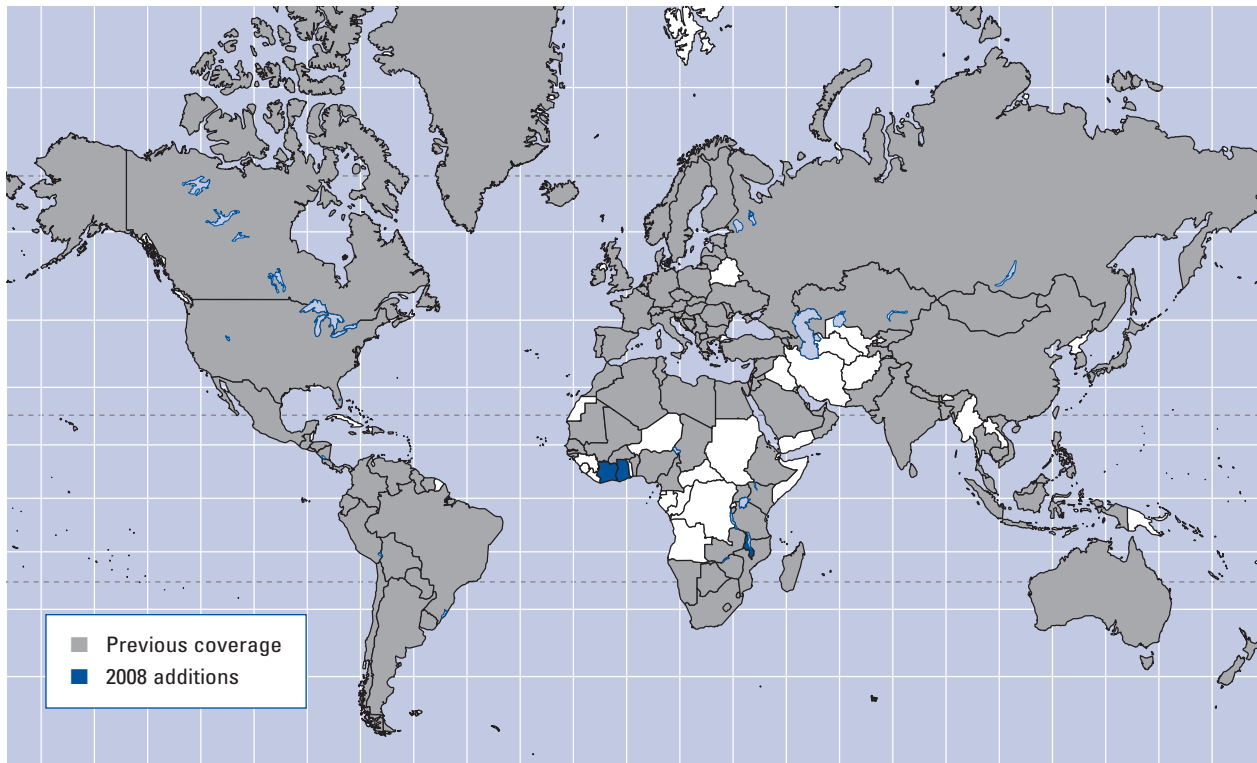
The main goal of *The Global Competitiveness Report* is to provide a picture of a nation's economic environment and its ability to achieve sustained levels of prosperity and growth. Capturing this information in an accurate way does not come without its challenges, given the breadth of issues that drive national competitiveness as well as the large number of national economies covered in the *Report* (many of which are from the developing world). The Executive Opinion Survey (Survey) meets the need for up-to-date and far-reaching data, providing valuable qualitative information for which hard data sources are scarce or nonexistent, and thus complementing the hard data derived from various international sources.

The World Economic Forum has conducted the annual Survey for nearly 30 years. This year, the Survey was completed by 12,297 top management business leaders—an all-time high—in 134 countries between January and May. This represents an average of 91 respondents per country. Table 1 shows key attributes of the Survey respondents for the 2008 dataset.

The Survey asks the executives to provide their expert opinions on various aspects of the business environment in which they operate. The data gathered thus provide a unique source of insight and a qualitative portrait of each nation's economic and business environment, and how it compares with the situation in other countries.

### Geographic expansion

Since the first competitiveness report was released in 1979, Survey coverage has been expanded from 16 European countries to this year's record coverage of 134 economies from all of the world's regions (see Figure 1 for details). This year four new countries have been added: Brunei Darussalam, Côte d'Ivoire, Ghana (previously covered in 2003 and 2004), and Malawi (previously covered between 2003 and 2006). Although the Forum aims to present comprehensive international coverage, expansion to additional countries may be constrained by the absence of adequate infrastructure to support the Survey process in some countries, and also because some of the hard data sources are themselves not available for some countries. However, despite the fact that some countries are not included in the *Report*, these 134 economies account for more than 98 percent of the world's gross domestic product (GDP), demonstrating that the findings are indeed global in scope.

**Figure 1: Country/economy coverage of the Executive Opinion Survey**

### Survey structure and methodology

The Survey is reviewed and streamlined every year to reflect the variables captured in the Global Competitiveness Index (GCI), which is at the heart of this *Report*. Because of the scope of the Survey's coverage, it is translated into more than 20 different languages.

Most questions in the Survey follow a structure that asks participants to evaluate, on scale of 1 to 7, the current conditions of their particular operating environment. At one end of the scale, 1 represents the worst possible operating condition or situation, and at the other end of the scale, 7 represents the best. See Box 1 for an example.

The Forum collaborates closely with a network of over 140 Partner Institutes that administer the Executive Opinion Survey at the national level.<sup>1</sup> Typically, the Partner Institutes are recognized economics departments of national universities, independent research institutes, or business organizations. This valuable collaboration helps to ensure that the Survey is conducted in a consistent manner across the globe. In addition, our partners help us in explaining the results at the national level. This better ensures that the findings are used as a tool for improving the competitiveness outlook in each country.

To this end, and in order to reach a representative sample of Survey responses from each economy, the Partner Institutes are each year required to follow a detailed set of guidelines. The process was reinforced this

#### Box 1: Example of a typical Survey question

##### Intellectual property protection in your country:

Is weak and not enforced < 1 2 3 4 5 6 7 > Is strong and enforced

**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

year with the support of an internationally renowned survey consultancy and in collaboration between the World Economic Forum and the Institute of Strategy and Competitiveness at the Harvard Business School. In this way, the process is moving toward a best practice procedure, ensuring greater data accuracy and allowing for more robust comparison across economies.

The Survey sampling follows a dual stratification based on the size of the company and the sector of activity.<sup>2</sup> Specifically, the Survey sampling guidelines ask the Partner Institutes 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).<sup>3</sup>
3. Based on these lists, and in view of reducing survey bias, choose a random selection of these firms to receive the Survey.<sup>4</sup>

Despite the significantly increased complexity of the process this year, the 2008 Survey guidelines were followed by a large majority of Partner Institutes, improving the robustness of the sample. However, this year should be seen as a transition year, as some Partner Institutes were not yet able to implement the improved procedure fully. We expect to move much closer to a situation of full implementation in the coming year or two.

Beyond the sampling guidelines, the actual administration of the Survey to the selected group of companies is tailored at the national level to take into account differences in infrastructure, distance, cultural preferences, and other such issues. For example, in some instances, the Partner Institute may deem that face-to-face interviews with business executives are the most effective method, as opposed to a mailing or telephone interview method, or offering the online version as an alternative.

Over the past year, the online completion of the Survey has increased further, and now represents 20 percent of all responses, with over 20 countries having an online usage above 70 percent. An improved online Survey was introduced this year, which allows for the inclusion of non-Latin-based languages, making the online Survey available in 13 languages.

Beyond the administration of the Executive Opinion Survey, the Partner Institutes act as the ambassadors of *The Global Competitiveness Report* and the report series. This often includes holding press events at the national level at the time of the launch, and explaining the Index findings to the public throughout the year.

### Who else uses the Executive Opinion Survey?

The Executive Opinion Survey results serve as a major component of research by a number of international and national organizations, government bodies, and companies. Besides our Partner Institutes, some of our principal partners include the US Agency for International Development (USAID) for monitoring economic progress; Transparency International for their research on bribery and corruption; and Harvard University, in collaboration with the Forum’s Health Initiative, in their annual global review of business perceptions and their response to the HIV/AIDS epidemic. Moreover, reference to the Survey data is made by many other international and multilateral organizations, government research departments, and academic institutions.

Every year the World Economic Forum’s Global Competitiveness Network publishes a number of reports besides *The Global Competitiveness Report* for which the underlying data are taken from the Survey. From the Survey 2007, the Forum published a series of industry-specific studies, including the annual *Global Information Technology Report 2007–2008* and *The Travel & Tourism Competitiveness Report 2008*, as well as the first ever *Global Enabling Trade Report 2008* and *The Financial Development Report 2008*.

Finally, an increasing number of national competitiveness reports that make use of or refer to the Executive Opinion Survey data are being published worldwide.

### Data treatment and score computation

The previous sections described how the Survey is actually conducted and the data collected. The following pages describe in detail how the data are then processed to arrive at country-level scores. These results,<sup>5</sup> together with hard data indicators, then feed into the GCI, described in Chapter 1.1 of this *Report*.

#### Data editing

The collected respondent-level data are subjected to a careful editing process. The first editing rule consists of excluding those surveys with a completion rate inferior to 50 percent.<sup>6</sup> This is because partially completed surveys likely demonstrate a lack of sufficient focus on the part of the respondent. In a second step, a multivariate outlier analysis is applied to the data using the Mahalanobis distance technique. This test assesses whether each individual survey is representative, given the overall sample of survey responses in the specific country, and allows for the deletion of clear outliers. (See Box 2 for more detail.)

**Table 1a: Distribution of respondents to the Executive Opinion Survey 2008 by country and firm size**

Country/Economy	Sample size		Respondents by firm size						
	Count*	Percent online	<101 (%)	101–500 (%)	501–1,000 (%)	1,001–5,000 (%)	5,001–20,000 (%)	20,000 > (%)	No response (%)
Albania	88	0	60	33	5	1	1	0	0
Algeria	62	0	53	19	8	6	5	0	8
Argentina	81	99	26	32	10	20	10	2	0
Armenia	89	15	56	28	7	8	1	0	0
Australia	83	14	31	20	8	28	7	5	0
Austria	73	3	23	14	33	22	8	0	0
Azerbaijan	79	1	78	13	4	4	1	0	0
Bahrain	84	48	46	23	18	8	2	0	2
Bangladesh	93	0	32	25	13	20	5	2	2
Barbados	85	0	47	33	14	5	0	0	1
Belgium	89	96	55	19	3	13	7	2	0
Benin	98	0	69	14	9	1	2	2	2
Bolivia	39	77	54	21	15	5	0	0	5
Bosnia and Herzegovina	90	0	72	18	6	4	0	0	0
Botswana	73	1	49	33	12	5	0	0	0
Brazil	180	64	4	8	19	41	21	8	1
Brunei Darussalam	38	24	61	34	0	3	0	0	3
Bulgaria	94	1	54	36	3	6	0	0	0
Burkina Faso	77	0	71	21	0	3	0	0	5
Burundi	87	0	82	8	6	3	0	0	1
Cambodia	79	0	29	33	23	13	1	0	1
Cameroon	63	0	59	37	3	2	0	0	0
Canada	79	75	39	18	13	18	5	8	0
Chad	116	0	95	3	2	1	0	0	0
Chile	104	0	25	22	11	29	13	0	0
China	323	2	27	22	13	22	8	7	0
Colombia	128	36	52	27	10	9	2	0	2
Costa Rica	72	56	26	49	13	13	0	0	0
Côte d'Ivoire	82	0	74	12	5	2	5	0	1
Croatia	104	0	29	37	13	17	2	1	1
Cyprus	95	0	46	41	6	6	0	0	0
Czech Republic	89	1	4	49	30	13	2	0	0
Denmark	52	52	33	13	12	33	8	2	0
Dominican Republic	61	10	49	26	8	13	3	0	0
Ecuador	82	7	38	43	9	9	1	0	1
Egypt	104	4	12	38	13	28	8	1	1
El Salvador	77	29	39	43	9	6	3	0	0
Estonia	84	71	58	30	7	4	1	0	0
Ethiopia	97	0	62	25	6	7	0	0	0
Finland	65	98	28	23	20	25	2	3	0
France	105	3	15	21	10	29	10	13	1
Gambia, The	77	0	70	23	4	0	0	0	3
Georgia	85	60	69	16	5	9	0	0	0
Germany	71	18	25	20	6	15	13	20	1
Ghana	101	0	50	35	5	10	0	0	1
Greece	84	4	27	12	20	32	8	0	0
Guatemala	96	0	45	28	6	15	4	2	0
Guyana	89	0	67	24	4	1	0	1	2
Honduras	91	34	60	20	7	12	1	0	0
Hong Kong SAR	39	38	28	15	8	23	21	5	0
Hungary	101	1	25	32	18	21	3	2	0
Iceland	38	95	42	42	8	8	0	0	0
India	141	6	16	19	14	24	11	15	0
Indonesia	83	0	37	24	7	19	7	5	0
Ireland	59	36	36	24	20	15	5	0	0
Israel	84	95	25	45	10	20	0	0	0
Italy	85	7	28	24	12	14	11	12	0
Jamaica	55	0	58	22	15	5	0	0	0
Japan	148	5	14	19	3	23	28	13	0
Jordan	131	10	40	41	8	8	1	0	2
Kazakhstan	193	0	36	51	8	4	1	0	0
Kenya	102	0	52	23	11	12	3	0	0
Korea, Rep.	116	3	31	19	16	13	18	3	1
Kuwait	65	18	54	17	8	14	6	0	2
Kyrgyz Republic	100	0	71	19	5	2	1	0	2
Latvia	80	76	40	28	11	18	4	0	0
Lesotho	125	0	93	2	1	0	0	0	5
Libya	71	0	42	27	11	14	3	0	3

(Cont'd.)

Table 1a: Distribution of respondents to the Executive Opinion Survey 2008 by country and firm size (cont'd.)

Country/Economy	Sample size		Respondents by firm size						
	Count*	Percent online	<101 (%)	101–500 (%)	501–1,000 (%)	1,001–5,000 (%)	5,001–20,000 (%)	20,000 > (%)	No response (%)
Lithuania	109	75	38	44	9	6	4	0	0
Luxembourg	44	9	57	25	11	2	0	2	2
Macedonia, FYR	118	3	36	45	10	8	0	0	1
Madagascar	100	0	71	17	5	6	1	0	0
Malawi	97	0	54	30	7	6	2	1	0
Malaysia	70	4	24	36	9	20	4	4	3
Mali	94	0	65	22	3	6	0	0	3
Malta	47	38	55	30	6	6	2	0	0
Mauritania	59	0	85	14	0	0	0	0	2
Mauritius	44	2	43	25	16	16	0	0	0
Mexico	73	58	15	23	12	23	11	14	1
Moldova	118	0	37	35	14	13	2	0	0
Mongolia	81	1	32	38	23	6	0	0	0
Montenegro	81	0	74	16	2	2	0	0	5
Morocco	99	0	62	26	5	4	2	1	0
Mozambique	94	3	60	20	11	4	1	0	4
Namibia	43	40	40	26	21	14	0	0	0
Nepal	99	3	48	38	7	5	0	0	1
Netherlands	89	85	16	22	13	27	11	9	1
New Zealand	43	100	19	28	23	23	7	0	0
Nicaragua	81	0	51	35	7	7	0	0	0
Nigeria	87	1	36	32	6	16	2	3	5
Norway	37	43	22	32	11	24	11	0	0
Oman	142	80	36	32	13	15	4	0	0
Pakistan	130	4	42	20	18	14	5	0	2
Panama	91	2	43	27	13	9	4	0	3
Paraguay	114	5	56	32	6	4	1	0	2
Peru	84	1	2	54	19	17	6	1	1
Philippines	59	2	37	24	17	14	8	0	0
Poland	85	2	59	24	5	11	1	1	0
Portugal	75	29	15	28	17	21	8	5	5
Puerto Rico	74	99	58	19	7	14	3	0	0
Qatar	79	72	20	30	14	23	1	5	6
Romania	104	0	13	63	11	13	0	0	0
Russian Federation	343	1	17	21	33	21	4	2	1
Saudi Arabia	138	0	21	25	11	31	8	4	0
Senegal	97	1	90	8	0	1	0	0	1
Serbia	112	0	48	38	5	8	1	0	0
Singapore	136	40	24	46	14	11	4	0	1
Slovak Republic	86	0	27	41	10	20	0	0	2
Slovenia	75	1	40	17	9	9	3	11	11
South Africa	39	79	8	13	10	26	21	21	3
Spain	117	26	34	26	11	15	9	6	0
Sri Lanka	97	0	45	31	14	6	2	1	0
Suriname	54	48	65	31	4	0	0	0	0
Sweden	45	93	22	22	9	20	18	4	4
Switzerland	97	77	31	16	9	21	15	7	0
Syria	136	1	68	19	4	6	1	0	1
Taiwan, China	65	54	6	11	14	32	31	6	0
Tajikistan	99	0	75	15	4	6	0	0	0
Tanzania	97	1	51	32	7	9	1	0	0
Thailand	83	0	16	28	11	28	14	2	1
Timor-Leste	67	0	85	9	0	0	0	0	6
Trinidad and Tobago	91	16	51	21	5	18	3	0	2
Tunisia	88	7	39	40	7	13	2	0	0
Turkey	77	17	9	31	16	36	6	1	0
Uganda	100	0	69	22	4	3	2	0	0
Ukraine	116	2	57	25	10	5	2	0	1
United Arab Emirates	66	52	15	24	15	24	9	12	0
United Kingdom	63	92	38	14	16	17	8	3	3
United States	200	87	36	16	5	13	14	16	1
Uruguay	89	0	55	30	9	4	0	0	1
Venezuela	60	100	47	23	10	12	7	2	0
Vietnam	130	0	40	38	7	10	2	1	2
Zambia	85	0	72	15	5	6	0	0	2
Zimbabwe	52	25	13	17	23	40	6	0	0
<b>TOTAL/AVERAGE (%)</b>	<b>12,297</b>	<b>19</b>	<b>42</b>	<b>26</b>	<b>10</b>	<b>13</b>	<b>5</b>	<b>2</b>	<b>1</b>

\* Final count, after editing of the data. See text for details.

**Table 1b: Distribution of respondents to the Executive Opinion Survey 2008 by export profile and level of competition**

Country/Economy	Share of exports (%) in total firm's sales					Level of competition				
						DOMESTIC ONLY		INTERNATIONAL		
	<10% share (%)	10–25% share (%)	25–50% share (%)	>50% share (%)	No response (%)	With other domestic companies (%)	With domestic and international companies (%)	From a domestic base only (%)	With activities located in different countries (%)	No response (%)
Albania	61	5	3	5	26	39	38	7	5	13
Algeria	79	2	3	5	11	35	48	0	5	11
Argentina	56	22	9	10	4	9	41	22	28	0
Armenia	55	6	9	18	12	27	38	18	12	4
Australia	72	13	6	5	4	13	35	18	28	6
Austria	45	8	5	38	3	15	25	15	42	3
Azerbaijan	67	4	4	3	23	41	42	5	4	9
Bahrain	46	7	7	14	25	19	36	19	17	10
Bangladesh	65	9	1	16	10	20	42	22	12	4
Barbados	64	9	4	5	19	29	27	12	19	13
Belgium	48	13	8	25	6	15	33	16	35	2
Benin	58	8	16	10	7	46	43	4	6	1
Bolivia	49	0	13	31	8	21	36	33	5	5
Bosnia and Herzegovina	72	10	8	8	2	41	34	19	6	0
Botswana	79	4	0	1	15	29	53	5	4	8
Brazil	66	15	9	7	3	11	31	22	36	1
Brunei Darussalam	87	3	0	5	5	58	29	5	3	5
Bulgaria	74	2	5	12	6	41	27	16	7	9
Burkina Faso	66	5	3	6	19	55	30	3	5	8
Burundi	92	2	0	3	2	76	15	2	0	7
Cambodia	68	4	6	10	11	15	43	9	28	5
Cameroon	51	5	13	11	21	13	48	11	22	6
Canada	52	13	10	22	4	15	30	20	34	0
Chad	75	5	3	1	16	61	25	1	3	9
Chile	66	12	7	10	6	19	43	21	15	1
China	67	12	10	9	2	39	31	16	14	0
Colombia	71	6	2	7	14	41	33	15	9	2
Costa Rica	43	10	11	22	14	13	31	25	31	1
Côte d'Ivoire	66	11	4	11	9	32	39	13	11	5
Croatia	63	13	11	8	6	21	43	15	16	4
Cyprus	67	6	13	7	6	22	40	12	23	3
Czech Republic	44	8	10	34	4	20	21	31	26	1
Denmark	48	6	8	38	0	12	21	15	52	0
Dominican Republic	72	3	2	7	16	20	61	10	7	3
Ecuador	68	5	5	7	15	23	45	13	15	4
Egypt	70	7	11	12	1	34	29	25	13	0
El Salvador	49	13	13	12	13	21	36	16	26	1
Estonia	55	14	14	15	1	18	36	24	23	0
Ethiopia	73	1	0	5	21	41	32	11	9	6
Finland	58	6	6	26	3	15	26	18	40	0
France	46	16	13	19	6	17	19	6	56	2
Gambia, The	75	4	0	3	18	44	39	3	5	9
Georgia	79	8	1	2	9	27	47	15	8	2
Germany	37	10	17	25	11	13	13	8	65	1
Ghana	58	10	7	14	11	11	57	12	15	5
Greece	65	11	5	15	4	19	43	11	25	2
Guatemala	48	17	9	19	7	9	29	28	33	0
Guyana	72	6	4	7	11	38	37	13	7	4
Honduras	60	8	3	15	13	12	51	25	10	2
Hong Kong SAR	56	3	3	36	3	5	15	18	62	0
Hungary	51	7	11	29	2	18	27	38	16	2
Iceland	84	5	3	8	0	37	34	11	18	0
India	54	16	11	13	6	16	32	18	32	3
Indonesia	75	13	1	4	7	37	40	6	17	0
Ireland	59	3	2	22	14	14	34	15	29	8
Israel	25	5	10	58	2	10	13	18	58	1
Italy	58	7	6	19	11	15	33	13	38	1
Jamaica	65	11	5	4	15	15	51	16	18	0
Japan	53	12	15	9	11	15	17	14	55	0
Jordan	51	8	9	18	14	21	34	18	22	5
Kazakhstan	92	5	1	2	0	78	16	5	1	0
Kenya	65	7	8	5	16	32	37	9	17	5
Korea, Rep.	60	16	12	9	2	29	34	2	34	1
Kuwait	63	8	6	6	17	22	32	9	29	8
Kyrgyz Republic	55	5	4	6	30	49	30	4	7	10
Latvia	63	5	14	14	5	15	45	19	18	4
Lesotho	83	2	0	0	15	56	18	6	2	17
Libya	61	6	3	6	25	25	39	11	11	13

(Cont'd.)

**Table 1b: Distribution of respondents to the Executive Opinion Survey 2008 by export profile and level of competition**  
(cont'd.)

Country/Economy	Share of exports (%) in total firm's sales					Level of competition				
						DOMESTIC ONLY		INTERNATIONAL		
	<10% share (%)	10-25% share (%)	25-50% share (%)	>50% share (%)	No response (%)	With other domestic companies (%)	With domestic and international companies (%)	From a domestic base only (%)	With activities located in different countries (%)	No response (%)
Lithuania	58	7	9	21	5	24	39	23	12	2
Luxembourg	30	9	5	55	2	5	18	32	45	0
Macedonia, FYR	52	12	5	28	3	25	36	23	14	3
Madagascar	67	5	2	11	15	49	31	8	7	5
Malawi	73	6	4	6	10	23	47	15	8	6
Malaysia	50	9	10	11	20	20	30	10	29	11
Mali	66	10	4	6	14	39	45	1	5	10
Malta	68	9	4	13	6	26	28	17	30	0
Mauritania	61	5	8	0	25	37	41	5	3	14
Mauritius	68	5	5	18	5	16	34	18	32	0
Mexico	59	8	15	11	7	10	29	22	40	0
Moldova	62	5	10	18	5	19	46	25	10	1
Mongolia	44	15	17	22	1	33	47	12	7	0
Montenegro	69	11	0	7	12	23	51	14	9	4
Morocco	72	6	4	8	10	45	33	12	5	4
Mozambique	64	7	5	2	21	22	48	14	13	3
Namibia	67	2	0	16	14	9	44	21	16	9
Nepal	62	9	4	4	21	41	36	16	2	4
Netherlands	48	15	3	22	11	16	21	16	40	7
New Zealand	60	14	5	21	0	14	49	9	28	0
Nicaragua	64	11	2	6	16	30	48	7	11	4
Nigeria	48	22	2	2	25	30	53	7	7	3
Norway	51	5	5	35	3	8	32	5	54	0
Oman	73	8	4	9	6	13	54	11	21	1
Pakistan	57	5	8	13	17	27	38	18	11	6
Panama	21	4	5	11	58	25	42	11	14	8
Paraguay	56	4	7	7	26	32	42	11	11	4
Peru	46	19	15	11	8	14	44	20	18	4
Philippines	81	3	3	7	5	17	61	7	14	2
Poland	62	13	6	15	4	13	51	19	16	1
Portugal	41	9	9	17	23	9	27	19	36	9
Puerto Rico	73	9	4	9	4	16	55	14	12	3
Qatar	57	9	3	6	25	13	44	13	23	8
Romania	57	13	9	22	0	28	37	18	15	2
Russian Federation	84	10	3	1	2	55	33	6	3	3
Saudi Arabia	61	16	6	4	13	22	41	7	19	12
Senegal	89	2	3	5	1	61	27	8	1	3
Serbia	76	11	5	8	0	37	43	9	12	0
Singapore	17	8	4	65	5	0	1	8	88	2
Slovak Republic	36	15	12	34	3	7	43	30	19	1
Slovenia	40	13	11	31	5	8	28	23	39	3
South Africa	46	13	10	15	15	5	21	21	44	10
Spain	67	9	4	5	15	14	37	15	29	5
Sri Lanka	72	2	3	4	19	45	37	9	2	6
Suriname	70	9	4	0	17	31	50	15	4	0
Sweden	47	13	11	16	13	2	22	9	56	11
Switzerland	48	7	6	31	7	19	20	14	45	2
Syria	56	16	6	10	12	35	40	13	7	4
Taiwan, China	45	11	15	20	9	3	22	18	57	0
Tajikistan	81	7	5	1	6	69	22	3	1	5
Tanzania	69	8	1	10	11	20	62	6	10	2
Thailand	70	7	8	12	2	27	35	20	18	0
Timor-Leste	67	9	4	9	10	33	40	9	10	7
Trinidad and Tobago	67	7	7	5	14	32	31	10	19	9
Tunisia	39	13	13	32	5	33	23	15	20	9
Turkey	38	19	22	19	1	12	13	42	32	1
Uganda	66	4	4	7	19	38	43	9	9	1
Ukraine	81	9	3	6	1	66	22	10	2	0
United Arab Emirates	61	12	3	9	15	9	44	18	29	0
United Kingdom	71	6	3	11	8	33	17	8	35	6
United States	55	15	9	12	11	11	15	20	52	3
Uruguay	44	11	9	22	13	16	29	29	21	4
Venezuela	67	10	12	7	5	8	40	17	32	3
Vietnam	65	2	2	23	7	18	60	13	4	5
Zambia	79	5	4	4	9	27	39	13	16	5
Zimbabwe	48	19	8	21	4	13	35	33	19	0
<b>TOTAL/AVERAGE (%)</b>	<b>62</b>	<b>9</b>	<b>7</b>	<b>13</b>	<b>10</b>	<b>27</b>	<b>35</b>	<b>14</b>	<b>20</b>	<b>4</b>

### Box 2: A multivariate outlier detection technique: The Mahalanobis distance

The Mahalanobis distance measure is used to estimate the likelihood that one particular point of  $N$  dimensions belongs to a set of such points. It extends a standard Euclidean measure of distance by taking into account the variance and covariance of points in the set across the  $N$  dimensions. It is therefore perfectly suited to the treatment of survey data. In effect, 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 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 a particular survey is a clear outlier and does not “belong” to the sample.

There is a limitation in applying this technique to the Survey data. In order to compute the Mahalanobis distance, the number of surveys in a country (i.e., the set of points) must be greater than the number of questions considered (i.e., the dimension or “degree of freedom”). Given the limited number of respondents in many countries, we cannot include all the Survey questions—over 150—and therefore limit the test to a group of 67 questions, selected for their relevance and placement in the Survey instrument. This allows us to calculate the measure in 106 country samples.<sup>1</sup>

#### Note

1 A total of 71 surveys in 10 countries are dropped based upon the Mahalanobis outlier test.

Following the multivariate outlier test, a univariate outlier test is applied at the country level for each question of each Survey. We use the standardized score method—also called “z-score”—which indicates by how many standard deviations any one individual answer deviates from the mean of the country sample. Formally, this is calculated as follows:

$$z_{i,q,c} = \frac{x_{i,q,c} - \bar{x}_{q,c}}{\sigma_{q,c}},$$

where

$x_{i,q,c}$  is respondent  $i$ 's answer to question  $q$  in country  $c$ ; and

$\bar{x}_{q,c}$  and  $\sigma_{q,c}$  are the average and standard deviation, respectively, of individual answers to question  $q$  within country  $c$ 's sample.

Individual answers with a z-score  $z_{i,q,c}$  greater than 3 or less than negative 3 are dropped.

### Data weighting: Sector-weighted country averages

Once the data have been edited, individual answers are aggregated at the country level. We compute sector-weighted country averages to obtain a more representative average that takes into account the structure of a country's economy. The structure is defined by the known contributions to a country's gross domestic product of each of the four main economic sectors: agriculture, manufacturing industry, non-manufacturing industry, and services (see Table 2).<sup>7</sup>

An additional step is taken to prevent individual responses within a sample from receiving an excessive weight when the structure of the sample and the underlying economy differ greatly. As an extreme example, imagine that just 3 percent of responses from a country came from the services sector, but that sector actually represents 90 percent of the country's economy. (In practice we do not find such extremely misrepresentative samples in our data.) By applying the above weighting scheme, we would be giving a very high weight to a very few surveys. This is avoided by trimming the sector weights. More specifically, when for a country the ratio of the weight of one sector in the economy to the percentage of surveys from that sector in the country sample exceeds 5, the sector weight used for the weighted average is capped to five times the percentage of surveys from that sector in the sample. The weights of the other sectors are adjusted accordingly.

Formally, the sector-weighted country average of a Survey indicator,  $\bar{q}_c$ , is computed as follows:

$$\bar{q}_c = \sum_s w_{s,c} \times q_{s,c}$$

$$\text{with } q_{s,c} = \sum_j \frac{q_{j,s,c}}{N_{s,c}},$$

where

$w_{s,c}$  is sector  $s$ 's contribution to the economy of country  $c$  (for example, .77 for the services sector in the United States);

$q_{s,c}$  is the mean of the responses from sector  $s$  in country  $c$  ( $q_{j,s,c}$  is response  $j$  from sector  $s$  and country  $c$  and  $N_{s,c}$  is the number of responses from sector  $s$  in country  $c$ ).

### Data weighting: Moving average

As a final step, the sector-weighted country averages for 2008 are combined with the 2007 averages to produce the final country scores that are used for the computation of the 2008 GCI and other projects.<sup>8</sup>

This moving average technique, which was introduced last year, 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

**Table 2: Contribution (%) of economic sectors to GDP**

Country/Economy	Agriculture (%)	Non-manufacturing industry (%)	Manufacturing industry (%)	Services (%)	Country/Economy	Agriculture (%)	Non-manufacturing industry (%)	Manufacturing industry (%)	Services (%)
Albania	22.8	9.5	12.0	55.7	Lithuania	5.7	12.0	21.5	60.8
Algeria	8.5	55.8	5.6	30.1	Luxembourg	0.4	7.4	8.8	83.3
Argentina	9.4	12.5	23.2	55.0	Macedonia, FYR	12.9	10.9	18.4	57.7
Armenia	20.5	23.7	20.5	35.2	Madagascar	27.9	1.8	14.0	56.4
Australia	3.0	15.0	12.0	70.0	Malawi	34.7	6.9	12.5	45.9
Austria	1.5	10.7	20.0	67.8	Malaysia	8.7	21.2	30.6	39.6
Azerbaijan	10.0	54.5	7.8	27.7	Mali	36.6	21.0	3.2	39.3
Bahrain	0.4	29.3	14.0	56.3	Malta	2.8	22.4	n/a	74.8
Bangladesh	20.1	10.7	16.5	52.6	Mauritania	23.7	24.2	5.0	47.0
Barbados	6.0	8.9	7.1	78.0	Mauritius	6.1	8.0	20.2	65.7
Belgium	1.0	7.0	17.0	74.9	Mexico	3.8	8.2	17.7	70.2
Benin	32.2	5.9	7.5	54.4	Moldova	17.0	7.2	17.3	58.5
Bolivia	15.0	17.5	14.3	53.2	Mongolia	21.7	26.0	3.1	49.2
Bosnia and Herzegovina	10.1	13.7	11.6	64.6	Montenegro	13.0	12.4	12.6	62.0
Botswana	2.3	49.4	3.9	44.4	Morocco	14.1	13.4	16.6	55.9
Brazil	8.1	20.0	18.4	53.5	Mozambique	22.3	15.6	14.2	47.9
Brunei Darussalam	0.9	61.1	10.5	27.5	Namibia	9.9	18.3	13.5	58.4
Bulgaria	9.6	12.2	19.5	58.7	Nepal	38.2	13.2	7.7	40.8
Burkina Faso	30.6	6.3	13.5	49.6	Netherlands	2.1	10.4	14.0	73.6
Burundi	34.8	11.2	8.8	45.1	New Zealand	4.6	11.3	16.2	67.9
Cambodia	34.2	7.6	19.1	39.1	Nicaragua	18.6	10.1	17.9	53.4
Cameroon	41.1	6.9	7.2	44.8	Nigeria	23.3	52.8	4.0	19.9
Canada	2.2	12.9	16.5	68.4	Norway	1.6	32.3	11.0	55.1
Chad	22.7	46.5	4.7	26.1	Oman	2.0	48.0	8.0	42.0
Chile	5.5	29.2	17.6	47.7	Pakistan	21.6	6.9	18.2	53.3
China	12.6	14.1	33.5	39.9	Panama	7.7	8.6	7.8	75.9
Colombia	12.5	19.3	14.8	53.3	Paraguay	22.1	6.9	12.4	58.6
Costa Rica	8.7	7.9	21.9	61.5	Peru	7.2	18.5	16.3	58.0
Côte d'Ivoire	22.8	6.5	19.3	51.4	Philippines	14.3	9.0	23.3	53.4
Croatia	7.0	10.6	20.2	62.2	Poland	4.8	12.4	18.3	64.5
Cyprus	3.1	11.1	8.2	77.6	Portugal	2.9	8.6	16.0	72.5
Czech Republic	2.9	12.0	25.2	59.8	Puerto Rico	1.0	3.0	40.0	56.0
Denmark	1.8	10.6	14.0	73.5	Qatar	0.1	69.6	6.1	24.2
Dominican Republic	12.4	10.3	15.1	62.1	Romania	10.1	11.5	23.5	54.9
Ecuador	6.5	36.8	9.0	47.8	Russian Federation	5.6	20.1	17.9	56.4
Egypt	14.9	19.2	16.8	49.0	Saudi Arabia	42.0	13.0	8.0	37.0
El Salvador	10.3	6.9	23.1	59.8	Senegal	17.9	8.0	10.9	63.2
Estonia	4.0	10.9	18.5	66.6	Serbia	13.7	8.7	15.9	61.7
Ethiopia	47.7	8.2	5.1	39.0	Singapore	0.1	5.4	28.4	66.1
Finland	2.9	7.6	22.0	67.5	Slovak Republic	3.5	10.6	18.8	67.2
France	2.2	7.7	13.3	76.9	Slovenia	2.5	9.5	24.6	63.4
Gambia, The	32.6	7.9	5.2	54.2	South Africa	2.5	11.7	18.6	67.1
Georgia	16.7	9.9	17.6	55.9	Spain	3.3	13.5	16.0	67.2
Germany	0.9	6.7	23.0	69.4	Sri Lanka	16.8	11.2	14.9	57.1
Ghana	37.5	14.9	8.3	39.4	Suriname	10.8	18.9	5.5	64.8
Greece	5.2	9.8	11.0	74.0	Sweden	1.1	8.2	20.0	70.7
Guatemala	22.8	6.3	12.6	58.3	Switzerland	1.3	8.3	20.0	70.3
Guyana	31.0	16.5	8.0	44.5	Syria	23.3	4.8	30.5	41.4
Honduras	13.9	11.3	20.1	54.6	Taiwan, China	1.7	4.1	27.3	66.9
Hong Kong SAR	–	6.0	4.0	90.0	Tajikistan	24.4	7.8	24.1	43.7
Hungary	4.0	8.0	23.0	65.0	Tanzania	44.5	10.3	7.5	37.6
Iceland	5.8	13.6	10.1	70.5	Thailand	9.9	9.4	34.7	46.0
India	18.3	11.6	15.7	54.4	Timor-Leste	8.5	20.5	2.6	68.4
Indonesia	13.4	17.7	28.1	40.8	Trinidad and Tobago	0.8	53.3	6.4	39.6
Iran	10.4	32.8	11.8	45.0	Tunisia	11.6	11.1	17.5	59.7
Ireland	3.0	10.0	27.0	60.0	Turkey	11.9	9.7	14.0	64.5
Israel	3.2	10.7	22.1	64.0	Uganda	32.7	15.5	9.2	42.5
Italy	2.3	8.5	18.4	70.9	Ukraine	10.9	13.3	20.5	55.3
Jamaica	5.7	19.5	13.6	61.2	United Arab Emirates	2.3	41.6	14.1	42.0
Japan	2.0	9.0	21.0	68.0	United Kingdom	1.0	11.2	15.0	72.8
Jordan	2.8	10.4	19.2	67.6	United States	1.0	8.0	14.0	77.0
Kazakhstan	6.8	24.9	14.6	53.7	Uruguay	9.2	8.9	21.9	60.0
Kenya	27.0	7.1	11.5	54.4	Venezuela	4.7	33.7	18.0	43.7
Korea, Rep.	3.3	11.9	28.4	56.3	Vietnam	20.9	20.3	20.7	38.1
Kuwait	0.7	48.7	2.0	48.7	Zambia	18.5	13.4	11.7	56.3
Kyrgyz Republic	34.1	6.8	14.1	45.0	Zimbabwe	18.1	9.8	12.8	59.3
Latvia	4.1	9.2	12.8	73.8					
Lesotho	17.3	23.0	18.5	41.3					
Libya	2.8	73.5	3.8	19.9					

Source: Economist Intelligence Unit, *CountryData Database*; World Bank, *World Development Indicators 2008 Online Database*.  
Note: Data are for 2007 or most recent year available.

(Cont'd.)

### Box 3: Country score calculation

For any given Survey question  $q_i$ , country  $c$ 's score,  $q_{i,c}^{07-08}$ , is given by:

$$q_{i,c}^{07-08} = w_c^{2007} \times \bar{q}_{i,c}^{2007} + w_c^{2008} \times \bar{q}_{i,c}^{2008} \quad (1)$$

where

$\bar{q}_{i,c}^T$  is country  $c$ 's score on question  $q_i$  in year  $T$ , with  $T = 2007, 2008$ , as computed following the approach described in the text;

$q_{i,n,c}^T$  is respondent  $n$ 's response (on a 1–7 scale) to question  $q_i$  in year  $T$ ;

$N_c^T$  is the sample size (i.e., the number of respondents) for country  $c$  in year  $T$ ; 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:

$$w_c^{2007} = \frac{(1-\alpha) + \frac{N_c^{2007}}{N_c^{2007} + N_c^{2008}}}{2} \quad (2a)$$

and

$$w_c^{2008} = \frac{\alpha + \frac{N_c^{2008}}{N_c^{2007} + N_c^{2008}}}{2} \quad (2b)$$

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

$$q_{i,c}^{07-08} = \frac{1}{2} \times \underbrace{\left[ (1-\alpha) \times \bar{q}_{i,c}^{2007} + \alpha \times \bar{q}_{i,c}^{2008} \right]}_{\text{discounted-past weighted average}} + \frac{1}{2} \times \underbrace{\left[ \frac{N_c^{2007}}{N_c^{2007} + N_c^{2008}} \times \bar{q}_{i,c}^{2007} + \frac{N_c^{2008}}{N_c^{2007} + N_c^{2008}} \times \bar{q}_{i,c}^{2008} \right]}_{\text{sample-size weighted average}} \quad (3)$$

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. The value for  $\alpha$  is 0.6, which corresponds to a discount factor of 2/3. That is, the 2007 score of country  $c$  is given 2/3 of the weight given to its 2008 score. One additional property 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.

The same treatment is applied to the results of the previous editions of the Survey. That is, for any two consecutive editions  $t_1$  and  $t_2$  of the EOS, country  $c$ 's score on question  $i$  is computed as follows:

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

#### Example

For the sake of concreteness and clarity, let us compute the score of Costa Rica on indicator 7.01 on the nature of the relations between employers and employees, which is part of the 7th pillar of the GCI.

Costa Rica's score was 5.61 in 2008 and 5.67 in 2007. The weighting scheme described above indicates how the two scores are combined. In Costa Rica, the size of the sample was 57 in 2007 and 72 in 2008. Using  $\alpha = 0.6$  and applying formulas (2a) and (2b) yield weights of 44.2 percent for 2007 and 55.8 percent for 2008. The final country score for this question is given by formula (1):

$$\underbrace{0.442 \times 5.67}_{2007} + \underbrace{0.558 \times 5.61}_{2008} = 5.63.$$

This is the score used in the computation of the GCI. Although numbers were rounded to two decimal places in this example and are shown to one decimal place in the data tables, exact figures were used in the actual calculation.

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 2007 and first quarter 2008 better aligns the Survey data with many of the hard data indicators, which are year-average data.

Practically, to calculate the moving average, a weighting scheme is used that is 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.” Box 3 details the methodology and provides a clarifying example.

## Conclusion

The World Economic Forum’s Executive Opinion Survey is a unique tool for capturing the opinion of business leaders throughout the world concerning the many factors that not only impact the environment in which businesses operate, but in turn largely dictate the competitiveness of a nation. With coverage of 134 countries and with over 12,000 responses annually, the Survey is by far the largest poll of its kind. A project of this scale would not be possible without the incredible work carried out by the Forum’s network of over 140 Partner Institutes.

This year, the Survey has undergone a major overhaul with the help of world-class experts and practitioners. Improvements have been made throughout the process in order to further enhance the population representation of the sample and the statistical significance and the robustness of the results. In the future, we will continue to pursue efforts to enhance the Survey.

## Notes

- 1 Please refer to the list of Partner Institutes at the beginning of this *Report*.
- 2 The Survey sampling guidelines each year emphasize the need to have a sample with a sufficient presence of large companies because these companies tend to have better knowledge about the overall economy and the relative quality of the business environment. The size stratification of the sample helps to better achieve this goal.
- 3 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.
- 4 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.

- 5 The results are the scores obtained by each country in the various questions of the Survey. The two terms are used interchangeably throughout the text.
- 6 The completion rate is the proportion of unanswered questions among the 120 core questions in the survey instrument.
- 7 In a few cases, the respondent has not answered the question relative to their company’s activity. In order to include the surveys with missing sector information in the country averages, the average response values for the surveys without sector information are apportioned to the other sectors according to the sample sizes in those other sectors. This has the effect of including these surveys on a one-for-one basis as they occur in the sample—that is, with no adjustment for sector.
- 8 For details about the 2007 dataset of the Survey, please refer to Browne and Geiger 2007.

## Reference

- Browne, C. and T. Geiger. 2007. “The Executive Opinion Survey: The Voice of the Business Community.” *The Global Competitiveness Report 2007–2008*. Hampshire: Palgrave Macmillan. 85–95.