

Analysis on Factors Influencing Beijing's Aim for Per Capita GDP to Reach \$20,000

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I. Four Stages of the Development of GDP Per Capita

The economic development stage of a country or region is subject to various factors. Since the second half of the 20th century, GDP per capita has become an important basis for studying the process of economic development. This indicator can measure off the development stage and level of a country or region in a simple and clear way, and therefore international organizations such as the World Bank and IMF all resort to GDP per capita when classifying and researching economies. This approach has become the standard practice widely accepted around the world. In according with the newest grouping criteria for GNI per capita formulated by the World Bank in 2011, Beijing's economic development since 1978 will be divided into four stages in this article (see Table 1). Since 1978 Beijing's economy has continuously crossed new level, it has undergone the low-income stage, the lower-middle-income stage, the upper-middle-income stage and the high-income stage.

Table 1: Index decomposition of Beijing's GDP per capita at different stages (1978-2012)

Stage (Year)	GDP per capita (USD)	Time spent (Year)	Average annual growth rate of resident population (%)	Average annual CPI (%)	Annual growth rate of GDP at comparable prices (%)		
					Growth rate of the primary industry (%)	Growth rate of the secondary industry (%)	Growth rate of the tertiary industry (%)
Low-income stage (1978-1990)	1000 below	13	1.8	106.7	9.2	8.3	11.5
Lower-middle-income stage (1991-2002)	1000- 4000	12	2.3	108.7	11.1	10.0	13.4
Upper-middle-income stage (2003-2010)	4000- 12275	8	4.1	101.5	11.8	10.8	12.4
High-income stage (2011-2012)	12476 above	--	2.7	104.4	7.9	7.1	8.2

Note: the table data derive from the *Beijing Statistical Yearbook 2012*, or are calculated in accordance with the book. The 2012 data derive from *Beijing Statistical Bulletin of Economic and Social Development 2012*. The annual average exchange rate of the USD against the RMB is drawn from *China Statistical Yearbook 2012*.

II. Analysis of Factors Affecting Development Stages of GDP Per Capita & Characteristics of the Stages

GDP per capita is a comprehensive index closely related to factors such as prices, industrial structure, demand structure, and so on. Analysis of the dynamic changes of

the various factors at different stages and their influence on economic development will lay a good foundation for exploring the future direction.

1. The low-income stage: industry-led economic development in which the economy and prices undergo fluctuant growth

--The economic growth experienced two rounds of complete peaks and valleys, and prices in the period witnessed dramatic ups and downs.

--The average annual growth rate of resident population was at 1.8% keeping at a low growth stage. Population from other places compared to residential population remained below 6%, and the population mobility was fairly low.

--The secondary industry was leading the economic development, took up more than 50% of GDP, while the tertiary industry started to exert its influence, with an annual growth rate of 11.5% (3.2 percentage points higher than the secondary industry).

2. Lower-middle-income stage: rapid economic growth promoted by changes in the industrial structure

--Beijing's economy started a steady and rapid growth. GDP enjoyed an average annual growth rate of more than double digits, namely at 11.1%, 1.9 percentage points higher than that of the first stage. After 1996, market prices became more reasonable, which reduced inflationary pressures.

--The proportion of secondary industry to GDP decreased from 48.7% in 1991 to 29.0%. But within the industry, transformation toward high-end was gradually taking place.

--Beijing's economy was upgraded to service economy, and the tertiary industry rose as the leading industry, as shares of real estate, information transmission, computer services and software industry within the tertiary industry enjoyed a rapid increase.

3. Upper-middle-income stage: fast to stable economic growth with industrial structure moving towards high-end

--Beijing's GDP per capita increased rapidly by an average of \$ 900 annually during the eight years, and then entered into the \$ 10,000 camp. Using the year 2008 as a watershed, the GDP growth of this period can be divided into two phases: first fast and then to more steady. This period also witnessed rapid population growth of which one third was from other places without Beijing residency registration.

--The high-end tendency of the manufacturing industry stimulated industrial upgrading. The modern manufacturing led by automobile and electronics became the pillar industry of Beijing.

--The industrial pattern of "tertiary, secondary and primary" was further consolidated, which was closer to the development characteristics of international metropolis. Emerging industries were playing a growing role in the economy. From the perspective of internal structure, business-oriented productive service kept rising, indicating that the industrial structure was evolving to a higher level.

4. High-income stage: stabilized economic growth with three major difficulties affecting future development

--Difficulty 1: The “dual-wheel-drive” development pattern needed to be further strengthened. In recent years, Beijing had invested a huge amount of money in scientific and technological innovation. For example, in 2011 the R&D expenditure of the city (research and experimental development) was 93.66 billion yuan (as percentage of GDP 5.76%). It made Beijing rank first in the country for ten consecutive years in this respect. However, the output efficiency of technological innovation was relatively low especially compared to that of the input. At the same time, from the angle of internal industry structure, it was noticeable that information transmission, computer services and software industry took up an increasingly bigger portion of the cultural and creative industries, i.e. from 39.5% in 2005 to 52.4% in 2011. In a word, for the cultural and creative industry there was still a long way to go in order to transform their “large quantity” into “high quality”.

--Difficulty 2: The development of high-end industry needed to be further enhanced. Since 2005, labor productivity of the tertiary industry has become lower than that of the secondary industry. At the same time, computer service, software service, business service etc. should belong to the knowledge-intensive industry; failed to produce high added value. In fact, the added value rates of these industries were lower than the average level of the tertiary industry. Besides, in 2009 the financial crisis caused a substantial drop in the growth rate of productive service, making it even lower than that of the tertiary industry. It showed that the productive service, especially circulation service and financial service are relatively vulnerable to external impact.

--Difficult 3: Industrial integration needed to be further promoted. Productive service industry was originally detached from the internal production service department of enterprises and developed independently. It was an emerging industry whose development depended on the development of enterprises in the manufacturing sector. However, due to the adjustment of industrial structure in recent years, the proportion of the secondary industry in Beijing’s Economy has been steadily reduced, which will surely affect the progress of industry integration.

III. Predictive Analysis of Beijing’s GDP Per Capita reaching \$20 thousand

With the raise of GDP per capital, the economy shows more signs of stability (see Table 2). To conclude, it is predictable that Beijing’s economic trend in the up-coming years can be characterized as slower growth with a focus on restructuring and adjustments.

**Table 2: Fluctuation coefficient of Beijing’s GDP at different development stages
1978-2012**

Stage	Period (year)	Average annual GDP growth at comparable prices (%)	Fluctuation coefficient of total GDP
Low-income stage	1978-1990	9.2	0.53
Lower-middle-income stage	1991-2002	11.1	0.58
Upper-middle-income stage	2003-2010	11.8	0.35
High-income stage	2011-now	7.9	--

Note: Fluctuation coefficient = sample standard deviation / sample mean, used to reflect the amplitude data fluctuation.

In this article, we analyzed factors affecting the GDP per capita denominated in U.S. Dollars. Using Beijing’s GDP per capita (in U.S. dollar) data from 2000 to 2012 and resident population, it established combined forecasting method including ARMA model, curve simulation model and gray model GM (1,1) (see Table 3).

Table 3: Predictive value of Beijing’s GDP per capita (in U.S. dollar) and resident population 2013-2017

Year	Resident population(10,000)		GDP Per Capita (U.S. Dollar)	
	Interval	Mean	Interval	Mean
2013	[2089,2161]	2125	[14335,15010]	14673
2014	[2160,2243]	2201	[15533,16458]	15996
2015	[2231,2434]	2300	[16832,17979]	17406
2016	[2305,2392]	2349	[18239,19573]	18906
2017	[2381,2421]	2401	[19764,21239]	20502

As shown in Table 3, according to the forecast results calculated by these models, Beijing’s resident population will maintain a lower growth rate in the next five years, with an average annual increase of 66 million, and will reach around 24 million by 2017; meanwhile, the average annual nominal growth rate of per capita GDP will be 8.7%, lower than that of the Eleventh Five-Year period, and the GDP per capita will reach about \$ 20,000 by 2017. According to the forecasts made by economists and economic institutions, the exchange rate of the yuan against the dollar will not have major changes, because it has come closer to the equilibrium level when the exchange control system becomes more mature. That is to say, there is not much space for RMB to further appreciate, and consequently the influence of exchange rate on GDP per capita denominated in U.S. Dollars will gradually diminish. In such a context where economy moves into a phase stationary development, looking for a new growth point is the key to make the breakthrough of \$ 20,000 in the future.

IV. Direction for Beijing’s Development towards GDP Per Capita \$20,000

After the rapid development of the past three decades, Beijing’s economy has entered a new stage. This stage is not only an important period of strategic opportunities, but also a critical period transition with prominent economic and social contradictions of

all kinds. Therefore, the direction for Beijing's economic development in the coming years can be drawn as: to maintain the sustained and stable development of the national economy by means of accelerating the economic structural adjustment, changing the mode and pace of development, alleviating the pressure of population growth, strengthening the role of consumption and realizing the "dual-wheel-drive" development pattern (development relying on scientific and technological innovation as well as cultural innovation).

1. Promote the development of metropolitan area and realize rational distribution of population

As the capital city of China as well as an international metropolis, with enjoyment of stable and rapid economic growth, Beijing is attractive to people across the country. Therefore, the task for Beijing to ease its population pressure is very urgent. On one hand, the gap between various districts of Beijing and surrounding areas should be narrowed in the next phase of urbanization process, and the formation and development of the city agglomeration composed of Beijing, Tianjin and major cities in Hebei should be promoted so as to enhance the overall development of regional economy. A more balanced interregional development will lead to population movements, especially towards less developed areas. On the other hand, Beijing should take advantage of the industrial restructuring to decentralize some of its population. By moving some labor-intensive industries and low value-added industries of high energy consumption and high pollution to the outskirts of Beijing, or even to neighboring cities, employment opportunities can be also transferred outwards, which will help ease the population and environmental pressures and achieve a coordinated development of economy and social environment of the city.

2. Optimize and upgrade the economic structure, develop innovation-led industrial clusters

Looking at the development process of big cities in developed countries, it shows that after entering the developed stage these cities achieved the transformation from imitative innovation to original innovation. According to their advantages, they developed an innovation-led industrial cluster, and then they greatly enhanced the cities competitiveness. For example, the robots and animation industry cluster in Tokyo, the film & television as well as online games industry cluster in Seoul, the new media industry cluster in London, the financial industry cluster in New York, the biotechnology industry cluster in Singapore. These were basically developed when the economic entered its development stage.

On the Eleventh Party Congress, Beijing officially announced its goals to develop a "dual-wheel-drive" development pattern and to become an international scientific and cultural innovation hub. However, Beijing has not yet developed its own industrial clusters with international competitiveness. It still counts on the labor advantage to participate in international competition. Although over half of the products exported by local enterprises are mechanical and electrical kind or high-tech products, most of them are only processed or assembled in Beijing with almost no independent intellectual property rights and very low added value. In addition, the export volume

of service trade is still very small. Those who are involved in international trade are mainly traditional industries like tourism and international transport, while emerging services such as finance, business services are largely for the domestic market. Therefore, Beijing should give full play to its advantage of being China's science and technology center, cultural center and financial management center, vigorously develop intellectual-intensive industries with independent intellectual property rights, set up its own industrial clusters of financial service, technology service and information service. Only in this way can Beijing expand its influence nationwide and worldwide, and realize its goal of building it into one of the world's scientific and cultural innovation center.

References:

1. Elhanan Helpman, *The Secret of Economic Growth*. Beijing, China Renmin University Press, 2007.
2. Douglas North, *Structure and Change in Economic History*. Beijing, The Commercial Press, 2002.
3. Beijing Academy of Social Sciences, *Economics Development Report on Beijing 2007*. Beijing, Social Sciences Documentation Publishing House, 2007.
4. Zhaoliang Hu, *Underlying Causes for the Urban Functional Integration of Beijing*. Urban Problems, Issue 10 of 2007, page 2-6.
5. Ligu Shi , *Beijing's Yesterday, Today and Tomorrow: Analysis of Beijing's Economic Situation*. New Vision, Issue 4 of 2007, page 17-20.
6. Xiushui Bi, *Study on Effective Economic Growth: Analysis of Modern Economic Growth in the Context of Resource and Environmental Constraints*. Beijing, China Financial and Economic Publishing House, 2005.
7. Zhizhuang Zou, *China's Economic Transition*. Beijing, China Renmin University Press, 2005.
8. Shiyuan Han, Maohua Tang, *On the Cooperation priorities and the Role of Government in the Integrated Development of the Metropolitan Area Composed of Beijing, Tianjin and Major Cities in Hebei*. Journal of Tianjin Administration Institute, Issue 4 of Volume 7, published in November 2005, page 10-14.
9. Xuan Liu, *Beijing: A Need for Comprehensive Upgrading of Industrial Clusters*. Beijing Investment, Issue 8 of 2004, page 10-11.
10. Yongguo Chen, *Comparison of and Optimization Advice for the Tertiary Industry of Beijing, Tianjin and Major Cities in Hebei*. China Economic and Trade Tribune, Issue 1 of 2003, page 22-23.