The Inconsistency of Qualitative and Quantitative Fluctuations in Economic Growth of China and Interpretations

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Abstract. The economic growth in China shows inconsistent fluctuations in terms of the quantity and quality, featured by high speed but poor quality. This inconsistency can be identified in both gross national and provincial terms. The big quality gap between the input and output in economic growth, the high cost of resource and environment, the instable economic growth itself, and the problems in income and welfare distribution contribute to the inconsistency. To match the quality to the quantity of economic growth, economic surplus should add the gross welfare of the whole society, through routes such as promoting the change of economic development modes, fastening the upgrade of the industrial structure, developing innovative economy, strengthening asset management of resources and promoting the institution innovation.

Introduction

During the 30 years after the opening and reform policy was carried out, the economy in China has achieved outstanding results through continuous effort. According to the statistics of the World Bank, the economic growth rate in China in 1980’s has amounted to 10.1%, and 10.7% in 1990’s. However, the economic growth in China then showed inconsistent fluctuations in terms of the quantity and quality, featured by high speed but poor quality (Baoping REN, 2010), which has brought a worry for the sustainable economic development in China. Hence, pursuing answers to questions such as “what is the reason for the inconsistency of economic growth in terms of quantity and quality in China”, “what are the conditions contributing to the inconsistency” and “how to realize the consistency” are vital nowadays.

The Description of the Inconsistency of China’s Economic Growth in Terms of Quantity and Quality

The inconsistency of China’s economic growth in terms of quantity and quality is shown in horizontal and vertical dimensions; the vertical inconsistency represents the gross national level, and the horizontal inconsistency refers to the great difference of provinces in the ranking of economic growth quantity and quality.

The Inconsistency of Economic Growth Fluctuation in Terms of Quantity and Quality in China

The quantity and quality of economic growth compare to the two sides of a coin, they are the two parts of the same issue, and forms the complete system of economic growth. The quality of economic growth is the result of quantitative accumulation in certain phase. Without the quantitative economic growth, it is impossible to mention the quality.

In order to describe the inconsistency of the economic growth in terms of quantity and quality, the measure index should be established. Here based on the research of Baoping Ren (2012), QIEG (Qualitative Index of Economic Growth) is used to describe the quality of economic growth, which involves 6 dimensions, namely the efficiency, the structure, the stability, the welfare change and output distribution, the cost of resource usage and ecological environment, and the national economy proficiency. To describe the economic growth in terms of quantity, the gross GDP is used,
to be exact, the real GDP with 2000 as the base year is applied to measure the quantitative growth. By comparing the quality and quantity between 2000 and 2012, the situation of economic growth is shown in Table 1.

Table 1. The Comparison between quantity and quality of economic growth in China (2000—2012).

<table>
<thead>
<tr>
<th>Year</th>
<th>QIEG</th>
<th>Real GDP [billion Yuan]</th>
<th>Year</th>
<th>QIEG</th>
<th>Real GDP [billion Yuan]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>-0.6930</td>
<td>9921.455</td>
<td>2007</td>
<td>0.7289</td>
<td>20326.870</td>
</tr>
<tr>
<td>2001</td>
<td>-0.9618</td>
<td>10744.967</td>
<td>2008</td>
<td>0.9702</td>
<td>22285.296</td>
</tr>
<tr>
<td>2002</td>
<td>-5.9487</td>
<td>11720.833</td>
<td>2009</td>
<td>1.2379</td>
<td>24338.708</td>
</tr>
<tr>
<td>2003</td>
<td>-0.1914</td>
<td>12895.890</td>
<td>2010</td>
<td>1.4349</td>
<td>26879.442</td>
</tr>
<tr>
<td>2004</td>
<td>0.4740</td>
<td>14196.446</td>
<td>2011</td>
<td>1.3811</td>
<td>29379.230</td>
</tr>
<tr>
<td>2005</td>
<td>0.3286</td>
<td>15802.069</td>
<td>2012</td>
<td>1.7425</td>
<td>31641.431</td>
</tr>
<tr>
<td>2006</td>
<td>0.5381</td>
<td>17805.224</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. The Comparison between quantity and quality of economic growth in China.

Table 1 and Figure 1 show that, from 2000 to 2012, the trends of quantity and quality of economic growth in China are not consistent. During this period, the real GDP shows an obviously upward trend, but the quality index demonstrates a basically fluctuating upward trend. During 2000-2004, the economic growth fluctuated, with an index change from the bottom -0.6930 in 2000 to the top 0.4740 in 2004; and during 2005-2012, a stable upward tendency can be identified, from 0.3286 in 2005 up to 1.7425 in 2012.

Here, based on the research of Haiying Liu (2006), the coefficient $\varepsilon$ is revised, which demonstrates the asynchronous relation between economic growth quality advance and quantity expansion.

$$\varepsilon = \frac{(b_n - b_{n-1})/b_{n-1}}{(a_n - a_{n-1})/a_{n-1}} - 1$$

in which, $b$ represents QIEG, $a$ is the real GDP to show the quantity of economic growth, $n$ is the year, then $\varepsilon = 0$ shows the synchronous expansion of both quantity and quality, otherwise, $\varepsilon \neq 0$ shows the asynchronous trends of them.
Figure 2. The coefficient $\varepsilon$ showing the inconsistency between quality and quantity of China’s economic growth.

So the $\varepsilon$ values between 2001 and 2012 can be drawn, shown in Figure 2. It can be seen that the asynchronous trend between the quality and quantity is normal, and fortunately, the asynchronous trend in the recent years has slowed down. Overall, in the gross term, the inconsistency is beyond doubt.

**The Inconsistency in the Provincial Dimension**

A lot of discussion on the asynchronous feature of quality and quantity about China’s economic growth has focused on the gross dimension (Haiying LIU, 2006). In fact, besides the vertical inconsistency, the horizontal inconsistency is also very obvious, that is the provinces are inconsistent in terms of the ranking of their economic growth quantity and quality. By examining the economic growth quality of all provinces, monotonous regions and central government administrated cities, which all belong to provincial level, the QIEG of them have been obtained to measure economic growth quality, and the rank of provinces is achieved based on this index system. The gross GDP of provinces are chosen to measure the quantity of their economic growth. The ranking and changes of provinces in terms of quantity and quality of economic growth in 2012 are shown in Table 2.

**Table 2. The ranking of provinces in terms of quantity and quality of economic growth.**

<table>
<thead>
<tr>
<th>Province</th>
<th>Ranking of economic growth quality</th>
<th>Ranking of economic growth quantity</th>
<th>Difference*</th>
<th>Province</th>
<th>Ranking of economic growth quality</th>
<th>Ranking of economic growth quantity</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beijing</td>
<td>1</td>
<td>15</td>
<td>+14</td>
<td>Jiangxi</td>
<td>16</td>
<td>19</td>
<td>+3</td>
</tr>
<tr>
<td>Shanghai</td>
<td>2</td>
<td>9</td>
<td>+7</td>
<td>Heilongjiang</td>
<td>17</td>
<td>13</td>
<td>-4</td>
</tr>
<tr>
<td>Tianjin</td>
<td>3</td>
<td>17</td>
<td>+14</td>
<td>Henan</td>
<td>18</td>
<td>5</td>
<td>-13</td>
</tr>
<tr>
<td>Canton</td>
<td>4</td>
<td>2</td>
<td>-2</td>
<td>Jilin</td>
<td>19</td>
<td>20</td>
<td>+1</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>5</td>
<td>4</td>
<td>-1</td>
<td>Shaanxi</td>
<td>20</td>
<td>21</td>
<td>+1</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>6</td>
<td>1</td>
<td>-5</td>
<td>Hebei</td>
<td>21</td>
<td>7</td>
<td>-14</td>
</tr>
<tr>
<td>Hainan</td>
<td>7</td>
<td>28</td>
<td>+21</td>
<td>Yunnan</td>
<td>22</td>
<td>23</td>
<td>+1</td>
</tr>
<tr>
<td>Fujian</td>
<td>8</td>
<td>10</td>
<td>+2</td>
<td>Shanxi</td>
<td>23</td>
<td>24</td>
<td>+1</td>
</tr>
<tr>
<td>Chongqing</td>
<td>9</td>
<td>22</td>
<td>+13</td>
<td>Guizhou</td>
<td>24</td>
<td>26</td>
<td>+2</td>
</tr>
<tr>
<td>Shandong</td>
<td>10</td>
<td>3</td>
<td>-7</td>
<td>Xinjiang</td>
<td>25</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Anhui</td>
<td>11</td>
<td>14</td>
<td>+3</td>
<td>Ningxia</td>
<td>26</td>
<td>30</td>
<td>+4</td>
</tr>
<tr>
<td>Liaoning</td>
<td>12</td>
<td>6</td>
<td>-6</td>
<td>Gansu</td>
<td>27</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>Sichuan</td>
<td>13</td>
<td>8</td>
<td>-5</td>
<td>Inner Mongolia</td>
<td>28</td>
<td>16</td>
<td>-12</td>
</tr>
<tr>
<td>Hubei</td>
<td>14</td>
<td>12</td>
<td>-2</td>
<td>Qinghai</td>
<td>29</td>
<td>29</td>
<td>0</td>
</tr>
<tr>
<td>Hunan</td>
<td>15</td>
<td>11</td>
<td>-4</td>
<td>Guangxi</td>
<td>30</td>
<td>18</td>
<td>-12</td>
</tr>
</tbody>
</table>

*Difference refers to the ranking of economic growth quantity minus that of quality.
Table 2 shows that in 2012, when the quality ranking is compared to the quantity ranking, the top five provinces with positive difference are Hainan (+21), Tianjin (+14), Beijing (+14), Chongqing (+13) and Shanghai (+7), which represents although these provinces’ economy experienced not high growth in terms of quantity, they have quite good growth in quality. Similarly, the top five provinces with negative difference are Hebei (-14), Henan (-13), Inner Mongolia (-12), Guangxi (-12), and Shandong (-7), these provinces experienced quite big scale of economic growth in terms of quantity, but the quality of them are far from ideal. So the asynchronous relation can also be found in province dimension.

Theoretical Interpretation to the Inconsistency of Quantitative and Qualitative Fluctuations of China’s Economic Growth

In global economy, if seen from purchase power parity, in those countries with the same income per capita, people may have very different living quality. Some countries are experiencing unprecedented fast economic growth, but facing gradually complex social and economic problems, China is a good case. The following are the reasons why the quality and quantity of economic growth in China are not consistent, or synchronous:

The Quality of Input and Output in the Process of Economic Growth Leads to the Inconsistency of the Quantitative and Qualitative Economic Growth

In the long run process of economic growth, people always exchange maximum benefit for minimum cost. So the input and output are rationally proportional, that is less input can bring out more output, then the output quality of economic growth can be regarded as good. The fast growth of China’s economy in great part depends on a lot of inputs of capital, labor and land. Researchers like Xiaolu Wang (2009) have shown that capital formation rate in China from 1980 to 1990 fluctuated around 35%, recent years it rose to about 42%, and high capital formation rate has been one of the most dominant factors in China’s economic growth. This kind of high level of input has supported the miracle of China’s economic development in the quantity terms. However, if the quality of economic quality is measured by the input-output efficiency, the production mode featured by high input, low output, and low technology has led to the situation that the same level of raw materials and resource input bring about less value, so the quality must be poor. Hence in order to realize the sustainable development, the economic growth demands “increasing the resource mix quality and resource usage efficiency, lowering the input and enlarging output” (Jiye Wang, 2000). So the difference of efficiency and quality in the input and output directly leads to the inconsistency of the economic growth in terms of quantity and quality.

The High Cost of Resource and Environment in Economic Growth Leads to the Inconsistency.

The key to quality-oriented economic growth is to make rational use of natural resource and protect environment. Since the founding of People’s Republic of China, over 10 folds of GDP growth is the tradeoff of over 40 folds of mineral resource consumption. The high level of capital input in the long run has been based on the high consumption of resources and energy. Compared with the advanced countries in the world, the thermal power supply’s coal consumption is higher by 22.5%, large and medium-sized iron and steel enterprises’ comparable energy consumption per ton of steel is higher by 21%, and the comprehensive energy consumption of cement industry is higher by 45%. All these high level of energy consumption and input makes resources and environment suffer. A research has shown 13.9% of GDP in China is obtained in the cost of resource over consumption, environmental pollution and ecological downgrade (Minjun Shi, 2009). So even the performance of economy in China in the past years has been outstanding, if judged together by the environmental cost, the quality of economic growth is troublesome. In the regional dimension, some places enjoy quite high level of industrial softness, that is, service industry takes high percentage in economy, and their economic growth process involves low level of destruction to the resources and environment. However, in some regions, heavy industries take the major part, if the local
governments have not sound governance, and there is not clear ownership system, the destruction to the environment is quite obvious. This also leads to the inconsistency of the ranking.

The Instability in Economic Growth Process Leads to the Inconsistency.

The stable economic growth consists of two features: one is the fluctuation of economic growth rate is small, and the other is the frequency of fluctuation is low (Baoping Ren, 2010). The stability of economic growth is one of the most important dimensions to measure the quality, because it can generally demonstrate the basic trend and situation over a longer period of time. Although after the opening and reform policy was carried out, the economic growth in China has shown the tiny stable characteristics in economic cycle fluctuation (Shucheng Liu, 2007), that is the “radical change” has been smoothed, but at the same time, in certain regions, the investment impulsion is very strong, and the competition of governments is serious, then the macro stability of various regions varies significantly, which leads to the inconsistency of economic growth in terms of quality and quantity. Besides this, the whole country experiences the external forces such as financial crisis and European debt crisis, when the macro control of the national level is limited, the fluctuation of the macro-economy is inevitable, the roaring pressure of inflation in recent years all shows that the economy has poor stability, and the quality lags behind the quantity growth.

The Imperfect Income Distribution and Welfare Leads to the Inconsistency.

If the result of economic growth is examined, no matter quality or quantity is concerned, the basic aim is to help improve the living and development of human being. According to the report of the World Bank in 2007, the percentage of salary in GDP in China has shown decreasing trend, from 54% in 1997 to 41.4% in 2006, which is much lower than the 57% of US (Fang and Yu, 2008). It can be said that although the economy in China has achieved fast growth, the common people get the lowest level of income and welfare. Similarly, in terms of the income distribution, the GINI efficient of China in 1952 is 0.153, but in 2007 the evaluation of the Asian Development Bank is 0.473, basically it is sure that the GINI efficient in China recently has surpassed the alerting value of 0.4, such big gap of income distribution directly leads to the serious social conflict. Besides these, the deterioration of the environment, poorly-guaranteed food quality, the insufficient provision of public goods are affecting Chinese people's welfare level in the past, present and future, the vast majority of people cannot feel happiness from the bottom of heart. The economic growth representing only by GDP growing, without all the people sharing the fruits of growth, such kind of mode is not sustainable.

The above mentioned inconsistency means that the quantity and quality of economic growth are often asynchronous, only paying attention to the growth in terms of quantity cannot bring the long-term sustainable development, the focus must be changed to great attention to the quality issue, including bettering the low efficiency, emphasizing the resource saving and environment protection, ironing the steep fluctuations, and significantly improving the social welfare of common people.

The Routes to Realize the Consistency of Economic Growth in Terms of Quantity and Quality

In the past China paid more attention to the economic growth in terms of quantity, while ignoring the quality, which resulted that the quality and quantity of economic growth are not consistent, so that the economic growth showed a high speed, but low quality characteristics. In the background of economic transition and industrial upgrading, China's economic growth will focus more on quality, not speed. The future economic growth in China needs to improve the quality; the transformation from quantity-oriented to quality-oriented economic growth must be fastened, so as to realize the unity of quality and quantity.

To Promote the Transformation of Economic Development Mode.

The impacts of the world economic crisis and the current conflicts appeared in the process of economic growth in China show that, with the constant returns to scale, simply relying on the scale
expansion, or quantity-oriented economic growth mode has come to an end, it is urgent to transform the economic development mode. To improve the quality of economic growth, we must promote the transition of China's economic development, from emphasizing quantity and speed to emphasizing quality and benefit type; from the resource waste and environmental pollution to the resource conservation and environment friendly growth; from economic and social disorder to economic society coordinated growth; and from the growth by cost expansion to the high efficiency; from input-type economic growth to endogenous technological progress-type growth; from the growth driven by the government investment to that driven by the market investment; from the unsustainable to sustainable growth; from export-led growth to domestic demand driven growth; from the unbalance of structure transformation to the optimization of structure; from high carbon economy to a low carbon economy; from the growth depending on technology import to the growth depending on independent innovation; from "minority getting rich first" to "common prosperity". (Baoping Ren, 2011).

To Accelerate the Upgrading of the Industrial Structure.

The upgrading of the industrial structure enables the effective and reasonable allocation of resources, so as to improve the quality of growth. In the different stages of economic growth, its leading industry is different, so it will form the different industry structure. If the industrial structure is reasonable, it may contribute greatly to the quality of economic growth. So improving the quality of the economic growth must take the upgrading of the industrial structure as the core. Firstly, more investment should be done to agriculture, fastening the transformation of traditional agriculture, improving agricultural industrialization and modernization. Second, the mode of economic growth should be changed and the industrial performance improved by following the new route of industrialization. Third, the service industry should be developed further, focusing on the emerging industries with high added value, establishing a modern industrial system. Four, the upgrading of traditional industries should be strengthened by transforming and improving the R&D investment, encouraging independent innovation, accelerating the development of strategic emerging industries.

To Develop Innovative Economy.

The quantity-oriented economic growth is driven by productive factors, and the quality-oriented economic growth is driven by innovation. In order to improve the quality of economic growth in China, innovative economy must be developed: First, enterprises’ capability of independent innovation should be improved, promoting the transformation of scientific and technological achievements into practical productive forces, the human capital accumulation should be also paid great attention, making science, technology, knowledge the leading role in economic growth (Hong Yinxing, 2011); Second, the transformation of the traditional sector should be accelerated, increasing the technology and human capital input in the traditional sector, the upgrading of the industrial structure should be promoted, helping the enterprise or the entire industry transfer from original the capital or labor driven to knowledge driven, the industrial structure should be bettered from low level to high level; Third, China's economic growth should be improved from factor driven to technology driven, from the simple growth depending on inputs to efficient growth, promoting the formation of increasing returns to scale mechanism in economic growth.

To Strengthen Asset Management to Resources.

To achieve the overall goal of improving the quality of economic growth, the key lies in strengthening the asset management to resources. It means the contribution of various factors to the growth and China's resource should be considered, introducing property right into market mechanisms as the essence, changing the operating mechanism of administrative allocation and use of resources free of charge, so as to continuously improve the combination quality and configuration of quality factors in economic growth; Second, the positive and negative impacts of economic development to resources should be scientifically evaluated and guided, ensuring the best allocation of resources, environment, economy and society, protecting resources seriously, strictly implementing the current land resource planning, carrying on the management of resources,
bettering the regulation on allocating resources, improving resource utilization efficiency; Third, the compensation mechanism for the development and utilization of resources and ecological recovery should be further improved, making the same amount of investment bring more output, improving the supply mechanism of elements.

To Promote the Institution Innovation.

Improving the quality of economic growth basically depends on improving the supply, of which the most important task is to promote institutional innovation, establish a system compatible with the quality-oriented economic growth. First, the administrative management system should be innovated, setting up the scientific mechanism of government decision-making. The government acting “long-term” should be encouraged, which means the government focuses on changing the mode of economic growth” (Chen Zhao, 2007), on the basis of it, the scientific and rational mechanism of government decision-making can be established; Second, the system of science, technology and education should be innovated, providing knowledge, technology and personnel support for the quality of economic growth. Through the science and technology system innovation, the creativity in key technologies in the economic development should be expanded, forming a group of key technologies with independent intellectual property rights. Through the innovation of education system, high-quality talents should be cultivated, optimizing the educational structure, implementing quality education, enlarging the educational resources, speeding up the training of innovative talents; Third, the innovation of the income distribution system should be promoted, improving the social security system. The function of the government in regulating income distribution should be strengthened, adjusting the income gap; standardizing the distribution order, properly regulating the excessively high income of some monopoly industries. The proportion of medium income population should be enlarged, increasing the income of the low-income population, guaranteeing the basic living of the urban poor and rural poverty population.

Reference


