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NEW FEATURES OF CHINA'S NATIONAL ACCOUNTS

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This paper has been drafted by the Director-General of the National Accounts department of the National Bureau of Statistics of China (NBS). After describing the sources and methods of the current SNA based Chinese national accounts, the paper explains the origin of the recent significant upward revision of China's GDP (+17%), based on an impressive Economic Census conducted in 2004. The paper describes the shortcomings of the current methods, in particular the difficulty in regularly collecting appropriate statistics for the ever more rapidly increasing service industries. The paper describes the work program established by NBS, consisting in particular in developing quarterly estimates of the expenditure components of GDP. It concludes with illustrations of the use by the planning authorities of China of economic objectives expressed in terms of national accounts.

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NEW FEATURES OF CHINA'S NATIONAL ACCOUNTS

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I. Coverage of China's National Accounts

1. From the foundation of the People's Republic of China to the initial stage of the reform and opening-up, which is starting from 1950s to middle 1980s, China's National Accounts were compiled based on the Material Product System (MPS) created by the former Soviet Union and Eastern European countries which were of highly centralized planned economy; from middle 1980s to early 1990s, China's National Accounts gradually adopted the System of National Accounts (SNA) created by the market economy countries; from early 1990s to present, the SNA, instead of MPS, was adopted as the official accounting system in China.

2. Currently, the coverage of China's National Accounts includes Gross Domestic Product (GDP), Input-Output Tables, Institutional Sector Accounts, and Balance Sheet Accounts.

(I) GDP Estimation

1. Establishment and development of GDP estimation

3. From the foundation of China to the initial stage of the reform and opening-up, the core indicator of China's National Accounts is National Income in line with MPS. This indicator reflects the productive activity resulting from the sphere of material production sectors, such as Agriculture, Industry, Construction, Commerce and Transportation, but does not reflect the sphere of non-material service sectors.

4. After the reform and opening-up, the non-material service sectors, such as Finance and Insurance, Education, Scientific Research, and Consulting, have experienced fast development and had an increasing impact on the national economy. Macroeconomic policy makers needed information to setup appropriate policies for the healthy development of the service sectors in coordination with other sectors' growth. Therefore, starting in the early 1980s, the National Bureau of Statistics (NBS) started to conduct research on the GDP indicator in line with SNA. The NBS submitted the *Report on Establishing Tertiary Industry Statistics* to the State Council on 19 March 1985 exposing the necessity of developing statistics on the tertiary industry and GDP estimation. The State Council ratified this report. The Department of Administration of the State Council required NBS to speed up the establishment of an SNA GDP estimation while continuing the compilation of the MPS National Income on 5 April, 1985. According to this requirement, NBS started in 1985 an annual SNA based GDP estimation using the production approach. In order to meet the needs of various departments of macro-economy administration, NBS carried out, starting in 1989, an annual GDP estimation using the expenditure approach in 1989 and, starting in 1992, quarterly GDP estimation using the production approach.

5. For the purpose of economic analysis, NBS extrapolated during the 80s and 90s the 1978-1984 and 1952-1977 historical production and expenditure GDP data using the previous MPS National Income and

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other related historical materials.

6. To reduce the gap of data sources for estimating the service sectors value-added, NBS organized from 1993 to 1995 the first Tertiary Industry Census (the reference years being 1991 and 1992). The revised 1991 and 1992 GDP based on this tertiary industry census data were 7.1% and 9.3% higher than those original data, respectively. In order to keep the comparability of historical data, NBS conducted in 1995 a comprehensive revision of historical GDP time series from 1978 to 1990 benchmarked on the results of this census.

7. In 1996, NBS published *Historical Data of China's GDP Estimation, 1952-1995* (Department of National Accounts, 1997a) and, in 2004, *Historical Data of China's GDP Estimation, 1996-2002* (Department of National Accounts, 2004), which both provide comparable historical GDP time-series to users.

8. To improve the information of users and achieve better data quality, NBS published in 1997 a *Methodology of Annual GDP Estimation in China* (Department of National Accounts, 1997b) and also a *Methodology of Quarterly GDP Estimation in China* (Department of National Accounts, 1997c); in 2001, NBS also published a *Manual of China's GDP Estimation* (Department of National Accounts, 2001) in order to standardize data sources and methodologies of GDP estimation.

9. In 2003, NBS decided on a publication schedule based on three releases of data for annual and quarterly GDP estimation: "preliminary account", "preliminary verification" and "final verification". The NBS decided also that related data should be systematically published at the same time of the release of GDP, and methodological notes are published when necessary. (NBS, 2003a)

2. *Industrial classification, main data sources and basic method of GDP estimation before the 2004 Economic Census*

A. Industrial classification

10. Before the 2004 Economic Census, annual GDP was broken down into 16 industries, which are Agriculture, Forestry, Animal Husbandry and Fishing, Industry, Construction, Service Activities for Agriculture, Forestry, Animal Husbandry and Fishing, Geological Prospecting and Water Conservancy, Transportation and Storage, Post and Communication, Wholesale, Retail Trade and Restaurants, Finance and Insurance, Real Estate, Social Service, Health, Sport and Social Welfare, Education, Culture and Broadcasting, Movies, Television, Scientific Research and Technological Services, Public Administration and Social Organizations, and Other.

11. Quarterly GDP was estimated at a detail of 8 industries, which are Agriculture, Forestry, Animal Husbandry and Fishing, Industry, Construction, Transportation, Storage, Post and Communication, Wholesale, Retail Trade and Restaurants, Finance and Insurance, Real Estate, and Other Services.

B. Main data sources

12. The main data sources for GDP estimation in China are the following. First, statistical sources include data originating directly from NBS and other related ministries of the State Council. Second, sources include administrative records such as definitive financial statements of units, commercial registration data, etc. Third, financial statements for bank, insurance, aviation, railway, post and communication. Statistical sources originating from the NBS are the main sources: they include statistics on Agriculture, Forestry, Animal Husbandry and Fishing, Industry, Construction, Wholesale, Retail Trade and Restaurants, Fixed Assets Investment, Compensation of Employees, Price, Household Survey, etc.

The following paragraph focuses on these NBS data sources.

13. Statistics on Agriculture, Forestry, Animal Husbandry and Fishing cover the gross value added and intermediate input of Agriculture, Forestry, Animal Husbandry and Fishing. Statistics on Industry cover production, sale and financial information related to industrial enterprises above a designated size², and the main economic indicators of industrial enterprises below a designated size³ and of individual businesses. Statistics on Construction cover the production and financial information related to construction enterprises that have an official qualification⁴. Statistics on Wholesale, Retail Trade and Restaurants cover the financial information of wholesale and retail trade enterprises above a designated size⁵, the financial situation of restaurants, and retail trade businesses above another designated size⁶. Statistics on Fixed Assets Investment refers to total investment in fixed assets in the whole country, which include construction and installation, purchase of equipment and instruments, and others. Statistics on Compensation of Employees refers to employment wages grouped by industrial sectors. Statistics on Prices refers to producers' prices for farm products, agricultural production price indices, ex-factory price indices of industrial products, retail price indices, consumer price indices, price indices of investment in fixed assets, selling price indices of houses, and renting price indices of houses. Statistics on Household Survey refers to consumption expenditure under the urban and rural household surveys.

14. The regular statistics of NBS are based on comprehensive reporting and, also, sample surveys. For example, statistics on production, sale and financial situation of industrial enterprises above a designated size, statistics on production and financial situation of construction enterprises with official qualification, statistics on financial situation of wholesale trade, retail trade and restaurants above a designated size are comprehensive reporting. Staff from these enterprises fill out uniform reporting forms designed by the NBS and submit them to the county level statistical bureaus. After input into computer, the county level bureaus transfer these data to NBS, indirectly or directly. Statistics on main economic indicators of industrial enterprises below designated sizes and individual businesses, statistics on prices, and statistics on household survey are conducted by sample surveys. Statistics on yield of major farm crops for calculating gross output and intermediate input of Agriculture, Forestry, Animal Husbandry and Fishing, statistics on intermediate consumption of major farm crops, and statistics on farm crops' prices are also conducted by sample surveys. NBS has formulated a harmonized methodology and questionnaire for these sample surveys. Local survey organizations under NBS or local bureaus of statistics send sample survey investigators or assistant investigators to conduct the survey for selected enterprises and individual businesses. The national data may either be estimated directly by NBS based on the samples or derived by aggregating the sample-based extrapolated estimates made by the local bureau at provincial level. (NBS, 2003b)

² Industrial enterprises above designated size consist of all state-owned enterprises plus other enterprises with annual sales of five million Yuan or more. 1 Yuan equals approximately 0.125 US dollar.

³ Industrial enterprises below designated size consist of all non-state owned enterprises with annual sales less than five million Yuan.

⁴ Construction enterprises that have an official qualification consist of all construction enterprises satisfying with the *Technical Capability Grade of Construction Enterprises* jointly formulated by Ministry of Construction and other related ministries.

⁵ Enterprises above designated size in wholesale and retail trade consist of all enterprises above designated size in wholesale and retail trade. Enterprises above designated size in wholesale trade consist of enterprises with either 20 or more workers or those with annual sales of 20 million Yuan or more (All foreign trade companies are included in wholesale enterprises.). Enterprises above designated size in retail trade consist of enterprises with either 60 or more workers or those with annual sales of 5 million Yuan or more.

⁶ Enterprises above designated size in restaurants consist of enterprises with either 40 or more workers or those with annual sales of 2 million Yuan or more.

3. Basic estimation methods

15. Annual GDP estimation in China consists of both GDP estimation by the production and expenditure approaches. Both of them are estimated at current prices and constant prices. Current prices estimation uses current market prices and constant prices estimation uses prices of a fixed base year. Before 2000, the fixed base year is changed every 10 years: for example, 1980 is the base year for the period from 1981 to 1990 and 1990 is the base year for the period from 1991 to 2000. After 2000, the fixed base year is changed every 5 years: 2000 is the base year for the period from 2000 to 2005 and 2005 is the base year for the period from 2006 to 2010. The following section will expand on these basic estimation methods, which were relevant before the 2004 Economic Census.

A. The estimation of GDP at current prices by industries

16. The estimation of GDP at current prices is the sum of value-added by industries. The value-added by industries can be estimated both by the production or the income methods. The production method consists in subtracting intermediate consumption from gross output to obtain value-added. The formula is as following:

$$\text{Value-added by production} = \text{gross output} - \text{intermediate consumption}$$

17. The income method consists in adding up the components of value-added, such as compensation of employees, net taxes on production, depreciation of fixed assets and operating surplus. The formula is as following:

$$\text{Value-added by income} = \text{compensation of employees} + \text{net taxes on production} + \text{depreciation of fixed assets} + \text{operating surplus}$$

18. Before the 2004 Economic Census, a mixed method combining the production method and the income method was used: value-added of Agriculture, Forestry, Animal Husbandry, Fishing and Industry was estimated using the production method, while the value-added of other industries was estimated using the income method.

B. The estimation of GDP at constant prices by industries

19. Value-added at constant prices by industries may be calculated in two ways: deflation and extrapolation. Deflation methods are divided into double deflation and single deflation. Double deflation means that both output and intermediate input at current prices are deflated by the corresponding output price index and intermediate input price index to obtain output and intermediate input at constant prices. The difference between the former and the latter is defined as value-added at constant prices. Single deflation mainly means that value-added at current prices is deflated by the output price index to achieve value-added at constant price. Methods of extrapolation are also divided into double extrapolation and single extrapolation similar to the case of deflation. Double extrapolation is when both output and intermediate input at base period prices are extrapolated by using volume indices of output and intermediate input to arrive at output and intermediate input at constant prices in the current accounting period. The difference between the former and the latter is defined as value-added at constant prices. Single extrapolation mainly indicates that value-added at current prices is extrapolated by using volume indices of output to achieve value-added at constant prices.

20. In the estimation of GDP at constant prices by industries, the value-added of Agriculture at constant prices is calculated by double deflation. The value-added of Transportation, Storage, Post and Communication are calculated by using single extrapolation, and other industrial sectors are calculated by using single deflation.

C. The estimation of GDP at current prices using the expenditure approach

21. The demand-oriented GDP estimation at current prices (GDP estimation by expenditure approach) consists in compiling the various components of final uses including final consumption, gross capital formation, net export of goods and services. Final consumption includes household final consumption and government final consumption; gross capital formation includes gross fixed capital formation and changes in inventories, and net export of goods and services equals to export of goods and services minus import of goods and services. Mathematically:

$$\begin{aligned}
 \text{Expenditure side GDP} &= \text{final consumption} + \text{gross capital formation} + \text{net export of goods and services} \\
 &= (\text{household final consumption} + \text{government final consumption}) \\
 &+ (\text{gross fixed capital formation} + \text{changes in inventories}) \\
 &+ (\text{export of goods and services} - \text{import of goods and services})
 \end{aligned}$$

D. The estimation of GDP at constant prices using the expenditure approach

22. The estimation of the expenditure approach of GDP at constant prices uses corresponding price indices to deflate the various components of expenditure at current prices to obtain constant prices components. GDP at constant prices equals to the sum of each component of final demand at constant prices.

4. *The estimation of regional GDP*

23. From 1985, 31 provinces, autonomous regions and municipalities (except Tibet) of China started GDP estimation simultaneously with NBS. NBS formulated a uniform methodology for GDP estimation and each provincial bureau of statistics calculated GDP for its region. The GDP estimation for Tibet started a little bit later than in other regions (Tibet started annual GDP estimation on trial bases in 1985 and then conducted a full estimation from 1987, quarterly GDP estimation of Tibet did not start until 1999).

(II) Input-Output Tables

24. NBS compiled the first input-output tables for China (1973 input-output tables) in cooperation with the former National Economic Planning Committee (NEPC), the Chinese Academy of Science, and other partners. In early 1980s, during the initial stage of the reform and opening-up, in order to meet the requirement of users from macro-economic planning and management, NBS, in cooperation with the former NEPC, started to compile input-output tables in line with MPS. NBS compiled national input-output tables in 1981 and 1983, respectively. In the middle 1980s, in order to reflect the fast growth of the tertiary industry after the reform and opening-up and to assist formulating appropriate policy for the tertiary industry, NBS started to conduct research on input-output tables in line with SNA. The State Council promulgated the *Notice on Conducting National Input-Output Survey* on March, 1997, which introduced a regulation to conduct national I-O surveys and compile I-O tables every five years. From then on, China regularly established a system for compiling I-O tables in line with SNA, i.e., in years ending with a 2 or a 7, benchmark I-O tables are compiled by conducting large-scale I-O surveys; in years ending with a 0 or a 5, updated I-O tables are compiled by conducting small-scale surveys targeting to collect information for technical coefficient revisions. Since early 1990s, in order to adapt to the actual situation of enterprises under market economy and the management of macro-economy, NBS continued to improve the methodologies for I-O surveys and compilation methods. Up to now, NBS has compiled 4 national benchmark I-O tables consistent with SNA for the years 1987, 1992, 1997 and 2002, and 3 SNA consistent updated I-O tables for 1990, 1995 and 2000. Currently, the compilation of the 2005 updated I-O table is under processing.

25. I-O tables in China consist of the supply table, the use table and a symmetric input-output table (the number of products and industries in supply and use tables are equal). The classification is more detailed in the benchmark tables than that in the updated tables. The number of products and industries varies over time. For example, the number of products and industries in benchmark I-O table has been 117, 118, 124 and 122 in 1987, 1992, 1997 and 2002, respectively, and the number of products and industries in updated I-O table is 33, 33 and 40 in 1990, 1995 and 2000, respectively.

26. The procedure of compiling input-output tables in most countries is to first compile supply and use tables and then derive a symmetric I-O table based on the two. Differing from that, China first compiles the supply table and the symmetric I-O table and then derives the use table based on two of them. The main reason for adopting such a procedure is that the basic statistical unit in China is the enterprise rather than establishments. Enterprises, especially large-scale enterprises, produce several or even dozens of products. Compared with the establishment, the main-line product of an enterprise is not distinguished and there is little homogeneity in the outputs. The adoption of the alternative I-O compiling procedure would result in biased symmetric I-O tables.

27. The method for compiling symmetric I-O tables in China is called “direct decomposition” method. Under “direct decomposition”, the enterprise classifies itself the various products into different industries based on the uniform industrial classification formulated by statistical authorities, and then decomposes its input costs into intermediate inputs and initial input components of various products according to the uniform requirement of statistical departments. Statistical departments then use the input component sources provided by enterprises, combined with other related sources, to compile symmetric I-O tables.

28. From 1987, most bureaus of statistics at the level of province, autonomous region and municipality adopted the method formulated by NBS and compiled regional I-O tables with NBS simultaneously.

(III) Institutional Sector Accounts

29. In middle and late 1980s, NBS carried out research on SNA consistent institutional sector accounts and formally compiled them starting in 1992 (excluding balance sheet accounts). Based on 1993 SNA recommendations, NBS systematically revised the methodology of institutional sector accounts. Relatively standardized forms and methodologies were established in 1996. Up to now, NBS has compiled 11 institutional sector accounts from 1992 to 2002, and is working on the 2003 accounts.

30. Institutional sector accounts in China classify all domestic institutional units into non-financial corporations sector, financial corporations sector, general government sector, and households sector; all non-resident institutional units which have economic transactions with resident units into the rest of the world. Therefore, institutional sector accounts in China consist of five accounts, which are the non-financial corporations sector, the financial corporations sector accounts, the general government sector accounts, the households sector accounts and of the rest of the world. Of which, the former four accounts are called domestic sector accounts and their summation accounts are referred to economic collectivity accounts. (NBS, 2003c)

31. Because of the difficulty for distinguish them, institutional sector accounts in China categorize the non-profit institutions serving households sector into the general government sector. Therefore, differing from the 1993 SNA, there are no non-profit institutions serving households sector as a separate institutional sector in Chinese national accounts.

32. Each domestic sector accounts and economic collectivity accounts consist of the production account, the distribution and use of income account, the capital account and the financial account. The rest of the world accounts are made up by the current account, the capital account and the financial account. The

production account in the Chinese accounts is the combination of the production account and the income generation account in 1993 SNA. The distribution and use of income account is the combination of the primary distribution of income account, the secondary distribution of income account and the use of disposable income account in 1993 SNA. The capital account and the financial account are almost the same as corresponding accounts in 1993 SNA. Constrained by data sources, indicators in those above accounts are simplified compared with corresponding ones in 1993 SNA. For example, property incomes are classified in the following way in 1993 SNA: interest, distributed income of corporations, reinvested earnings on direct foreign investment, property income attributed to insurance policy holders and rent. Distributed income of corporations is further classified into dividends and withdrawals from income of quasi-corporations. However, property incomes in China are only categorized into four components, which are interest, dividend, rent and other.

33. Institutional sector accounts in China do not include the entrepreneurial income account, the primary distribution of other income account, the secondary distribution of income in kind account, the use of adjusted disposable income account and other changes in assets account in 1993 SNA.

34. From 1992, most bureaus of statistics at the level of province, autonomous region and municipality adopted the method formulated by NBS and compiled regional institutional sector accounts with NBS simultaneously.

(IV) Balance Sheet Accounts

35. In late 1980s, NBS carried out research on estimation of assets and liabilities and started to compile their accounts from middle and late 1990s. Based on experience and learning from estimation of fixed assets of Canada, NBS gradually improved the estimates and the methodology for balance sheet accounts. Up to now, NBS has compiled 6 balance sheet accounts for 1997, 1998, 1999, 2000, 2001 and 2002, respectively and is working on the 2003 account now.

36. From 1997, most bureaus of statistics at the level of province, autonomous region and municipality adopted the method formulated by NBS and compiled their own balance sheet accounts simultaneously with NBS.

II. Revision of GDP Estimation in China after the 2004 Economic Census

37. The first Economic Census, conducted in 2004, is the most comprehensive census in the history of China in terms of the coverage, which includes all industries except Agriculture, Forestry, Animal Husbandry and Fishing. The 2004 Economic Census covers Industry, Construction and all service industries except service activities for Agriculture, Forestry, Animal Husbandry and Fishing. The Economic Census provides relatively complete data sources for GDP estimation in China. After the Economic Census, the NBS has made a systematic revision of GDP estimation. (NBS, 2005a; XU, Xianchun, 2005; XU Xianchun 2006)

(I) GDP Estimation in the Year of Economic Census

38. Compared with GDP estimation in a regular year, there are many origins of revisions of GDP estimation in the year of Economic Census, including revision of coverage, basic classification, data sources, calculation methods, and adjustments for some special treatments, etc. Among these origins, the revision of data sources is the most important one, explaining the bulk of the significant changes of the volume, structure, and growth rate of GDP. Note that the revision in the level of GDP reached 16.8% for the year 2004.

1. *Revision on GDP estimation coverage*

39. In the year of Economic Census, the coverage of GDP estimation based on data sources from the Economic Census, expanded along the following lines: 1) Inclusion of some very significant business service activities, which were not completely included in regular statistics, based on the financial information of all types of service enterprises provided by the Economic Census; 2) Inclusion of service activities of administrative and institutional units, which were not completely included in regular statistics, based on financial information of administrative and institutional units provided by the Economic Census; 3) Inclusion of economic activity of establishments involved in production differing from the major operations of their mother enterprise based on establishment data provided by the Economic Census; 4) Inclusion of productive activities of those individual businesses, which do not register with the Bureau of Commerce and Industry Administration, based on information on individual business operations provided by the Economic Census.

40. In addition, GDP coverage in the year of Economic Census expanded, using data from the Household Survey, for the following two aspects: 1) Inclusion of owner occupied dwelling rent services of household into GDP estimation coverage; 2) Inclusion of some household services (tutor services and domestic services).

2. *Revision on basic classification*

41. The method used in the year of Economic Census contributed to revise various basic classifications used in regular years, including the industrial classification used in the production approach of GDP and the expenditure components classification used in the expenditure approach of GDP. In regular years, the classification of industries is in 16 categories while for the Economic Census year it was possible to further categorize industries into 94 categories, very close to the official *Industrial Classification for National Economic Activities of China*. The revisions on the classification of expenditure components were to breakdown rural and urban households' consumption expenditures based on separate consumption expenditure items from rural and urban household surveys, and to better classify import and export of goods and services based on data from Balance of Payment. Rural household consumption expenditure and urban household consumption expenditure were broken down into 11 and 12 groups, respectively, which include consumption of foods, consumption of cloths, consumption of dwelling services, etc. The breakdown of export of goods in the export of goods and services includes export of general goods, export of processing goods and export of other goods; the breakdown of export of services includes 8 groups consisting of export of transportation services, export of tourism services, export of communication services, etc. The breakdown of import of goods and services is same as for the exports.

3. *Revision on data sources*

42. The main differences of data sources between the first Economic Census and regular statistics are the following:

A. The financial statements data of enterprises. Some of the financial statements data in regular statistics are of good quality, such as those for industrial enterprises above the designated size, construction enterprises with official qualification and enterprises above the designated size in wholesale, retail trade and restaurants. All of them have complete financial statements. Those data sources are close to the data from the Economic Census. However, regular statistics do not cover the following services enterprises: construction enterprises without official qualification, enterprise below the designated size in wholesale, retail trade and restaurants, renting and business services enterprises, computer services enterprises, enterprises of information transmission services, enterprises of household services, etc. The value-added of those enterprises is estimated mainly by related indicators. The

Economic Census included questionnaires on the financial situation or questionnaires on production and management for those enterprises, which were used for deriving value added. (Census Office, 2004)

- B. Data sources for administrative units. The value-added estimation for administrative units in regular statistics is mainly based on statistics on Compensation of Employees and government financial statements data, which cannot provide complete value-added estimation. In order to offset this gap, the Economic Census included a questionnaire of the financial situation of administrative allowing a comprehensive calculation of value-added. (Census Office, 2004)
- C. Data of individual businesses. In a regular year, value-added created by individual businesses is estimated mainly by data from Commerce and Industry Administration Records. However, some of the individual businesses do not register with administrative departments and their data are thus missing. The Economic Census included a questionnaire for non registered individual businesses thus providing more comprehensive data sources for value-added estimation. (Census Office, 2004)
- D. Data of auxiliary establishment whose activities are different from the main activity of enterprise. For example, an industrial enterprise may include some auxiliary establishments who conduct other activities. Regular statistics provide very limited data on such activity. Therefore, their value-added are often missed. The Economic Census designed a questionnaire to obtain the basic information of establishments useful for a comprehensive value-added estimation. (Census Office, 2004)

4. *Revision on Method of GDP Estimation*

43. The revision of methods used for GDP estimation in the year of Economic Census included the following two aspects: 1) Revision of methods due to the change of data sources : GDP estimation in the year of Economic Census was based on direct value-added estimations, replacing the extrapolation method with related sources that is used in regular years, and this for industries that have no complete statistics in regular years, such as enterprises, administrative units, individual businesses and auxiliary establishments. 2) GDP estimation in the year of Economic Census used the production approach, the income approach and the expenditure approach simultaneously and provided three independent GDP estimations. Although GDP estimation in regular years also uses partially those three approaches, it is not completely possible to calculate value-added both for the production and income approaches for each industry. The value-added of Agriculture, Forestry, Animal Husbandry and Fishing, and Industry uses the production approach, and the value-added of other industries uses the income approach. Therefore, the method used in regular years cannot generate GDP estimation at production, income and expenditure approaches independently.

5. *Adjustments for some special treatments*

44. In order to comply with the recommended international standards and increase the comparability of GDP data, GDP estimation in the year of Economic Census revised or introduced some adjustments such as: 1) Adjustment of FISIM treatment. In the regular statistics, the net interest of various industries is treated as intermediate input and deposit interest of households is treated as value-added of financial industry. In the year of Economic Census, FISIM is distributed across industries and final uses components either as intermediate input for corresponding industries or final uses for final uses sectors, respectively. The deposit interest of households is no longer treated as value-added of financial industry. 2) Adjustment of computer software treatment. In the year of Economic Census, the acquisition of computer software has been treated as fixed capital formation, which was not the case before. 3) Adjustment of treatment for households' owner-occupied dwellings. First, the method was changed using prices based on current construction costs rather than historical prices to measure households' owner-occupied dwellings. Second, the depreciation rate used in the imputed calculation of rural households' owner-occupied

dwellings was changed from 2% to 3%, and the rate of urban counterpart from 4% to 2%.

6. Revision on GDP data

45. Compared with the GDP estimation in regular statistics, the volume of GDP estimation in the year of Economic Census increased by 2.3 trillion Yuan, which is 16.8% more than the pre-revised GDP. Of which, the value-added of tertiary industry increased 2.13 trillion Yuan, 92.6% of the total increase. The ratio of tertiary industry over the whole GDP was changed from 31.9% to 40.7%, an increase of 8.8 percentage points.

(II) Revision on Historical GDP Data

46. The 2004 GDP estimated using the Economic Census data sources and related new methods cannot be compared with the pre-revised GDP results estimated by regular statistics and old methods. It is necessary to revise all the historical GDP data estimated by regular statistics and old methods. Therefore, after having finished the calculation of GDP in the year of Economic Census, NBS immediately conducted a revision of historical GDP time series. The historical data for GDP estimation using the production approach were revised back to 1993. The reason for this date is that 92.6% of the 2.3 trillion Yuan of additional GDP is coming from tertiary industry, and historical GDP data have been revised from 1978 to 1992 using the first tertiary industry census. The year 1992 was therefore considered correct. Up to now, the historical revision of the expenditure approach of GDP is in process but has not been completed. As NBS did not revise expenditure GDP data after the first tertiary industry census, we want to revise them from 1978 to 2003. The method used for historical GDP data revision is the "trend deviation". This method is relatively straightforward. The main steps are as following: 1) Calculate the trend value of historical GDP data based on the original GDP data in 1992 (or 1978) and 2004. 2) Calculate the new trend value of historical GDP data based on the original GDP data in 1992 (or 1978) and the new GDP data in 2004. 3) Calculate a coefficient of the trend value of original 1993 to 2003 GDP data over the actual value at the same period. 4) Adjust the new historical GDP data trend value according to the above coefficient to achieve the revision value on new historical GDP data. (NBS, 2005b)

47. Table 1 shows the resulting revisions on GDP, value-added of tertiary industry, growth rate of GDP and the ratio of value-added of tertiary industry over GDP.

Table 1: Revised GDP data after the Economic Census

Year	GDP				Value-added of Tertiary Industry				
	After Revision	Before Revision	Level Changed	Ratio	After Revision	Before Revision	Level Changed	Ratio	Level Change over revised GDP (%)
1993	35334	34634	700	2.0	11992	11324	668	5.9	95.6
1994	48198	46759	1438	3.1	16281	14930	1351	9.1	93.9
1995	60794	58478	2316	4.0	20094	17947	2147	12.0	92.7
1996	71177	67885	3292	4.9	23456	20428	3028	14.8	92.0
1997	78973	74463	4510	6.1	27165	23029	4137	18.0	91.7
1998	84402	78345	6057	7.7	30780	25174	5607	22.3	92.6
1999	89677	82067	7610	9.3	34095	27038	7058	26.1	92.8
2000	99215	89468	9746	10.9	38942	29905	9038	30.2	92.7
2001	109655	97315	12340	12.7	44627	33153	11474	34.6	93.0
2002	120333	105172	15160	14.4	50197	36075	14122	39.2	93.2
2003	135823	117390	18433	15.7	56318	39188	17130	43.7	92.9
2004	159878	136876	23002	16.8	65018	43721	21298	48.7	92.6

Table 1: Revised GDP data after the Economic Census (Continued)

Year	Growth Rate of GDP (%)			Value-added of Tertiary Industry over GDP (%)		
	After Revision	Before Revision	Difference	After Revision	Before Revision	Difference
1993	14.0	13.5	0.5	33.9	32.7	1.2
1994	13.1	12.6	0.4	33.7	31.9	1.8
1995	10.9	10.5	0.4	33.0	30.7	2.3
1996	10.0	9.6	0.4	33.0	30.1	2.9
1997	9.3	8.8	0.5	34.4	30.9	3.5
1998	7.8	7.8	0.0	36.5	32.1	4.4
1999	7.6	7.1	0.5	38.0	32.9	5.1
2000	8.4	8.0	0.5	39.3	33.4	5.9
2001	8.3	7.5	0.8	40.7	34.1	6.6
2002	9.1	8.3	0.7	41.7	34.3	7.4
2003	10.0	9.5	0.5	41.5	33.4	8.1
2004	10.1	9.5	0.6	40.7	31.9	8.8

(III) Historical Revision of GDP in the Future

48. In 2003, The State Council promulgated the establishment of periodical Economic Censuses for every five years, which will be carried out on the years ending of 3 and 8. (State Council, 2003) In the same year, NBS decided that historical GDP revision should be conducted whenever the Economic Census is conducted, new data sources impacting GDP estimation are discovered, or methodology and classification are changed. (NBS, 2003a)

III. The Omission, Shortcoming and Difficulty of China's National Accounts

49. Although China's national accounts experienced fast convergence with international standards, there are still some shortcomings compared with 1993 SNA, with developed countries' national accounts, with requirements from departments of macro-economy, the civil society and international organizations. Also national accounts in China are facing some specific difficulties.

(I) GDP Estimation

1. Regular Service Statistics

50. The absence of good regular service statistics in China will remain a weakness. Already the first tertiary industry census in 1995 indicated that the value-added of the tertiary industry was significantly underestimated based on the regular statistics data sources. In 1995, NBS already conducted a comprehensive revision of historical value-added of tertiary industry from 1978 to 1992 based on the census results. At this time, the value-added of tertiary industry was adjusted upwards by 33.1%, which was about 9.3% of GDP. Now, the first Economic Census of 2004 indicated that the value-added of tertiary industry was still and even more underestimated in the regular statistics data sources. The 2004 value-added of tertiary industry was adjusted upwards by 48.7% in 2005, which is about 15.6% of GDP.

51. Omission of regular service statistics is mainly due to two factors: 1) Part of the service sectors and individual businesses are not covered by regular statistics, especially individual businesses that specialized in new emerging service activities, such as communication and information transmission, computer services, renting services, business services, and real estate development and operation. 2) The coverage of regular service statistics of some statistical departments is very limited, and most of them are confined to their own system. In addition, most of them are focused on quantity statistics and attach less importance

to current price statistics, thus making it impossible to meet the requirement of value-added estimation for service sectors.

2. *GDP estimation at constant prices*

52. Shortcomings of GDP estimation at constant prices are mainly due to the following two factors:

- A. The lack of producer price indices for the service industries. As China has not yet compiled PPIs in the service sectors, service components price indices from the CPI are used as proxies for service sectors' GDP estimation at constant prices. However, some of those services are not related with households, such as computer services, accountant services and advertisement services. Therefore, there is no corresponding price index for estimating those sectors' at constant prices. We use related price indices as substitution in such case and it will affect by definition the accuracy of value-added estimations at constant prices.
- B. The lack of trade price indices in service sectors. As China has not compiled trade price indices in service sectors yet, the price indices of imports and exports of goods and some related service price indices are used for value-added estimation of exports and imports of service at constant prices. This definitely affects the accuracy of value-added estimation of export and import of services at constant prices.

3. *Quarterly GDP estimation*

53. Shortcomings of quarterly GDP estimation are mainly the following:

- First, quarterly GDP is only estimated using the production approach, there is no formal approach of the quarterly expenditure components of GDP up to now. Expenditure components are: consumption demand, investment demand and net export demand. We know that the information provided by quarterly expenditure components of GDP is as important as quarterly production GDP to macro-economy analysts and policy makers. Starting in 2000, the NBS conducted some trial estimation of quarterly expenditure GDP. However, there are limitations in data sources and inconsistencies between production and expenditure data sources, which resulted in that we still do not produce nor publish any formal quarterly expenditure GDP estimations.
- Second, quarterly GDP estimation is on a cumulative basis rather than discreet basis. The cumulative quarterly GDP estimation provides a growth from the first quarter to the current quarter data. The discreet quarterly GDP estimation provides each quarter's growth. Compared with the cumulative basis, the discreet basis gives a better indication of economic trends in the quarter and provides important and timely information for short term macro-economic analysts and policy makers. Therefore, we recognize that it is more valuable than cumulative quarterly GDP estimation. The reason of continuing to publish cumulative quarterly GDP estimations in China is that basic statistics at hand do not meet the requirement for discreet quarterly GDP estimation. Especially, there is no discreet quarterly data on fixed assets investment and some price indices are also lacking.

4. *Regional GDP estimation*

54. Each bureau of statistics at the level of province, autonomous region and municipality has adopted the method formulated by NBS and compiles their own regional GDP. Due to a number of reasons, the summation of regional GDPs is systematically different from the national GDP. From 1992 onwards, the growth rate based on the summation of regional data is always higher than that based on the national data. From 1996, the level of the sum of regional GDP data is always higher than that of national GDP data. In

order to improve the data quality and minimize the gap between the sum of regional data and national data, NBS has started in 1999 to jointly evaluate and check-up the regional data quality. It has already achieved some good results in standardizing regional GDP estimations and improving their data quality. In 2005, NBS cooperated with some regional bureaus of statistics to calculate 2004 GDP at provincial level according to the Economic Census data. However, although the gap between the sum of regional data and national data is largely reduced, this problem has not been solved ultimately.

55. Because the regional GDP and national GDP are estimated by provincial bureaus of statistics and NBS, respectively, the gap between the sum of regional data and national data is inevitable. The problem is that the gap is too big for many years, exceeding a reasonable boundary. Reasons for such big difference are as following: 1) Some regions blindly pursue fast growth rate and compete with each other. 2) There are shortcomings in the statistical system. There are big deficiencies in service sectors statistics and it is hard for NBS to control data quality on related industries.

(II) Input-output Tables

56. As noted before, in China, the basic statistical unit is the enterprise, not the establishment. In order to keep the homogeneity of the same product, China compiles symmetric I-O tables using the method of direct decomposition. However, this method induces too much burden on the enterprise. In the development of a socialist market economy, private enterprises and foreign investment corporations grow very fast, and even state owned enterprises put more and more attention to financial results. Therefore, there is an increasing reluctance from the part of enterprises to accept such a heavy statistical duty as to decompose input according to the kind of production. The degree of cooperation with enterprises is therefore significantly dropping.

57. In order to adapt to the actual situation of enterprises under market economy and alleviate the burden of enterprises, NBS should abandon the method of direct decomposition of symmetric I-O tables, and use the method adopted by most countries, which is to first compile a supply table and an use table, and then derive symmetric I-O tables according to them. It will also need to adjust the basic statistical unit from enterprise to establishment. This will involve a major adjustment of the statistical system and will be a hugely difficult task.

(III) Institutional Sector Accounts

58. Although the methodology for institutional sector accounts are now relatively standard after more than 10 years practice, there are still some shortcomings left: 1) The classification of institutional units and sectors is too broad, and cannot reflect certain economic activities of some important sectors and economic relationships between them. 2) The definition of transactions is not enough detailed. For example, taxes on production and import are not sub-categorized and cannot reflect transactions on taxes on value-added, taxes on imports, taxes on exports and other production taxes between institutional sectors and the government sector. 3) There are large gaps in data sources, which are to be estimated with extrapolation methods.

(IV) Balance Sheets

59. Balance Sheets data have similar problems than those for institutional units and sectors. Classification and definition of transaction are not sufficiently detailed, and there are large gaps in data sources. In addition, constrained by data sources, there is no price reevaluation for non-state owned fixed assets. Therefore, China has not published yet published these balance sheets.

IV. The Blueprint for further Development of China's National Accounts

(I) GDP Estimation

1. Regular services sectors statistics

60. In order to solve the problem of deficiency on regular statistics on services, NBS is taking the following actions: 1) Conducting trial sample surveys on service enterprises, such as computer services, software, renting, business services, household services, etc, and on individual businesses. (NBS, 2005c) It will establish the formal sample surveys based on the experience of those trial sample surveys. 2) Coordinating with related ministries to help those improving statistics for services.

2. Constant prices estimation

61. In order to solve the problem of deficiency of price indices for constant prices estimation, NBS is preparing a plan to establish producer prices indices on services.

3. Quarterly GDP estimation

- A. Systematically summarize the experience on expenditure side quarterly GDP estimation in the past years, and establish and improve specialty statistics and departmental administrative statistics according to the lack of data sources and the poor data quality. Realize the link up of data sources between production and expenditure sides GDP estimation, which include the link up of prices indices. Establish the formal expenditure side quarterly GDP estimation based on it.
- B. Regarding the problem of insufficient data sources insufficiency for the calculation of discreet quarterly GDP, establish corresponding discreet quarterly specialty statistics step by step, especially discreet quarterly fixed assets investment statistics and discreet quarterly prices indices. Base discreet quarterly GDP estimation based on these new statistics.

4. Regional GDP estimation

62. NBS is planning to reform the framework of regional GDP estimation when it has sufficient data sources. In these cases, NBS will calculate directly or coordinate systematically with provincial bureaus of statistics to estimate provincial GDPs. This will reduce any deliberate interference on regional GDP data.

(II) Institutional Sector Accounts

63. The first Economic Census did not only provide prolific and detailed data sources for GDP estimation but also supplied good data sources for institutional units and sectors. By making full use of the data from this census and other relevant data, including government final financial accounts, final accounts for tax, banks, security and insurance, rural and urban household surveys, etc., we plan to further categorize the sector classification and setup indicators for institutional units and sectors aiming towards an improved method of compilation. The preliminary recommendation is to break the non-financial corporation sector down into two sub-institutional sectors: industrial enterprises and other non-financial corporations; to break financial institutions sector down into four sub-institutional sectors: banks, security, insurance and other; to further break down the government sector into two sub-institutional sectors: central government and local government; to further break down the household sector into two sub-institutional sectors: rural household and urban household; to further break down taxes on production and import, property income and other indicators; to formulate detailed compilation method for institutional sector accounts according to new data sources.

V. The Application of China's National Accounts in Macro-economy Management

64. China's national accounts have become an important tool for Chinese government to understand the change in the national economy and are an essential source of information to help setting up an economic development strategy, the medium and long-term plan, annual plans and various macro-economic policies. For instance, the Chinese government put forward the strategic aim in early 1990s that in 2000, per capita GDP would quadruple compared with that in 1980 while the population at the same time increased by 300 million compared to 1980; in the initial stage of this century, it also set the objective that in 2020, GDP will quadruple compared with that in 2000; in 2005, that in 2010, per capital GDP will double compared with that in 2000. All these strategies are based on GDP estimation. The national economic development aims raised in "the ninth five-year plan", "the tenth five-year plan" and the national economic development objectives raised in the past and also the annual plan set up by the Chinese government are based on GDP estimation. "The Program of the Eleventh Five-year Plan of National Economy and Society Development of People's Republic of China" ratified at the fourth session of the tenth national people's conference on March 14, 2006 has decided of 22 major indicators of economy and society development, among which there are 6 indicators related to GDP, including two economy growth indicators, two economy structure indicators, and two population resource indicators. Regarding the two economy growth indicators, one is GDP, the annual growth rate of which during the "eleventh five-year" is aimed at 7.5%; the other is per capita GDP, which is set to double in 2010 compared with that in 2000 and the annual growth rate which objective during the "eleventh five-year" is 6.6%. Regarding structure indicators, one is the ratio of service industry value-added over GDP, which should increase from 40.3% in 2005 to 43.3% in 2010, that is, 3 percentage higher in 5 years with an annual growth rate of 0.6 percentage points; the other is the ratio of expenditure on research and development over GDP, which should increase from 1.3% in 2005 to 2%, that is, 0.7 percentage points higher in 5 years, thus an annual growth rate of 0.14 percentage points. Regarding two human resource environment indicators, one is the unit GDP energy consumption, which should decrease by 20% in 2010 compared with that in 2005; the other is water consumption per industry value-added unit, which should decrease by 30% in 2010 compared with that in 2005.

65. In recent years, relevant administrative ministries of Chinese government, such as the National Development and Reform Commission, the Ministry of Finance, the State Administration of Taxation, the People's Bank of China, pay much attention to quarterly and annual estimates of GDP in volume, to data on structures and growth rates, in order to analyze the economic situation, conduct research on relationship between finance, taxes, money and economic development and make policies on finance, taxes, and monetary issues.

66. The relevant administrative sectors are also interested in input-output data, study industry structures, final demands structures, economic relationships among industry sectors, and study income allocation, savings, investment and financial transactions based on data from the institutional sector accounts so as to formulate relevant economic policies.

67. Chinese local governments also attach a great importance to local GDP, input-output tables, and institutional sector accounts. Based on these data, local governments analyze local economic levels, economic growth rates, industrial structures and demand structures, income allocation, savings and investment, and then compare the economic situation among different regions so as to formulate local economic development policies to speed up their own economic development.

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