

Appendix table 6-5

Leading indicators of technological competitiveness: 2002

(Index)

Region or country/economy	National orientation	Socioeconomic infrastructure	Technological infrastructure	Productive capacity	Total
Argentina.....	44.9	52.4	31.0	32.5	160.7
Brazil.....	52.5	50.5	35.4	35.8	174.2
China.....	63.0	55.0	55.2	49.6	222.7
Czech Republic.....	64.6	64.4	34.7	44.6	208.3
Germany.....	75.6	78.2	65.5	65.0	284.3
Hungary.....	66.7	67.9	40.0	42.2	216.7
India.....	62.5	49.3	37.0	47.8	196.6
Indonesia.....	45.1	39.1	20.7	27.7	132.6
Ireland.....	84.1	80.7	44.2	53.0	262.0
Israel.....	79.5	85.0	52.3	49.4	266.2
Japan.....	76.4	67.6	73.8	80.3	298.1
Malaysia.....	73.0	64.9	28.8	39.1	205.9
Mexico.....	55.2	49.0	28.7	35.4	168.2
Philippines.....	59.3	55.0	24.0	45.0	183.3
Poland.....	63.7	68.3	36.6	42.5	211.1
South Korea.....	80.4	81.1	45.2	52.3	259.0
Taiwan.....	83.0	84.4	45.3	59.6	272.2
United States.....	79.8	85.9	92.7	82.8	341.2
Thailand.....	47.7	54.2	23.9	30.9	156.7
Venezuela.....	37.2	46.0	19.5	20.3	123.0

NOTES: For score and indicator calculations, raw data were transformed into scales of 0–100 for each indicator component and then averaged to generate comparable indicators with a 0–100 range. For survey items, 100 represents the highest response category for each question; for statistical data, 100 typically represents the value attained by the country with the largest value among the 33 countries included in the study. In the indicator formulations cited below, each term carries equal weight.

National orientation (NO) provides evidence that a nation is taking directed action to achieve technological competitiveness. These actions could take place in the business, government, or cultural sector or any combination of the three.

Indicator formulation: $NO = [Q1 + (Q2 + Q3)/2 + Q4 + F1V2002]/4$.

Data used: Published data from the PRS Group, Political and Economic Forecast table, Political Risk Letter for 2002 rating each country's investment risk (F1V2002); and survey data assessing each country's national strategy to promote high-technology development (Q1), social influences favoring technological change (Q2 and Q3), and entrepreneurial spirit (Q4).

Socioeconomic infrastructure (SE) assesses the social and economic institutions that support and maintain the physical, human, organizational, and economic resources essential to the functioning of a modern, technology-based industrial nation.

Indicator formulation: $SE = (Q5 + Q10 + HMHS2000)/3$.

Data used: Published data on the percentage of students enrolled in secondary (net percentage) and tertiary (gross percentage) education (HMHS2000) from the Harbison-Myers Skills Index for 2000, *Gross and Net Enrollment Ratio at Secondary Level by Country and by Gender for the School Years 1998/1999 and 1999/2000*, Institute for Statistics, United Nations Educational, Scientific, and Cultural Organization (UNESCO), October 2002 and *Gross Enrollment Ratio at Tertiary Level by Country and Gender for the Academic Years 1998/1999 and 1999/2000*, Institute for Statistics, UNESCO, October 2002; and survey data assessing each country's efforts to attract foreign investment (Q10) and the mobility of capital (Q5).

Technological infrastructure (TI) assesses the institutions and resources that contribute to a nation's capacity to develop, produce, and market new technology.

Indicator formulation: $TI = [(Q7 + Q8)/2 + Q9 + Q11 + EDP2002 + S\&E2000]/5$.

Data used: Published data from *Science and Technology*, Personnel Engaged in R&D by Category of Personnel (new available data for 1996-2000), Institute for Statistics, UNESCO, November 2002, on the number of scientists and engineers involved in research in 2000 (S&E 2000), national purchases of electronic data-processing equipment (EDP2002) from Reed Electronics Research, *Yearbook of World Electronics Data 2002/2003*, Reed Business Information Ltd., England, 2002; and survey data assessing linkages of R&D to industry (Q9), output of indigenous academic S&E (Q7 and Q8), and the ability to make effective use of technological knowledge (Q11).

Productive capacity (PC) assesses the physical and human resources devoted to manufacturing products and the efficiency with which those resources are employed.

Indicator formulation: $PC = (Q6 + Q12 + Q13 + A262002)/4$.

Data used: Published data on electronics production (A262002) from Reed Electronics Research, *Yearbook of World Electronics Data 2002/2003*, Reed Business Information Ltd., England, 2002; and survey data assessing the supply and quality of skilled labor (Q6), capability of the indigenous management (Q13), and the existence of indigenous suppliers of components for technology-intensive products (Q12).

SOURCE: Georgia Technology Research Co., *High Tech Statistics, Preliminary Report* (Atlanta, GA, 2003).