The Competitiveness Indexes

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The World Economic Forum (WEF) has been studying the competitiveness of nations for nearly three decades. Since 1979, annual *Global Competitiveness Reports* have examined the factors enabling national economies to achieve sustained economic growth and long-term prosperity. In 2004, the World Economic Forum introduced the Global Competitiveness Index (GCI), for measuring national competitiveness, taking into account the microeconomic and macroeconomic foundations of national competitiveness. *Competitiveness is defined by WEF* as *the set of institutions, policies, and factors that determine the level of productivity of a country*. The GCI is composed of 113 variables, of which 79 come from the Executive Opinion Survey (Survey) carried out annually by the World Economic Forum. The United States tops the overall ranking in The Global Competitiveness Report 2007-2008. Switzerland is in second position followed by Denmark, Sweden, Germany, Finland and Singapore, respectively. This year GCI has been prepared by Xavier Sala-i-Martin, Jennifer Blanke, Margareta Drzeniek Hanouz, Thierry Geiger, Irene Mia, and Fiona Paua and executive survey has been conducted by Ciara Browne and Thierry Geiger.

GCI is measured by 12 *pillars of competitiveness:*

1. Institutions
2. Infrastructure
3. Macroeconomy
4. Health and primary education
5. Higher education and training
6. Goods market efficiency
7. Labor market efficiency
8. Financial market sophistication
9. Technological readiness
10. Market size
11. Business sophistication
12. Innovation

Institutions

1. The institutional environment forms the framework within which private individuals, firms, and governments interact to generate income and wealth in the economy.
2. Provides security for investment.
3. Distribution of benefits and costs of development strategies and policies among the society.
4. Excessive bureaucracy and red tape, overregulation, corruption, dishonesty in dealing with public contracts, lack of transparency and trustworthiness, or the political dependence of the judiciary system impose significant economic costs to businesses and slow down the process of economic development.
5. Private institutions: The large corporate scandals that have occurred over the past few years have highlighted the relevance of accounting and reporting standards for preventing fraud and mismanagement, and for maintaining investor and consumer confidence.

Variables:

Judicial independence

Strength of auditing and reporting standards

Protection of minority shareholders' interests

Efficacy of corporate boards

Efficiency of legal framework

Property rights

Transparency of government policymaking

Business costs of crime and violence

Wastefulness of government spending

Business costs of terrorism

Public trust of politicians

Burden of government regulation

Organized crime

Diversion of public funds

Ethical behavior of firms

Reliability of police services

Favoritism in decisions of government officials

Intellectual property protection

Infrastructure

The existence of high-quality infrastructure is critical for ensuring the efficient functioning of the economy. A well-developed transport and communications infrastructure network is a prerequisite for the efficient functioning of markets and for export growth, as well as for poor communities' ability to connect to core economic activities and schools. WEF looks for:

1. Effective modes of transport for goods, people, and services—such as quality roads, railroads, ports, and air transport—enable entrepreneurs to get their goods to market in a secure and timely manner, and facilitate the movement of workers around the country to the most suitable jobs.
2. Electricity supplies that are free of interruptions and shortages, to ensure that businesses and factories can work unimpeded.
3. A solid and extensive telecommunications network- allows for a rapid flow of information, which increases overall economic efficiency by helping to ensure that decisions made by economic actors take into account all available relevant information.

Variables:

Available seat kilometers (hard data)

Quality of railroad infrastructure

Quality of electricity supply

Telephone lines (hard data)

Quality of roads

Quality of port infrastructure

Quality of overall infrastructure

Quality of air transport infrastructure

Macroeconomy

The stability of the macroeconomic environment is important for business and, therefore, is important for the overall competitiveness of a country. WEF looks for an macroeconomy that take care of:

1. Inflation and unemployment
2. Deficits

3. Stability

Variables:

National savings rate (hard data)

Interest rate spread (hard data)

Government surplus/deficit (hard data)

Government debt (hard data)

Inflation (hard data)

Health and primary education

This pillar takes into account the health and quality and quantity of primary education provided to workers in an economy because both these factors adds to production efficiency of workers. Unhealthy workers cannot operate at their full potential and Basic education increases the efficiency of each individual worker, making the economy more Productive.

Variables:

Infant mortality (hard data)

Life expectancy (hard data)

Business impact of malaria

Malaria incidence (hard data)

Business impact of HIV/AIDS

Tuberculosis incidence (hard data)

HIV prevalence (hard data)

Business impact of tuberculosis

Quality of primary education

Primary enrollment (hard data)

Education expenditure (hard data)

Higher education and training

This pillar measures secondary and tertiary enrollment rates as well as the quality of education as assessed by the business community. The importance of vocational and continuous on-the-job training, neglected in many economies, cannot be overstated, as it ensures a constant upgrading of workers' skills to the changing needs of the production system.

Variables:

Quality of management schools

Quality of math and science education

Quality of the educational system

Local availability of specialized research and training services

Extent of staff training

Secondary enrollment (hard data)

Tertiary enrollment (hard data)

Internet access in schools

Goods market efficiency

This pillar looks for the goods market efficiency of a country. Efficient good markets can produce the appropriate combination of products and services according to the demand and supply. WEF looks for:

1. Healthy market competition, both domestic and foreign- ensures that most efficient firm survives.
2. Minimum of impediments to business activity through government intervention- ensures best possible environment for exchange of goods.
3. Market efficiency also depends on demand conditions such as customer orientation and buyer sophistication: customers who accept poor treatment by firms tend not to impose the necessary discipline on companies for efficiency to be achieved in the market.

Variables:

Intensity of local competition

Extent of market dominance

Extent and effect of taxation

Effectiveness of anti-monopoly policy

Buyer sophistication

Degree of customer orientation

Prevalence of trade barriers

Trade-weighted tariff rate (hard data)

Total tax rate (hard data)

Number of procedures required to start a business (hard data)

Burden of customs procedures

Time required to start a business (hard data)

Agricultural policy costs

Prevalence of foreign ownership

Business impact of rules on FDI

Labor market efficiency

1. The efficiency and flexibility of the labor market are critical for ensuring that workers are allocated to their most efficient use in the economy.
2. Labor markets must have the flexibility to shift workers from one economic activity to another quickly, and to allow for wage fluctuations without much social disruption.
3. Efficient labor markets must also ensure a clear relationship between worker incentives and their efforts, as well as the best use of available talent—which includes equity in the business environment between women and men.

Variables:

Reliance on professional management

Brain drain

Pay and productivity

Female participation in labor force (hard data)

Hiring and firing practices

Firing costs (hard data)

Rigidity of employment (hard data)

Non-wage labor costs (hard data)

Flexibility of wage determination

Cooperation in labor-employer relations

Financial market sophistication

1. An efficient financial sector is needed to allocate the resources saved by a nation's citizens to its most productive uses.
2. A proficient financial sector channels resources to the best entrepreneurs or investment projects rather than to the politically connected. A thorough assessment of risk is therefore a key ingredient.
3. Opportunities for small innovators with good ideas.
4. Availability of risk capital and loans.
5. Trustworthiness and transparency of financial sector.
6. Sources as loans from a sound banking sector, well-regulated securities exchanges, and venture capital.

Variables:

Financing through local equity market

Strength of investor protection (hard data)

Venture capital availability

Regulation of securities exchanges

Financial market sophistication

Ease of access to loans

Soundness of banks

Legal rights index (hard data)

Restriction on capital flows

Technological readiness

This pillar measures the agility with which an economy adopts existing technologies to enhance the productivity of its industries. This is a critical concept, as technological differences have been shown to explain much of the variation in productivity between countries. WEF measures the usage and access of information and communication technologies (ICT) by the country. This pillar does not give any significance that whether the technology used has been invented by the country or not. That is where this pillar differs from 12th pillar that is innovation.

Variables:

Firm-level technology absorption

FDI and technology transfer

Availability of latest technologies

Laws relating to ICT

Mobile telephone subscribers (hard data)

Personal computers (hard data)

Internet users (hard data)

Broadband Internet subscribers (hard data)

Market size

The size of the market affects productivity because large markets allow firms to exploit economies of scale. Foreign trade also matters as international markets serve as substitute to the domestic market. The empirical evidence on the relation between international trade and growth is controversial. However, much evidence shows that trade is positively associated with growth. WEF takes into account both markets while constructing the 10th pillar of economic competitiveness: market size.

Variables:

Domestic market size index (hard data)

Foreign market size index (hard data)

Business sophistication

Business sophistication concerns the quality of a country's overall business networks, as well as the quality of individual firms' operations and strategies. Business sophistication is conducive to higher efficiency in the production of goods and services. This leads, in turn, to increased productivity, thus enhancing a nation's competitiveness. This pillar is particularly important for economies in the innovation-driven stage of development. The quality of a country's business networks and supporting industries is measured by using variables on the quantity and quality of local suppliers. WEF looks for if companies and suppliers are interconnected in geographically proximate groups- efficiency is heightened, leading to greater opportunities for innovation and to the reduction of barriers to entry for new firms.

Variables:

Local supplier quantity

State of cluster development

Value chain breadth

Extent of marketing

Control of international distribution

Willingness to delegate authority

Local supplier quality

Production process sophistication

Nature of competitive advantage

Innovation

In the long run, when all the other factors run into diminishing returns, standards of living can be expanded only by technological innovation. WEF measures an environment

that is conducive to innovative activity, supported by both the public and the private sectors. In particular, sufficient investment in research and development especially by private, high-quality scientific research institutions, collaboration in research between universities and industry, and protection of intellectual property.

Variables:

Availability of scientists and engineers

Quality of scientific research institutions

Company spending on R&D

Capacity for innovation

University-industry research collaboration

Government procurement of advanced technology products

Utility patents (hard data)

The interrelation of the 12 pillars

All the 12 pillars are related to each other and tend to reinforce each other. Innovation (12th pillar) is not possible in a world without institutions (1st pillar) that guarantee intellectual property rights, cannot be performed in countries with a poorly educated and poorly trained labor force (5th pillar), and will never take place in economies with inefficient markets (6th, 7th, and 8th pillars) or without extensive and efficient infrastructure (2nd pillar). Although the actual construction of the Index involves the aggregation of the 12 pillars into a single index, the individual measures are also published which helps countries to identify their week points explicitly.

Stages of development

The determinants of competitiveness are many, are complex, and are open-ended. Different pillars affect different countries differently. So WEF adapt Michael Porter's definition of stages of development.

In the first stage, the economy is ***factor-driven*** and countries compete based on their factor endowments, primarily unskilled labor and natural resources. Companies compete on the basis of price and sell basic products or commodities, with their low productivity reflected in low wages. Maintaining competitiveness at this stage of

development hinges primarily on well-functioning public and private institutions (pillar 1), appropriate infrastructure (pillar 2), a stable macroeconomic framework (pillar 3), and a healthy and literate workforce (pillar 4).

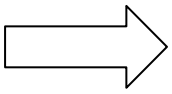
As wages rise with advancing development, countries move into the ***efficiency-driven*** stage of development, when they must begin to develop more efficient production processes and increase product quality. At this point competitiveness is increasingly driven by higher education and training (pillar 5), efficient goods markets (pillar 6), well-functioning labor markets (pillar 7), sophisticated financial markets (pillar 8), a large domestic or foreign market (pillar 9), and the ability to harness the benefits of existing technologies (pillar 10).

Finally, as countries move into the ***innovation-driven*** stage, they are able to sustain higher wages and the associated standard of living only if their businesses are able to compete with new and unique products. At this stage, companies must compete through innovation (pillar 12), producing new and different goods using the most sophisticated production processes (pillar 11).

Weighted Index

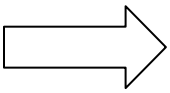
Higher relative weights are attributed to those pillars that are relatively more important for a country given its stage of development. Although all 12 pillars are important for any country but importance of each one depends on the particular stage of development. To take this into account, the pillars are organized into three subindexes, each critical to a particular stage of development. The *basic requirements subindex* groups those pillars most critical for countries in the factor-driven stage. The *efficiency enhancers subindex* includes those pillars critical for countries in the efficiency-driven stage. And the *innovation and sophistication factors subindex* includes all pillars critical to countries in the innovation-driven stage. To obtain the precise weights that each subindex gets in the overall GCI, a maximum likelihood regression of GDP per capita was run against each subindex for past years, allowing for different coefficients for each stage of development. The rounding of these econometric estimates led to the choice of weights displayed.

Basic requirements
- Institutions
- Infrastructure
- Macroeconomic stability
- Health and primary education



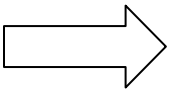
factor-driven economies

Efficiency enhancers
- Higher education and training
- Goods market efficiency
- Labor market efficiency
- Financial market sophistication
- Technological readiness
- Market size



efficiency-driven economies

Innovation and sophistication factors
- Business sophistication
- Innovation



innovation-driven economies

Pillar group	Factor driven stage	Efficiency driven stage	Innovation driven stage
Basic requirements	60	40	20
Efficiency enhancers	35	50	50
Innovation and sophistication factors	5	10	30

Stages of development

Countries are allocated to stages of development based on two criteria. The first criterion is the level of GDP per capita at market exchange rates. This widely available measure is used as a proxy for wages, as internationally comparable data for the latter are not available for all countries covered. The second criterion measures the extent to which countries are factor driven. WEF proxy this by the share of exports of primary goods in total exports (goods and services) and assume that countries that export more than 70 percent of primary products are to a large extent factor driven. Countries falling in between two of the three stages are considered to be "in transition." For these

countries, the weights change smoothly as a country develops, reflecting the smooth transition from one stage of development to another. By introducing this type of transition between stages into the model—that is, by placing increasingly more weight on those areas that are becoming more important for the country's competitiveness as the country develops—the index can gradually "penalize" those countries that are not preparing for the next stage.

Stage of development	GDP per capita (in us $)
Factor driven	<2,000
Transition	2,000-3,000
Efficiency driven	3,000-9,000
Transition	9,000-17,000
Innovation driven	>17,000

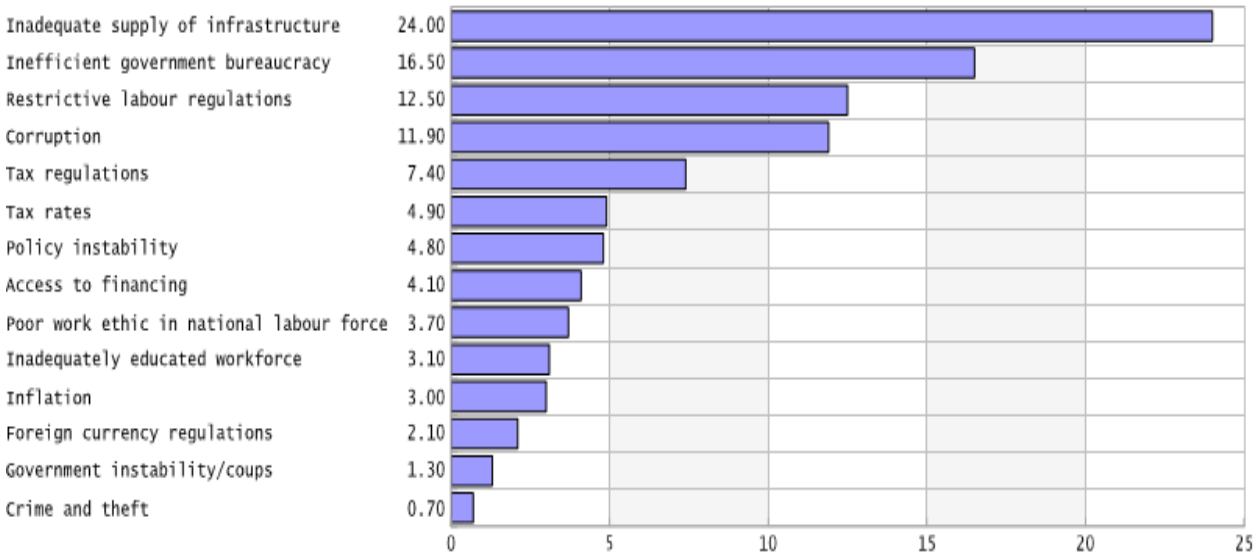
Changes in GCI in 2007-08

1. Number of countries has been increased to 131. Serbia and Montenegro have been treated as separate countries this year. New countries added are: Libya, Oman, Puerto Rico, Saudi Arabia, Syria, and Uzbekistan.
2. The structure of model has returned to 12 pillar system as compared to 2005-06 similar to 2004-05- First, the single pillar on market efficiency has been broken into its three subcomponents (goods, labor, and financial markets), Second, market size, which was last year a sub-component of the goods market pillar, is now reinstated as a pillar in its own right, as it was in the original index in 2004.
3. New Survey data has been included for some concepts that were previously missing from the model. For example, in the financial markets sophistication pillar a hard data variable is introduced to capture the strength of investors' legal rights, and in the health and primary education pillar, a Survey variable is introduced capturing the quality of primary education.
4. The real exchange rate (RER) has been dropped from the model from macroeconomic stability pillar- it is very hard to measure RER in practice.
5. New rankings for 2006-07 have also been given so that countries can compare their competitiveness as compared to last year.
6. This year, a new approach is introduced for computing the country scores for Survey variables. A *moving average* technique has been adopted, which consists of taking a weighted average of the results of the 2007 Survey and of the 2006 Survey. The weights are determined so that each individual response of the 2007 sample is given 1.5 times more weight than each response of the 2006 sample.

Analysis

categories	India	Pakistan	China	US
1. Institutions	48	81	77	33
2. Infrastructure	67	72	52	6
3. Macroeconomy	108	101	7	75
4. Health and primary education	101	115	61	34
Basic requirement	74	98	44	23
5. Higher education and training	55	116	78	5
6. Goods market efficiency	36	82	58	12
7. Labor market efficiency	96	113	55	1
8. Financial-market sophistication	37	65	118	11
9. Technological readiness	62	89	73	9
10. Market size	3	28	2	1
Efficiency enhancers	31	81	45	1
11. Business sophistication	26	79	57	7
12. Innovation	28	69	38	1
Inn. and soph. factors	26	78	50	4
GCI 2007-08	48	92	34	1
GCI 2006-07	43	91	54	6
GCI 2005-06	45	94	48	1
characterization	Factor driven	Factor driven	1-2 transition	Innovation driven

The most Problematic factors for doing business in India



Some Views

"The quality of the business environment in India has improved tangibly in recent years, with increased efficiency of goods, labor and financial markets and greater innovation and sophistication of firm operations. However, a number of weaknesses persist that need to be addressed especially in the area of infrastructure quality. Moreover, dealing with shortcomings in the provision of health services and education will ensure that the benefits of economic growth are more broadly distributed," said World Economic Forum's head of strategic insight teams, Fiona Paua.

-Fiona Paua

Sir India is the only country in the world that has

- Outdated, Iron-Clad Labor laws that make firing inefficient workers impossible. No other country in the world including Communist China has these laws.
- Bureaucrats with colonial mindset, going berserk choking enterprise with Byzantine and opaque rules, like the five year rule stopping domestic airlines flying abroad.

- The above leading to unimaginable corruption and inefficiency from top to bottom. No wonder India is in the Bottom.

-Jay Bharat, New York

I am sure the Indian Government is well aware of the situation and will do something about it. Projects like the Golden Quadrilateral and the fact that air travel is reaching beyond the metros will definitely alleviate the situation. India should move up the rankings from here on. Additionally, per capita income is rising despite the population increase.

-Ameya K, London

Actually this index does not have any "justification". All people and nations cannot be competitive. A welfare index, per capita, showing the following would be more pertinent: Hunger (or food intake, with nutrition content etc etc.). Homelessness, Clothing, Daily wages, Wealth.

-Appusami, India

India is always the down Economy, it is the false data from your side that makes India the best, wait for few years what is happening with America that will happen with India.

-Rahul Magan, Delhi

India, at 48th place, also derives substantial advantage from its market size, where it ranks third in domestic market size and fourth in foreign market size; as well as gaining competitive advantage from the sophistication of its businesses and its innovative potential.

The Global Competitiveness Report series has evolved over the last three decades into the world's most comprehensive and respected assessment of countries' competitiveness, offering invaluable insights into the policies, institutions, and factors driving productivity and, thus, enabling sustained economic growth and long-term prosperity.

Produced in collaboration with leading academics and a global network of research institutes, The Global Competitiveness Report provides users with a comprehensive dataset on a broad array of competitiveness indicators for a large number of industrialized and developing economies. This year's edition features a record 131 economies, accounting for more than 98 percent of the world's GDP.

The rankings are calculated from both publicly available data and the Executive Opinion Survey, a comprehensive annual survey conducted by the World Economic Forum together with its network of Partner Institutes (leading research institutes and business organizations) in the countries covered by the Report. This year, over 11,000 business leaders were polled in a record 131 countries.

References

1. The Global Competitiveness Report 2007-2008 issued by world economic forum.
2. Data available online at WEF official website freely.
3. Media coverage by Economic Time, India.
4. Interviews of report makers available online free at YouTube.
5. Some googling.