

The System of Xiaokang Indicators: A Framework to Measure China's Progress

Qingzhe Lv

Research Institute of Statistical Sciences of National Bureau of Statistics of China

75 Yuetan Nanjie, Xichengqu, Beijing, 100826, China

E-mail: lvqz@gj.stats.cn

Gang Li

Research Institute of Statistical Sciences of National Bureau of Statistics of China

75 Yuetan Nanjie, Xichengqu, Beijing, 100826, China

E-mail: lig@gj.stats.cn

Fangchuan Shi

Research Institute of Statistical Sciences of National Bureau of Statistics of China

75 Yuetan Nanjie, Xichengqu, Beijing, 100826, China

E-mail: sfc@gj.stats.cn

Kuankuan Yang

Census center, National Bureau of Statistics of China

75 Yuetan Nanjie, Xichengqu, Beijing, 100826, China

E-mail: yangkuan@gj.stats.cn

Jianjun Liu

Research Institute of Statistical Sciences of National Bureau of Statistics of China

75 Yuetan Nanjie, Xichengqu, Beijing, 100826, China

E-mail: liujj@gj.stats.cn

The word “Xiaokang” (Well-off and moderate prosperity) is a concept bearing distinctive Chinese characteristics. Over 2000 years ago, this word featured one of the Chinese’ ideals for a society in which people worked hard for prosperity of their own families, led a well-off life, and enjoyed orderliness of the environment.

In the 1980s, the Chinese government set the goal of building a Xiaokang society conformed to China’s national conditions: doubling the GNP of 1980 by 1990 to end shortages of food and clothing and quadrupling the GDP of 1980 by 2000 and raising the people’s living standard to a well-off level, which has been achieved as expected after 20 years of strenuous efforts.

Since the dawn of the new century, China has moved to a new stage of development of building a moderately prosperous society in all aspects. The Chinese government has set a new development goal during the period from 2000 to 2020: building a moderately prosperous society, or Xiaokang society, in all aspects for the entire Chinese population that features accelerated economic development, enhanced democracy, advanced science and education, prosperous culture, harmonious society, higher living standard, more efficient use of resources and friendly environment. The goal covers a wide range of areas as it has reflected the concepts of human orientation and scientific development and balanced the development of society and economy, production and life, democracy and law, science, education and culture, resources and environment.

For the purposes of measuring China’s progress and monitoring the advancement of building a

Xiaokang society, we have set up the “Statistical Indicator System of Building a Moderately Prosperous Society in all Aspects”, known as “System of Xiaokang Indicators” for short. The system covers six areas including economic development, social harmony, quality of life, democracy and law, culture and education, resources and environment with 23 indicators in total.

I. Economic development

Economic development involves five indicators such as per capita GDP, share of R&D expenses in GDP, share of value-added of the tertiary industry in GDP, proportion of urban population and urban surveyed unemployment rate, which presents a picture of economic development in terms of economic growth, technical innovation, industrial structure, demographic structure and employment.

1. Per capita GDP

As a comprehensive indicator that reflects the economic development of a particular country or region, per capita GDP is an important yardstick against which a country’s economic performance is measured. Economic development is not only about GDP and GDP does not speak for everything; however, compared with other indicators, GDP is irreplaceable under the current conditions as it is a comprehensive, aggregate and representative indicator in reflecting economic development. As countries differ greatly in size of the population, per capita GDP can present a more vivid picture of a country’s economic development. China’s GDP grows very fast and ranks the third in the world while its per capita GDP lags behind the 100th position. Economic development forms the basis of social development, without which, overall social development will not be made possible, not to mention all-around development of mankind. Given the pressure of economic development, China has set the objective of quadrupling the GDP in building a Xiaokang society in all aspects in the first 20 years of the century.

2. Share of R&D expenses in GDP

Technical innovation is the driving force behind a country’s economic development. Indicators such as contribution ratio of technical progress, number of patents, number of technicians and R&D expenses are often used to reflect the level of technical progress; however, it is difficult to accurately calculate the contribution ratio of technical progress as it involves a lot of estimation; the number of patents can not fully represent the level of technical progress as the patents vary in benefits; the difficulty to define the concept technician makes it difficult to specify its coverage and it is difficult to quantify the competence of technicians; whereas the input in technology is the basic guarantee sustaining technical innovation and an important indicator measuring the technical level and strength of a country; and particularly for such a large developing country as China, the input in technology is of vital importance in promoting technical innovation, strengthening economic development and tapping economic potential.

3. Share of value-added of the tertiary industry in GDP

Share of the tertiary industry in total economy is an important indicator in reflecting the economic structure and a symbol representing the stage of a country’s economic development. Generally speaking, economic structure evolves from agriculture-based economy, industry-based economy to service-based economy. At present, China is facing the challenge of information economy with its industrialization yet to be completed. From the perspective of economic structure, China has to accelerate industrialization while pushing forward the development of information-based economy for quite a long period of time. Seen from the perspective of statistics, this process means that the tertiary industry will account for an increasing share in GDP.

4. Proportion of urban population

It is a universal necessity of industrialization and modernization that surplus labor force in the rural areas migrates toward non-agricultural industries and urban areas. Urbanization is the inevitable outcome of industrialization and modernization. The proportion of urban population directly reflects a country’s urbanization level and an important symbol measuring its social progress. China is in the process of accelerated urbanization though rural population still accounts for the majority of China’s population.

5. Urban unemployment rate

Unemployment is one of the most important indicators commonly used in the world to reflect the status of economic development. As employment is the basis of people's livelihood, how to provide enough jobs for such a large population as that of China's is about the people's interests as well as social security and prosperity, which makes it an important symbol of China's building of a Xiaokang society. Given the seasonal characteristics of agricultural production, it is difficult to make accurate statistics on the unemployment of farmers; therefore, urban unemployment rate is used to reflect the conditions of unemployment.

II. Social harmony

Social harmony involves five indicators such as Gini Coefficient, urban-rural resident income ratio, regional economic development disparity coefficient, basic social security coverage and sex ratio of senior high school graduates, which reflects the conditions of social harmony in terms of income gap, urban-rural divide, regional divide, social security and gender disparity.

6. Gini Coefficient

Gini Coefficient is a classical indicator commonly recognized and widely used in the world that reflects the gap of income distribution. The changes of Gini Coefficient since China's reform and opening up have basically reflected the changes in the residents' income gap. Although it is less vivid than such indicators as "income quintile", it can reflect overall income gap and its quantitative threshold has been commonly recognized.

7. Urban-rural resident income ratio

Urban-rural resident income ratio is the ratio of disposable income of urban residents to rural residents that reflects the gap of urban and rural incomes. A large gap between urban and rural incomes is one of the signs showing the imbalance of China's economic development. Reversing the expansion of urban and rural income gap is one of the objectives of building a Xiaokang society.

8. Regional economic development disparity coefficient

Regional difference is mainly reflected in the gap of regional economic development. Based on the per capita GDP of different regions, the coefficient of regional economic development disparity can reflect the gap of economic development in different regions. Regional difference has widened since China's reform and opening up. Reversing the expansion of regional difference and achieving balanced development of different regions is an important part in building a well-off society. Calculated with dispersion coefficient, regional economic development disparity coefficient is more accurate than it is vivid and enables us to make an overall judgment. Its formula is as follows:

$$V_{\sigma} = \frac{\sqrt{\frac{1}{n} \sum_{i=1}^n (PCY_i - \overline{PCY})^2}}{\overline{PCY}}$$

N is the number of regions within a certain area, PCY_i is per capita GDP of region i, \overline{PCY} is the mean of per capita GDP of n regions. Regional economic development disparity coefficient V_{σ} reflects the disparity of economic development in different regions. The larger V_{σ} is, the larger the disparity of regional economic development and vice versa.

9. Basic social security coverage

Social security system means a lot to guaranteeing the people's living standard and promoting social harmony. Building and enhancing social security system is about giving people a well-off life where the young are employed, the old are cared for and the sick are well treated. A social security system covers many aspects such as insurance schemes, coverage rate, standard, money guarantee. Among all the items of social security, basic endowment insurance and medical insurance are most closely related to the people's living. Therefore, coverage of basic endowment insurance and that of medical insurance are selected to reflect the conditions of social security. Although social security system involves many aspects such as security items,

coverage, security level and capital guarantee, coverage can best reflect how social security benefits the people. Its formula is as follows:

$$\text{Basic social security coverage} = \frac{\text{Number of people covered by basic endowment insurance}}{\text{Number of people that should be covered by basic endowment insurance}} \times 50\% + \frac{\text{Number of people covered by basic medical insurance}}{\text{Number of people that should be covered by basic medical insurance}} \times 50\%$$

10. Sex ratio of senior high school graduates

Gender equality forms an important part of social development and a yardstick against which social progress is measured because it is only through gender equality based development can we have a more harmonious society. The indicators that reflect gender equality include the ratio of unemployed females to unemployed males, the proportion of females in junior or senior high school graduates, the proportion of women in civil servants, and the ratio of women's average payment to that of men. Comparatively speaking, it is reasonable to use the sex ratio of senior high school graduates as the factors that affect employment, income and social status are more complicated than gender alone; meanwhile, as China has made the nine-year (up to junior high school) compulsory education universal and the future goal is to make senior high school education universal; therefore, sex ratio of senior high school graduates is used to reflect gender equality. Its formula is as follows:

$$\text{Gender Disparity Coefficient of Senior High School Graduates} = \frac{\text{Sex ratio of senior high school graduates}}{\text{Sex ratio of population of the same age group}} \times 100\%$$

III. Quality of life

Quality of life involves per capita disposable income, Engel's Coefficient, per capita usable floor space, under-five mortality rate and life expectancy, which reflects the people's quality of life in terms of income level, consumption structure, housing conditions, health care and people's health conditions.

11. Per capita disposable income

Per capita disposable income provides basis for raising people's living standard and improving their quality of life. There is no consumption without income. Although per capita GDP is closely related to the changes of per capita disposable income, they do not always go together. Per capita GDP can not fully replace per capita disposable income as the latter can be put under separate observation. In China, disposable income is separately calculated for urban and rural residents; therefore, the calculation of nationwide per capita disposable income shall be based on the weight of urban and rural populations.

12. Engel's Coefficient

Engel's Coefficient, the proportion of food expenditure in total spending, is an important indicator commonly used in the world that reflects household's total consumption and its structure. Evidence shows that Engel's Coefficient tends to go down as people's consumption goes up. Engel's Coefficient and per capita disposable income complement each other and reflect resident's living standard in terms of income and consumption structure. Of course, the changes of Engel's Coefficient are influenced by drastic movements in food prices. In this case, it can not fully reflect the changes of people's living standard, which should be noted in analysis.

13. Per capita usable floor space

Housing is an important indicator that measures the people's living standard. Housing involves a number of aspects such as space, facilities, quality and environment. Since China's reform and opening up, the floor space of people's housing has been greatly improved, which is particularly true in rural areas; however, compared with quality improvement and environment enhancement, expanding floor space remains the top priority on the overall basis; therefore, per capita usable floor space is used to reflect housing

conditions. Usable floor space is selected here as it can reflect the size of living space more accurately than floor space. Of course, selecting floor space does not mean that housing quality is left unconsidered; for example, the houses in rural areas that are below the standard of reinforced concrete or brick and wood structures are not included.

14. Under-five mortality rate

Under-five mortality rate is an important indicator stressed by the United Nations Children's Fund and United Nations Millennium Development Goals to measure the level of children's health and welfare. Compared with "enrollment rate for children of school age", "per capita calorie intake" or "physicians per 1 000 persons", the indicator is highly representative of the result of various inputs or actions, including mothers' knowledge in nutrition and health care, planned immunization, maternal and child health care, family income and food sources, clean water and sanitary facilities and safe environment for children. In spite of its flaws, the indicator can accurately reflect the health conditions of most children and thus indirectly reflect the health care conditions of the society.

15. Life expectancy

Total mortality rate, standardized mortality rate and life expectancy are the indicators commonly used to measure the health conditions of a cohort of people, of which, life expectancy is commonly used in all countries because the improvement of life expectancy is the result of improved quality of life and enhanced medical and health care that reflects the progress of social and economic development. Life expectancy has two features: one is that it is not affected by age composition and the other is that its changes are relatively moderate and it shows a rising trend along with the development of society in the absence of significant natural disasters or when there is a major medical breakthrough (the cure of cancer).

IV. Democracy and law

Democracy and law involves two indicators such as citizens' satisfaction of democratic rights and social safety index, which reflects the conditions of China's socialist democracy and law.

16. Citizens' satisfaction of democratic rights

It is the satisfaction of citizens about whether their political, economic and cultural rights and interests are respected and guaranteed. Developing socialist democracy and political civilization is an important objective in building a well-off society. Satisfaction of the people is the basis in the building of democratic systems. Data for the indicator can be obtained through ad-hoc sample surveys.

17. Social safety index

The rule of law requires that there must be laws to follow, the laws must be observed and strictly enforced, and lawbreakers must be prosecuted; however, it is difficult to monitor legal construction on a quantitative basis. We have considered using indicators such as rate of legal maturity, case reporting, case occurrence, case registration, case solution, case settlement, public trial, jury trial, retrial, appeal and citizens' satisfaction about legal construction to monitor legal construction; however, it is difficult to accurately calculate these indicators, such as legal maturity rate; or these indicators are subject to inspection of the relevant departments making it difficult to measure them on a regular basis. After careful deliberation, we have decided to use the changes in social safety to reflect the achievements of China's socialist legal construction in terms of public security, traffic safety, living safety and production safety. Social safety index is a composite index that shows the changes in social order, involving the overall changes of the major aspects of social order (public security, traffic safety, living safety and production safety) within a certain period. Its formula is as follows:

$$\text{Social safety index} = \frac{\text{Criminals in 10,000 persons in 2000}}{\text{Criminals in 10,000 persons in the current year}} \times 40 + \frac{\text{Traffic deaths in 10,000 persons in 2000}}{\text{Traffic deaths in 10,000 persons in the current year}} \times 20 +$$

$$\frac{\text{Fire deaths in 10,000 persons in 2000}}{\text{Fire deaths in 10,000 persons in the current year}} \times 20 + \frac{\text{Work injury deaths in 10,000 persons in 2000}}{\text{Work injury deaths in 10,000 persons in the current year}} \times 20$$

V. Culture and education

Culture and education involves three indicators such as share of value-added of cultural industry in GDP, share of household’s expenses on cultural, educational and recreational services in total expenses and average years of education, which reflects the development of culture and education in terms of cultural industry, social service and education.

18. Share of value-added of cultural industry in GDP

It is the share of value-added of cultural industry in Gross Domestic Product and the increase in the share can reflect the prosperity and development of a country’s cultural industry.

19. Share of household’s expenses on cultural, educational and recreational services in total expenses

The share of household’s expenses on cultural, educational and recreational services in total expenses reflects the diversity of people’s spiritual life and improvement of their education from the perspective of a household.

20. Average years of education

Improving scientific and cultural competence and education is the basis and inevitable requirement of building a well-off society. The indicators that reflect the development and competency of national education include: number of students at school, school enrollment rate, illiteracy rate and average years of education. The former two indicators reflect school education and the latter reflect the education of the entire population. As a structural indicator, illiteracy rate can not reflect the education level of the entire population while the average years of education shows a picture of the overall situation. We should focus on the education level of the entire population in building a well-off society. Compared with other countries in the world, China has greatly reduced its illiteracy rate while the education of the entire population is still lagging behind.

VI. Resources and environment

Resources and environment involves three indicators such as per unit GDP energy consumption, arable land area index and environmental quality index, which reflects the conditions of sustainable development in terms of resources utilization efficiency and environmental quality.

21. Per unit GDP energy consumption

“Per unit GDP energy consumption” can reflect the efficiency of resources utilization. China is lagging behind the world average level in per capita occupation of natural resources. It is only through reducing energy consumption and saving resources can we meet the requirement for rapid economic development. The experience of the world social and economic development indicates that increased energy consumption is an important factor for global warming and worsening of regional environment; therefore, reducing energy consumption is actually one of the basic measures of protecting and improving the environment.

22. Arable land area index

Arable land is the most important strategic resource of a country as well as the basis of human being’s livelihood and development. As a country with a large population and scarce land, China must practice the most strict arable land protection policy. China has set the objective of achieving a dynamic balance of total arable land area and balancing the requisition and compensation. Arable land area index is used here to measure the protection of arable land and its formula is as follows:

$$\text{Arable land area index} = \frac{\text{Arable land area in the reporting period}}{\text{Arable land area in the reporting period}} \times 100\%$$

Arable land area of the base
period (2000)

23. Environmental quality index

Environmental quality index gives a comprehensive evaluation of environmental quality. Environmental quality is a comprehensive concept that involves such factors as water environment, air environment, soil environment, ecological environment, geological environment and noise environment. Given the restriction of statistics, calculation of environmental quality index is temporarily based on air environment, water environment and land greening with other factors yet to be added at the right time.

Its formula is as follows:

$$\text{Environmental quality index} = \text{Urban air quality conformity rate} \times 40\% + \text{Surface water conformity rate} \times 40\% + \text{Land greening conformity rate} \times 20\%$$

Of which, (1) urban air quality conformity rate: proportion of days with air quality above the level of good throughout the year in a certain area (days when Air Pollution Index is below or equal to 100)

(2) Surface water conformity rate: proportion of the number of sections that have met the standard of water quality in a certain area to the number of total sections in a certain area.

Its formula is as follows:

$$\text{Surface water conformity rate} = \frac{\text{Number of sections that have met the standard of water quality in a certain area}}{\text{Number of total sections in a certain area}} \times 100\%$$

(3) Land greening conformity rate: the ratio of forest coverage in a certain area divided by target value 23%. Its formula is as follows:

$$\text{Land greening conformity rate} = \frac{\text{Forest coverage}(\%)}{23\%} \times 100\%$$

The above-mentioned 23 indicators present the different aspects of the China's development from different perspectives and constitute a comprehensive framework to measure the societal progress. The selected indicators constrain and reinforce each other, with each one having its target value and weight.

We have made an estimation of China's progress in building a moderately prosperous society during the period from 2000 to 2009 according to this framework. The result shows that China's economy has delivered rapid development, the people's quality of life has been greatly improved, social causes have been promoted and the building of a moderately prosperous society is being steadily pushed forward. In 2009, China completed 77.1% of the plan of building a Xiaokang society in all aspects, up 17.5 percentage points from 2000, representing an increase of 1.94 percentage points each year, of which, economic development accounts for 72.6%, up 22.3 percentage points; social harmony accounts for 77.3%, up 19.8 percentage points; quality of life accounts for 83.6%, up 25.3 percentage points; democracy and law accounts for 93.1%, up 8.3 percentage points; culture and education accounts for 65.4%, up 7.1 percentage points; resources and environment accounts for 76.8%, up 11.4 percentage points. Generally speaking, it is likely that China will attain the goal of building a moderately prosperous society in all aspects by 2020.