Relative competitiveness of 31 mainland China provinces and states of India and ten economies of Association of South East Asian Nations
Implications for growth and development

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Abstract

Purpose – The paper is a pioneering attempt to study the relative competitiveness of Association of South East Asian Nations – ASEAN-10, 31 provinces of mainland China and 35 states of India by disaggregate approach *vis-à-vis* ranking and simulation studies.

Design/methodology/approach – The proposed methodology is based on the standard ranking adopted by the *World Competitive Yearbook* but redefines a relevant set of data matrix consisting of 101 indicators to better reflect local conditions and characteristics of local economies. Under the proposed methodological approach, the basis of ranking is the standardized value (STD), and first the 31 economies' average for each indicator were computed following which the standard deviation was calculated. STD was computed by subtracting the 31 economies' average from an economy's original value and then dividing the result by the standard deviation.

Findings – The empirical findings revealed the specific shifts in relative competitiveness between China and India over decades and over four different environments, namely economics, government-institutions, business social categories. It was found that competitive provinces for China are concentrated along the eastern coastal region, whereas more competitive states of India are well distributed across the Indian continent. This implies that the Chinese government needs to play a more pro-active role in drawing foreign direct investment to less developed western, central and north eastern China by way of infrastructure development, tax incentives and investment in education in those regions. Studies further revealed that Vietnam is a rapid rising economy drawing closer towards Thailand while Indonesia and Philippines are deteriorating within the ten Associate of Southeast Asian Nations. Based on these empirical findings, comparative strategies and cooperation for growth and development amongst China, India and ASEAN were drawn.

Originality/value – The fundamental *raison d'être* of this study stems from the desire to address an area of research gap previously overlooked. Most international studies on competitiveness rankings to date either ranked economies across the globe and/or by population sizes. One of the critical issues in emerging economies of Asia is the uneven regional development, especially the urban-rural growth disparity amongst local economies of China and India. Through competitiveness ranking of vast and diverse economies such as China, India and ASEAN-10.

Keywords South East Asia, China, India, Economic development, Economic growth, International trade

Paper type Research paper

Introductory notes: motivation, objectives and concerns

The fundamental *raison d'être* of our study stems from the desire to address an area of research gap previously overlooked. Annual competitiveness studies by Global

Competitiveness Report, *World Economy Yearbook* (*WCY*) and World Economic Forum, which either ranked economies across the globe and/or by population size of greater or below ten million, yet be it multinational corporations (MNCs) or small- and medium-enterprises (SMEs), are more interested in relative competitiveness of economies within the same geographical sub regions when considering investment strategies and locations. Through competitiveness ranking, we aim to provide yet another alternative source of information to assist companies to better formulate investment strategies and make informed choices on investment locations.

One of the critical issues in emerging economies of Asia must be the uneven regional development, especially the urban-rural growth disparity amongst local economies of China and India. Currently, we do not observe independent competitiveness studies on local economies amongst 31 provinces of China, 35 states of India and ten economies of Association of South East Asian Nations (ASEAN). Thus, the prime objective of our pioneering attempts to assess relative competitiveness so as to introduce peer pressure to improve competitiveness amongst policy makers and local governments.

We are also motivated by wide global interests on the two giant emerging economies, namely China and India, in terms of their relative performances by sectors over time, and hence implications on the developmental path the two economies have separately taken. We hope to generate some empirical results that would throw light on differences in competitiveness of these two economies.

Detailed study on competitiveness of local economies of Asia would assist formulation of developmental strategies and help to enhance competitive edge by improving their respective strength and weaknesses. Such effort should assist in the longer-term effort to promote a more balanced regional development, convergence and integration of Asian economies to move towards an Asian Economic Entity.

ASEAN members were shocked by the startling vulnerability of ASEAN, both for market and transition economies, in the 1997 financial turmoil. Fresh attractiveness to and fierce competition posed by large emerging economies such as India and China, since late 1990s are becoming increasing concerns. ASEAN economies risked being marginalized unless pooled together and should integrate further with Asian economies via the vehicle known as ASEAN 10 + 3 (+3 include China, Japan and Korea). It is therefore of strategic interests for ASEAN to understand detailed competitiveness profiles of the vast and diverse economies of China and India.

Unlike, Japan or the newly industrialized East Asian economies which include Hong Kong, Korea, Singapore and Taiwan, that have systematically moved up the technological ladder under the flying-geese theory of development, emerging China and India, that are rich in natural and human resources, are capable of absorbing both low- and high-tech production activities from within and could potentially pose direct competition across ASEAN. It is thus paramount for ASEAN to ponder how to promote economic resiliency, identify market niches, target potential demand in China and India that could reflect ASEAN's comparative advantage and develop a balanced economic ecol system so as to avoid being squeezed in the middle.

Methodology, competitiveness matrix and data sources
Methodological approach adopted
The proposed methodology adopted by the Asia Research Center (ACR) is based on the principal methodology of WCY but redefines a relevant set of data matrix consisting of

101 indicators that reflect local conditions and characteristics of local economies in China. Under the proposed methodological approach, the basis of ranking is the standardized value (STD), and we first compute the 31 economies' average for each indicator following which the standard deviation is calculated using the formula:

$$S = \sqrt{\frac{\sum(x - \bar{x})^2}{N}}.$$

(1)

Following which STD is computed, by subtracting the 31 economies' average from an economy's original value and then dividing the result by the standard deviation as follows:

$$\text{STD value} = \frac{x - \bar{x}}{S}.$$

(2)

Note that sub-sector rankings are the average of the STD values of all the ranked indicators that make up each sub-sector. This average is found by dividing the sum of the STD values by the number of indicators in each sub-sector. That is to say each sub-sector, independent of how many indicators it contains, has the same weight in the overall consolidation of competitiveness scores. This enables us to "lock" the weight of sub sectors independently of the number of indicators they each contain.

Classical economists evaluate competitiveness amongst nations based on factors of production such as land, capital, natural resources and labor. It is widely acknowledge that a country's competitiveness is more than just a set of "hard" quantitative macroeconomics aggregates. Attraction of foreign direct investments (FDIs) and flourishing of both MNCs and SMEs must also cope with other "soft" attributes such as social, political, cultural, governmental, environment, institutional and educational dimensions of a nation.

Be it through the World Trade Organization's (WTO) multilateral effort, regional or bilateral free trade agreements, these are parts of the globalization effort to push tariffs down; open markets further, attract FDIs and deepen the globalization process. In a world of imperfect markets given limited, incomplete and asymmetric information, it is vital for Asian economies to cope with intensifying global competition *vis-à-vis* a new but not necessarily lesser role of the government, which must work hand in hand with markets, economic agents and the community. In the following proposed studies, we defined four major environments, namely economics, government-institutions, business and social, which consist of matrix of competitiveness indicators as listed in Appendices 1 and 2.

Environments, factors and indicators for computing ASEAN-10 competitiveness index are as follows
We identify a common matrix of 122 competitiveness indicators under the four-designated environments including economics, government, institutions, businesses and social environment consisting of 51 series of quantitative data and 71 series of qualitative data (Tan, 2004). Data series were sourced from International Financial Statistics, International Monetary Fund, ASEAN Secretariat, Political and Economic Risk Consultancy, Ltd and raw data generated by ARC at Nanyang Technological University, Singapore. The competitiveness indicators used are as follows:

- Economic environment (18): national accounts (8); international transactions (5); foreign investments (5).
- Government and institutions (43): government finance (6); government policies (7); institutional framework; standards and regulations (30).
- Business environment (22): financial markets (9); labor market (9); productivity (4).
- Social environment (39): basic infrastructure (12); technological infrastructure (9); quality of life (18).

Environments, factors and indicators for computing China-India relative competitiveness index (CI-RCI)
In the proposed study, we design a common matrix of 101 competitiveness indicators for China and India under the four-designated environments including economics, government-institutions, businesses and social environment (Chen *et al.*, 2005; Sen *et al.*, 2005). We then conduct competitiveness ranking on 66 economies, (i.e. including 31 provinces, municipalities and autonomous regions of China, 35 states and union territories of India), holding 2004 data set for India and simulate it against the 1994, 1999 and 2004 data set for China in each round, thereafter we sum the standardized scores of top ten economies for both provinces of China and states of India, respectively, to arrive at the various sets of values for China-India relative competitiveness index (CI-RCI).

We aim to empirically determine the differences in terms of overall competitiveness and the relative competitiveness gap by environments between India and China over time. Data sources used include Chinese official provincial statistical yearbooks, Datanet India Private Limited purchased online and other raw data series generated by ARC at Nanyang Technological University, Singapore. The competitiveness indicators used are as follows:

- Economics environment (21): regional economies (13); international and inter-regional trade (5); FDIs (3).
- Government and institutions (26): public finance (8); institutional framework (6); government policies (12).
- Business environment (29): financial markets (4); labor markets (15); other business conditions (10).
- Social environment (25): basic infrastructure (11); technological infrastructure (4); quality of life (10).

Empirical findings and their interpretations
Summary findings on Institute of Policies Studies-Nanyang Technological University (IPS-NTU) competitiveness ranking of ASEAN (2003, 2004, 2005) are as follows.

In terms of overall competitiveness, Singapore, Malaysia and Thailand have continued to hold on to their respective top three positions from 2003 to 2005 (Table I). Singapore is well ahead of Malaysia and Thailand in all categories except in business environment where Malaysia seems to be in par with Singapore, closing the gap with the latter catching up from 90 per cent in 2004 to 99 per cent in 2005 (Table II).

Brunei was included in the study for the first time in 2005. Being a resource-rich economy with a relative small population, she emerged in the sixth position amongst

ASEAN-10 in the overall competitiveness, economic, government-institutions and business environment, but slightly better fifth position in the social category.

Vietnam has demonstrated improvement in over all competitiveness, claiming the fourth position in 2005, up from fifth position in 2003 and 2004. In terms of economic environment, Vietnam has made significant gains from sixth position in 2003 to fourth position in 2004 and 2005 (Table III), but she remains relatively weak in the government and institutions category (Table IV).

Philippines and Indonesia appear to have steadily deteriorated in their overall competitive edge, from fourth and sixth in 2003 to fifth and eighth in 2005, respectively. Their worsening competitiveness is due mainly to economic environment

Ranking	2003	2004	2005	Final score
1	Singapore	Singapore	Singapore	1.5081
2	Malaysia	Malaysia	Malaysia	0.5772
3	Thailand	Thailand	Thailand	0.1604
4	Philippines	Philippines	Vietnam	− 0.1425
5	Vietnam	Vietnam	Philippines	− 0.1428
6	Indonesia	Myanmar	Brunei	− 0.2817
7	Cambodia	Cambodia	Cambodia	− 0.3827
8	Myanmar	Indonesia	Indonesia	− 0.3831
9	Lao PDR	Lao PDR	Lao PDR	− 0.4501
10			Myanmar	− 0.4701

Table I.
IPS-NTU overall competitiveness ranking of ASEAN-10

Ranking	2003	2004	2005	Final score
1	Singapore	Singapore	Singapore	0.5859
2	Malaysia	Malaysia	Malaysia	0.5808
3	Thailand	Philippines	Thailand	0.2181
4	Philippines	Thailand	Philippines	0.2096
5	Vietnam	Vietnam	Vietnam	0.1459
6	Indonesia	Myanmar	Brunei	− 0.3006
7	Myanmar	Indonesia	Indonesia	− 0.3061
8	Cambodia	Cambodia	Cambodia	− 0.3448
9	Lao PDR	Lao PDR	Lao PDR	− 0.3469
10			Myanmar	− 0.4714

Table II.
IPS-NTU competitiveness ranking on business environment of ASEAN-10

Ranking	2003	2004	2005	Final score
1	Singapore	Singapore	Singapore	1.6487
2	Thailand	Malaysia	Malaysia	0.7022
3	Malaysia	Thailand	Thailand	0.2731
4	Philippines	Vietnam	Vietnam	− 0.0739
5	Indonesia	Philippines	Cambodia	− 0.2942
6	Vietnam	Cambodia	Brunei	− 0.2953
7	Cambodia	Lao PDR	Indonesia	− 0.3104
8	Myanmar	Myanmar	Philippines	− 0.4063
9	Lao PDR	Indonesia	Lao PDR	− 0.5760
10			Myanmar	− 0.6680

Table III.
IPS-NTU competitiveness ranking on economic environment of ASEAN-10

for Philippines and both economic and social environments for Indonesia. In terms of social category, Indonesia has deteriorated from eight position in 2003 to ninth position in 2004 and tenth position in 2005 (Table V).

As expectedly, Cambodia, Laos and Myanmar continued to be consistent non-performers since 2003, notably Myanmar has steadily slipped to the bottom rankings in overall competitiveness and all other four environments including economics, business, social, government and institutions by 2005.

Summary findings on relative competitiveness index amongst respective top ten mainland China provinces and states of India are as follows.

When computing CI-RCI using 1994 data (Table VI), the index suggested that India was only 73 per cent of China' overall competitiveness, where both were nearly in par

Ranking	2003	2004	2005	Final score
1	Singapore	Singapore	Singapore	1.9061
2	Malaysia	Malaysia	Malaysia	0.5797
3	Thailand	Thailand	Thailand	0.0577
4	Philippines	Philippines	Philippines	− 0.1977
5	Indonesia	Indonesia	Indonesia	− 0.3142
6	Vietnam	Myanmar	Brunei	− 0.3289
7	Myanmar	Lao PDR	Vietnam	− 0.3672
8	Cambodia	Cambodia	Myanmar	− 0.4097
9	Lao PDR	Vietnam	Cambodia	− 0.4484
10			Lao PDR	− 0.4792

Table IV. IPS-NTU competitiveness ranking on government and institutions of ASEAN-10

Ranking	2003	2004	2005	Final score
1	Singapore	Singapore	Singapore	1.8916
2	Malaysia	Malaysia	Malaysia	0.4459
3	Thailand	Thailand	Thailand	0.0927
4	Philippines	Philippines	Philippines	− 0.1770
5	Vietnam	Vietnam	Brunei	− 0.2019
6	Cambodia	Myanmar	Vietnam	− 0.2752
7	Lao PDR	Cambodia	Myanmar	− 0.3311
8	Indonesia	Lao PDR	Lao PDR	− 0.3983
9	Myanmar	Indonesia	Cambodia	− 0.4433
10			Indonesia	− 0.6034

Table V. IPS-NTU competitiveness ranking on social environment of ASEAN-10

	B/A (per cent)	China (1994) A	India (1994) B
Overall CI-RCI	74	5.1455	3.8065
Economics	93	4.8809	4.5492
Government and institutions	76	6.7360	5.1421
Businesses	69	6.5277	4.4975
Social	67	4.5372	3.0724

Table VI. IPS-NTU CI-RCI (1994) amongst respective top ten local economies

on economic environment (93 per cent), but China was ahead in government and institutions (76 per cent), business (69 per cent) and social (67 per cent) environment.

When computing CI-RCI using 1999 data (Table VII), the index revealed that India was left further behind with only 49 per cent of China's overall competitiveness and losing ground in all four environments including economic (49 per cent), government and institutions (69 per cent), businesses (50 per cent) and social (39 per cent) environments.

When computing CI-RCI using 2004 data (Table VIII), the index showed that India was left with a fraction amounting to 25 per cent of China's overall competitiveness, with further deterioration in all four environments including economics (48 per cent), government and institutions (53 per cent), businesses (48 per cent) and social (9 per cent) categories.

However, when computing CI-RCI holding 2004 data for India and 1999 data for China (Table IX), CI-RCI indicated that India still has only 56 per cent of China's overall competitiveness, more competitive than China in government and institutions (116 per cent), but still behind in economics (54 per cent), business (77 per cent) and social (54 per cent) environments.

	B/A (per cent)	China (1999) A	India (1999) B
Overall CI-RCI	49	6.4126	3.1236
Economics	49	6.7803	3.3390
Government and institutions	69	8.6861	5.9548
Businesses	50	6.9167	3.4664
Social	39	6.4604	2.5080

Table VII. IPS-NTU CI-RCI (1999) amongst respective top ten local economies

	B/A (per cent)	China (2004) A	India (2004) B
Overall CI-RCI	25	6.6994	1.6771
Economics	48	7.9141	3.7600
Government and institutions	53	8.9705	4.7300
Businesses	48	6.1343	2.9166
Social	9	4.8213	0.4449

Table VIII. IPS-NTU CI-RCI (2004) amongst respective top ten local economies

	B/A (per cent)	China (1999) A	India (2004) B
Overall CI-RCI	58	5.2545	3.0247
Economics	54	7.2076	3.8834
Government and institutions	116	5.7569	6.6587
Businesses	76	4.8286	3.7116
Social	54	4.4390	2.4072

Table IX. IPS-NTU China (1999)-India (2004) relative competitiveness index amongst respective top ten local economies

Interestingly, when computing CI-RCI holding 2004 data for India and 1994 data for China (Table X), CI-RCI index reflected that India was overall more competitive than China (148 per cent), quite in par with China in terms of business environment (108 per cent), ahead in economics (120 per cent) and government and institutions (147 per cent), but still with only 66 per cent of China's competitiveness in the social environment.

Based on the above empirical findings, we may further summarized that the overall competitiveness gap between China and India has indeed widen considerably from three quarter of the former in 1994 (74 per cent) to a quarter in 2004 (25 per cent). The Indian economy of 2004 can be conjectured on overall to be 48 per cent more competitive than the level China was in 1994 including economics, government and institutions, businesses except the social environment. Rapid shift of relative competitiveness for the Indian economies in comparison with China were most evident in the social environment as well as efficiency of government and institutions.

Policy implications of CI-RCI on development strategies suggest that India must seriously consider to incorporate the FDI-driven export-led growth model as part of an overall growth strategy, as was adopted by other Asian economies including China, Japan, Korea, Hong Kong, Malaysia, Taiwan and Singapore.

India needs to improve her government efficiency further, undertake more wide-ranging institutional reforms and adopts a more pro-business environment if she is to attract more FDI from MNCs in the next decade. The sharp contrast between China and India is the head-start by the former on infrastructure investments, in air and sea ports, transportation routes and telecommunication facilities, especially amongst the coastal-eastern belt of China.

India is significantly lagging behind China in education investment and hence India's relative lower level of literacy, which featured amongst indicators under the social environment, called for government policy intervention and funding assistance from international agencies.

Concluding remarks
Some facts about the increasing Chinese economic influences
Firstly, China's export trade, which is currently growing at a relatively slower pace in comparison to East Asian economies then during their first stage of development, has only just picked up momentum is probably less than half of the way! Secondly, China's trade patterns revealed increasing exports to the USA and Europe, since the late 1990s and greater import growth from Asian economies since 2000. Thirdly, since the new millennium, China's trade surplus with the USA and Europe are widening, but were

	B/A (per cent)	China (1999) A	India (2004) B
Overall CI-RCI	148	2.8909	4.2779
Economics	120	4.2099	5.0465
Government and institutions	147	4.1549	6.0909
Businesses	108	5.2317	5.6347
Social	66	2.8475	1.8867

Table X.
IPS-NTU China (1994)-India (2004) relative competitiveness index amongst respective top ten local economies

more than off-set by increasing trade deficits with the rest of Asian economies resulting in moderate increase in China's overall trade surplus. The Chinese economy is still regionally imbalance and essentially external-demand or FDI-driven. Domestic-driven demand is weak due to widening urban-rural income disparity. However, it is reassuring to see Chinese non-performing loans eased and financial market reforms gained pace, since 2000.

There are unwarranted concerns on the economic rise of China. She needs a stable regional political environment to grow steadily and she knows such environment can only be achieved by sharing prosperity with Asian neighbours. The cross-strait tension between China and Taiwan has eased significantly since 2005, as dialogue between both sides intensified and reaffirmation of one China policy by ASEAN members helped. Even if China achieves a stable middle class by 2035, her per capita income of US$ 10,000 is still relatively low by international standard. Japan, together with the USA would still be a formidable balance of power in Asia. As China becomes more market oriented and more globalize in her economy, political reform would evolve with pressure from within by the vast and emerging middle class. The hold and concentration of power by the Chinese communist party is expectedly to be diluted over time (Tan, 2005).

Some observations regarding the emerging Indian economy
India has been pursuing the domestic demand-driven growth model and there is no reason why she should not opt for a robust FDI-driven export-led East Asian growth model in various parts of the Indian continent by establishing free economic zones. While, information technology-related investments and information services are the sun rise sources of growth for India, it should still attract MNCs which not just producing low volume, high value-added manufacturing activities but also those low-tech and mass production activities.

We observe that the Indian growth locomotive is beginning to move, and her competitive economies, unlike China, are rather evenly spread across the Indian continent. India's widespread English proficiency and her large pool of senior overseas managers and professionals, unlike China, are important assets for growth. India is seriously underdeveloped in terms of physical infrastructure and basic education for her massive population. India therefore needs further privatization and greater domestic deregulation and improving corporate governance in achieving sustained and balanced longer-term growth.

Four strategies for ASEAN-10 in greater globalization drive
It seems clear that unless member nations put their houses in order, the FDI flows from OECD will continue to bypass ASEAN-10. While it is true that ASEAN-10 currently may be small as an economic entity, its geographical location will continue to be empowered ASEAN as a strategic political entity. The emergence of China and India is not a zero sum game and ASEAN can stand to benefit from it if correct strategies are pursued.

Firstly, ASEAN must keep China and India committed to the terms of WTO and take advantage of the China/India-ASEAN free trade agreement as vehicles to further and deepen involvement in the globalization process. Secondly, expanding the ASEAN 10 + 3 framework by an inclusive approach to bring in India and turning East Asia into Asia Economic Summit for an effective Asian Economic Community in the longer run.

Thirdly, at the rate of rapid growth and development in China, she is likely to become a net food importer by 2030. ASEAN can potentially be exporters in agricultural produces, food processing, minerals and other raw materials to China. Finally, ASEAN members must continue to promote private enterprises and explore bilateral trade agreements with global economies including Europe, the USA, South Asia and Middle Eastern countries.

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Appendix 1. List of indicators for computation of ASEAN-10 competitiveness index
I. Economic environment
National accounts

      1.1.01 Gross domestic product (GDP), in US$ millions.

      1.1.02 Gross domestic capital formation, in percentage of GDP.

      1.1.03 Gross domestic savings, in percentage of GDP.

      1.1.04 Real GDP growth, in percentage change.

      1.1.05 GDP per capita, in US$ per capita (constant 1995).

      1.1.06 Inflation, in percentage.

      1.1.07 Consumer price index (CPI), 1995 = 100.

      1.1.08 Money growth (M2), in percentage (annual rate).

International transactions

      1.2.01 Current account balance, percentage of GDP.

      1.2.02 Exports in US$ millions.

      1.2.03 Imports in US$ millions.

1.2.04 Openness, (exports + imports)/GDP.

1.2.05 International tourism, receipts in US$ billions.

Foreign investment

1.3.01 Foreign direct investment (FDI), in US$ millions.

1.3.02 Discrimination against new FDI.

1.3.03 Levelness of local playing field for existing foreign investors.

1.3.04 Transparency of investment approval and licensing process.

1.3.05 Nationalism, extent to which it is an impediment to foreign investment.

II. Government and institutions
Government finance

2.1.01 External indebtedness, in US$ millions

2.1.02 International reserves, in US$ millions.

2.1.03 Government expenditure, in US$ millions.

2.1.04 Foreign assets, in US$ millions.

2.1.05 International Monetary Fund credit, in US$ millions.

2.1.06 Overall budget deficit, including grants, in percentage of GDP.

Government policies

2.2.01 Fiscal balance, as a percentage of GDP.

2.2.02 Taxes in US$ millions.

2.2.03 Tax system as an efficient tool in administrating income distribution policies and in
tax revenue collection.

2.2.04 Money supply, in US$ millions.

2.2.05 Government policies if they are constructive and successfully realized.

2.2.06 Government economic, the soundness of these policies and the effectiveness of the
government in implementing them.

2.2.07 Government environmental protection/enhancement policies serve their purposes well.

Institutional framework
Regulatory authorities

2.3.01 Interest rate (three-month time deposits) in percentage.

2.3.02 Interest rate spread, lending rate minus deposit rate.

2.3.03 Exchange rate (average of period), national currency per US$ (market rate).

2.3.04 Central bank/monetary authority's efficiency of policies.

State competency

2.3.05 Government stability is ubiquitous.

2.3.06 Political leadership is of high quality.

2.3.07 Political system risk is low.

2.3.08 Government responsiveness to the needs of businesses.

2.3.09 Legislature/parliament is of exacting standards.

2.3.10 Conduct of state affairs by key institutions is carried out with a great degree of transparency.

2.3.11 Institutional sophistication, its ability to adapt to the changing political and economic environment.

2.3.12 Bureaucracy/red tape does not hamper business operations.

2.3.13 Corruption, the degree that is inherent in the system structure.

2.3.14 Cronyism, impediment it poses to just and fair administration.

2.3.15 State-owned enterprises, extent to which they are a problem.

Standards and regulations

2.3.16 Corporate governance promotes good disclosure practices.

2.3.17 Regulatory environment possesses adaptability to changing conditions.

2.3.18 Transparency, the degree to which government objectives behind economic policies are known and explained.

2.3.19 Monopolies and cartels, their prevalence and the extent to which market forces are distorted.

2.3.20 Level of competition between public and private sectors.

2.3.21 Establishment of a company in terms of the ease of doing so.

2.3.22 Barriers, presence of official and unofficial barriers to imports and exports of goods and services.

2.3.23 Intellectual property rights pirates are prevalent.

2.3.24 Regional competitiveness is high.

Justice and security

2.3.25 Judiciary has an established role in ensuring justice.

2.3.26 Legal system, the degree to which it can be relied on to defend against intellectual property rights abuse.

2.3.27 Legal system in terms of overall integrity.

2.3.28 Police is effectual in enforcing law and order.

2.3.29 Political change, potential for disruptive upheavals.

2.3.30 Social stability in terms of overall level of social cohesion.

III. Business environment
Financial markets
Banking efficiency

3.1.01 Bank claims on private sector in US$ millions.

3.1.02 Domestic credit provided by banking sector, in US$ millions.

3.1.03 Banking and financial system is resilient to external shocks.

3.1.04 Credit to private sector, in US$ millions.

Stock market efficiency

3.1.05 Listed domestic companies, number count.

3.1.06 Market capitalization, in US$ billions.

3.1.07 Stocks traded, as a percentage of GDP.

3.1.08 Credit rating is sound.

3.1.09 Stock market regulatory authority is effective in ensuring the proper operation of the market.

Labor market

3.2.01 Unemployment rate, as a percentage of total labor force.

3.2.02 Labor force, as a percentage of total population.

3.2.03 Cost of production labor competitiveness of compensation.

3.2.04 High quality production staff is widely available.

3.2.05 Management staff is highly paid.

3.2.06 High-quality management staff is readily employable.

3.2.07 Skill level of labor force.

3.2.08 Work ethics are established.

3.2.09 Labor turnover is low.

Productivity

3.3.01 Agriculture, value-added, as percentage of GDP.

3.3.02 Industry, value-added, as percentage of GDP.

3.3.03 Manufacturing, value-added, as percentage of GDP.

3.3.04 Services, value-added, as percentage of GDP.

IV. Social environment
Basic infrastructure
Physical infrastructure

4.1.01 Population in millions.

4.1.02 Local road system is generally efficient.

4.1.03 Rail facilities are adequate.

4.1.04 Airport facilities are satisfactory.

4.1.05 Access to airport is easy and convenient.

4.1.06 Public transport system is efficient.

4.1.07 Electric power is a public good and readily available.

4.1.08 Water and other utilities are widely available and accessible.

Education

4.1.09 Illiteracy rate, percentage of people ages 15 and above.

4.1.10 Primary schooling is universal.

4.1.11 Secondary schooling is attained for indigenous population.

4.1.12 University and post-graduate education is broadly pursued.

Technological infrastructure

4.2.01 Telecommunications system is amply invested in.

4.2.02 Telephone mainlines, number of main lines per 1,000 people.

4.2.03 Internet users, in thousands.

4.2.04 Cellular mobile telephone, number of subscribers per 1,000 subscribers people.

4.2.05 Internet and the services supporting it in meeting business requirements.

4.2.06 Personal computers, number of computers per 1,000 people.

4.2.07 High technology expenditure, as a percentage of GDP.

4.2.08 Information and communication expenditure, as a percentage of GDP.

4.2.09 High-technology proficiency is good.

Quality of life

4.3.01 Human development index combines economic, social and educational indicators.

4.3.02 Health expenditure as a percentage of GDP.

4.3.03 Urban population as a percentage of total population.

4.3.04 Urban population growth in percentage (annual rate).

4.3.05 Public security and safety is high.

4.3.06 Freedom of press and other local media, the extent to which freedom of expression is exercised.

4.3.07 Quality of press and other local media are high.

4.3.08 Freedom of speech is allowed.

4.3.09 Information flows freely.

4.3.10 Freedom of religion, the degree to which a country is dominated by any one religion.

4.3.11 Religious unrest threatens the well-being of society.

4.3.12 Labor unrest is rampant.

4.3.13 Racial unrest occurs frequently.

4.3.14 Labor activism is an issue.

4.3.15 Water quality, if it is safe for consumption.

4.3.16 Air quality is low.

4.3.17 Noise pollution does not severely affect urban areas.

4.3.18 Traffic congestion, the degree to which accessibility is impeded.

Appendix 2. List of indicators for computation of China-India relative competitiveness index

	Regional economy	
1.1.01	Gross regional product (GRP)	In US$
1.1.02	Primary sector GRP	In US$
1.1.03	GRP growth	As an annual percentage
1.1.04	GRP per capita	In US$
1.1.05	Per capita income	In US$
1.1.06	Gross fixed capital formation in agriculture	In US$
1.1.07	External financial assistance received	In US$
1.1.08	Poverty projection[a]	As a percentage of total population
1.1.09	General consumer price index[a]	Base year = 1987
1.1.10	Consumer price index for rural laborers[a]	Base year = 1987
1.1.11	Consumer price index for agricultural laborers[a]	Base year = 1987

Table AI.
Economic environment

(*continued*)

1.1.12	Consumer price index for industrial laborers[a]	Base year = 1987
1.1.13	Consumer price index for urban non-manual laborers[a]	Base year = 1987
	International and inter-regional trade	
1.2.01	Total exports of goods and services	In US$
1.2.02	Revenue collection from customs	In US$
1.2.03	Number of passports issued	Total number
1.2.04	Number of domestic tourists	Total number
1.2.05	Number of international tourists	Total number
	Foreign direct investment	
1.3.01	Foreign investment utilized	In US$
1.3.02	Foreign direct investment growth	As an annual percentage
1.3.03	Total investment approved by government	In US$

Note: [a]Reverse rankings

Table AI.

	Public finance	
2.1.01	Government revenue	In US$
2.1.02	Share of tax revenue to GRP	As a percentage
2.1.03	Share of tax revenue to government revenue	As a percentage
2.1.04	Growth rate of tax revenue	As an annual percentage
2.1.05	Share of interest payment to government revenue	As a percentage
2.1.06	Government expenditure	In US$
2.1.07	Share of overall budget surplus to GRP	As a percentage
2.1.08	Share of capital outlay to gross fiscal deficit[a]	As a percentage
	Institutional framework	
2.2.01	Total number of limited companies	Total number
2.2.02	Share of total number of private limited companies	As a percentage
2.2.03	Share of total number of public limited companies	As a percentage
2.2.04	Total number of foreign companies	Total number
2.2.05	Total number of public companies	Total number
2.2.06	Total number of private companies	Total number
	Government policies	
2.3.01	Share of fiscal balance to GRP	As a percentage
2.3.02	Domestic product from public administration and defense	In US$
2.3.03	Number of police	Total number
2.3.04	Number of policemen per 10,000 km	As a ratio
2.3.05	Number of policemen per 10,000 of population	As a ratio
2.3.06	Police expenditure	In US$
2.3.07	Change in police expenditure	As an annual percentage
2.3.08	Share of grant allocation	In US$
2.3.09	Expenditure on education	As a percentage
2.3.10	Government per employee salary expenditure[a]	In US$
2.3.11	Financial assistance on tourism projects	In US$
2.3.12	Diversion of forest land	In hectares

Note: [a]Reverse rankings

Table AII.
Government and
institutional environment

	Financial markets	
3.1.01	Number of bank offices	Total number
3.1.02	Population served by each bank office[a]	As a ratio
3.1.03	Total credit of banks	In US$
3.1.04	Total deposits of banks	In US$
	Labor market	
3.2.01	Unemployment rate in urban areas[a]	As a percentage of labor force
3.2.02	Average daily wages and salaries[a]	In US$
3.2.03	Average daily agricultural wages[a]	In US$
3.2.04	Average daily non-agricultural wages[a]	In US$
3.2.05	Minimum wages per day	In US$
3.2.06	Share of labor costs on wages[a]	As a percentage of total wages
3.2.07	Number of industrial training institutes	Total number
3.2.08	Total labor supply	Total number
3.2.09	Share of rural labor supply[a]	As a percentage
3.2.10	Share of urban labor supply	As a percentage
3.2.11	Share of population employed	As a percentage
3.2.12	Share of employment in rural area	As a percentage
3.2.13	Share of employment in urban area	As a percentage
3.2.14	Agricultural productivity	In US$
3.2.15	Non-agriculture productivity	In US$
	Other business conditions	
3.3.01	Total land area	Square kilometre
3.3.02	Area of cultivated land	Square kilometre
3.3.03	Number of patents granted	Total number
3.3.04	Length of railways in operation	Km
3.3.05	Length of roads	Km
3.3.06	Number of ports	Total number
3.3.07	Number of railway stations	Total number
3.3.08	Total cargo handled	In tones
3.3.09	Consumption of electricity per capita	Kwh
3.3.10	Power generation	MU

Table AIII.
Business environment

Note: [a]Reverse rankings

	Basic infrastructure	
4.1.01	Total population	Total number
4.1.02	Share of urban population	As a percentage
4.1.03	Share of rural population[a]	As a percentage
4.1.04	Population density[a]	Persons per square kilometre
4.1.05	Illiteracy rate[a]	As a percentage of total population
4.1.06	Total number of educational institutions	Total number
4.1.07	Disparity between number of primary and secondary schools[a]	Percentage difference
4.1.08	Share of tertiary institutions	As a percentage
4.1.09	Student-teacher ratio (primary)[a]	As a ratio
4.1.10	Student-teacher ratio (secondary)[a]	As a ratio
4.1.11	Student-teacher ratio (tertiary)[a]	As a ratio

Table AIV.
Social environment

Relative competitiveness

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	Technological infrastructure	
4.2.01	Persons per local telephone subscriber[a]	Persons
4.2.02	Persons per internet subscriber[a]	Persons
4.2.03	Expenditure on science and technology	As a percentage of GRP
4.2.04	Motor vehicles	As a percentage of total population
	Quality of life	
4.3.01	Health expenditure	As a percentage of GRP
4.3.02	Per capita public health expenditure	In US$
4.3.03	Urban population growth	As an annual percentage
4.3.04	Birth rate	Per 1,000 persons
4.3.05	Death rate[a]	Per 1,000 persons
4.3.06	Life expectancy	Number of years
4.3.07	Adequacy of hospitals	Persons per hospital
4.3.08	Persons per hospital bed[a]	Persons
4.3.09	Persons per medical personnel[a]	Persons
4.3.10	Water pollution control	In US$

Note: [a]Reverse rankings

Table AIV.

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