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A Study on the Measurement of Services Industries  
and Related Issues in China  
(provisional translation)

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The measurement for services industries contains two aspects, which are measurement from production side and measurement from expenditure side. Measurement from production side means value added estimation, whereas measurement from expenditure side refers to estimation of final consumption, capital formation, and import and export. This paper describes the scope of services industries and the related estimation methods, discusses some of the remaining problems, offers a view of further improvement of Chinese services industries measurement.

## **1. Scope of Services Industries and Revision of Their Classification**

### **1.1 Scope of Services Industries**

The estimation of valued added of services industries as a part of GDP from production side<sup>1</sup> started in 1985. Then NBS adopted the expenditure approach for services estimation on a trial basis in 1989, and formally in 1993.

In March 19, 1985, the NBS submitted to the State Council a *Report on Establishment of Tertiary Industry Statistics*<sup>3</sup>, which proposed a classification of thrice industries and emphasized the necessity to establish a statistical system for tertiary industry and gross domestic products (GDP) estimation<sup>4</sup>. The report was approved by the State Council, and the classification of thrice industry is as follows:

Primary Industry: including agriculture (agriculture, forestry, animal husbandry and fishing)

Secondary Industry: including mining & quarrying, manufacturing, tap water, electricity, steam, hot water & gas and construction

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<sup>1</sup> National income of the traditional Material Product System (MPS) involves no other services industries but transportation, commerce and catering.

<sup>3</sup> See the "Notice of the General Office of the State Council to Forward the Report of NBS to Setup Tertiary Statistics" on page 120 of the Statistics Handbook by Li Chengrui.

<sup>4</sup> Gross National Product in the Report of NBS to Setup Tertiary Statistics is, in practice, primarily gross domestic product.

Tertiary Industry: including all industries other than primary and secondary industry. In accordance with this standard, all types of services are classified into the tertiary industry. As a result, tertiary industry has, since 1985, been synonymous with service industry in Chinese national accounting.

The above standard was abolished by NBS in 2003. A new classification of the thrice industries was defined based on “*Industrial Classification of National Economy*” (GB/T 4754-2002)<sup>5</sup> issued in 2002. The redefined thrice industries are as follows:

Primary industry refers to agriculture, forestry, animal husbandry, and fishing.

Secondary industry refers to mining & quarrying, manufacturing, production and supply of electricity, gas and water ; and construction.

Tertiary industry refers to the industries other than primary and secondary industries, including 1) transport, storage and post, 2) information transfer, computer services and software, 3) wholesale and retail trade, 4) accommodation and catering, 5) banking and insurance, 6) real estate, 7) leasing and business services, 8) scientific research, technical services, and geological prospecting, 9) management of water resources, environmental and public infrastructure, 10) household services and other services, 11) education, 12) health care, social security and welfare, 13) culture, sports and entertainment, 14) public administrations and social organizations, 15) international organizations<sup>7</sup>. All the 15 services industries are the first digital categories listed in the *Industrial Classifications of National Economy (GB/T 4754-2002)*.

Personally, I don't think that international organizations should be involved in the tertiary industry because international organizations should not be treated as residential units of China.

It is worth notifying that the new classification of the thrice industries treats service industry for agriculture, forestry, animal husbandry and fishing as a component in the primary industry rather than that in the tertiary industry in the old standard. Such

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<sup>5</sup> The National Economic Industry Classification (GB/T 4754-2002) promulgated on May 10, 2002 by State Administration of Quality Control, Inspection & quarantine

<sup>7</sup> International Organizations are excluded from national accounts because of their no-residential status.

adjustment leads to some trivial difference between the concept of services industry and the concept of tertiary industry. In practice, such difference might be ignored while the scale of the service industry for agriculture, forestry, animal husbandry and fishing is limited.

## **1.2 Classification of Services Industries for Production Measurement and Its Revision**

Historically, there has been a gap between the classification of services industries for production measurement and the classification of services industries in standard industrial classification of national economy due to the availability of data sources. The gap still exists today. This paper focuses on the former rather than the latter classification of services industries and its related changes.

From 1985 to 1993, the classification of services industries was as follows:

1) transport, post and telecommunications, 2) commerce, catering, material supply and sale, and storage, 3) banking & insurance, 4) real estate, 5) services, 6) public utilities, 7) science, education, culture, health care, sports and welfare, 8) governmental agencies, party organs and social organizations, 9) other. Of which, the coverage of “services” is in line with the narrow concept, relevant only to household services, consulting services, services for agriculture, forestry, animal husbandry and fishing, geological prospecting, water conservancy management, and comprehensive technical services. This classification was made on the basis of the Industrial Classifications & Codes of National Economy (GB 4754-84)<sup>9</sup> promulgated in 1984 with a consideration of China’s data sources at that time.

The above classification was adjusted after 1994 in accordance with the Industrial Classifications & Codes of National Economy (GB/T 4754-94) issued by the State Administration of Quality Control and the data availability of China. The revised

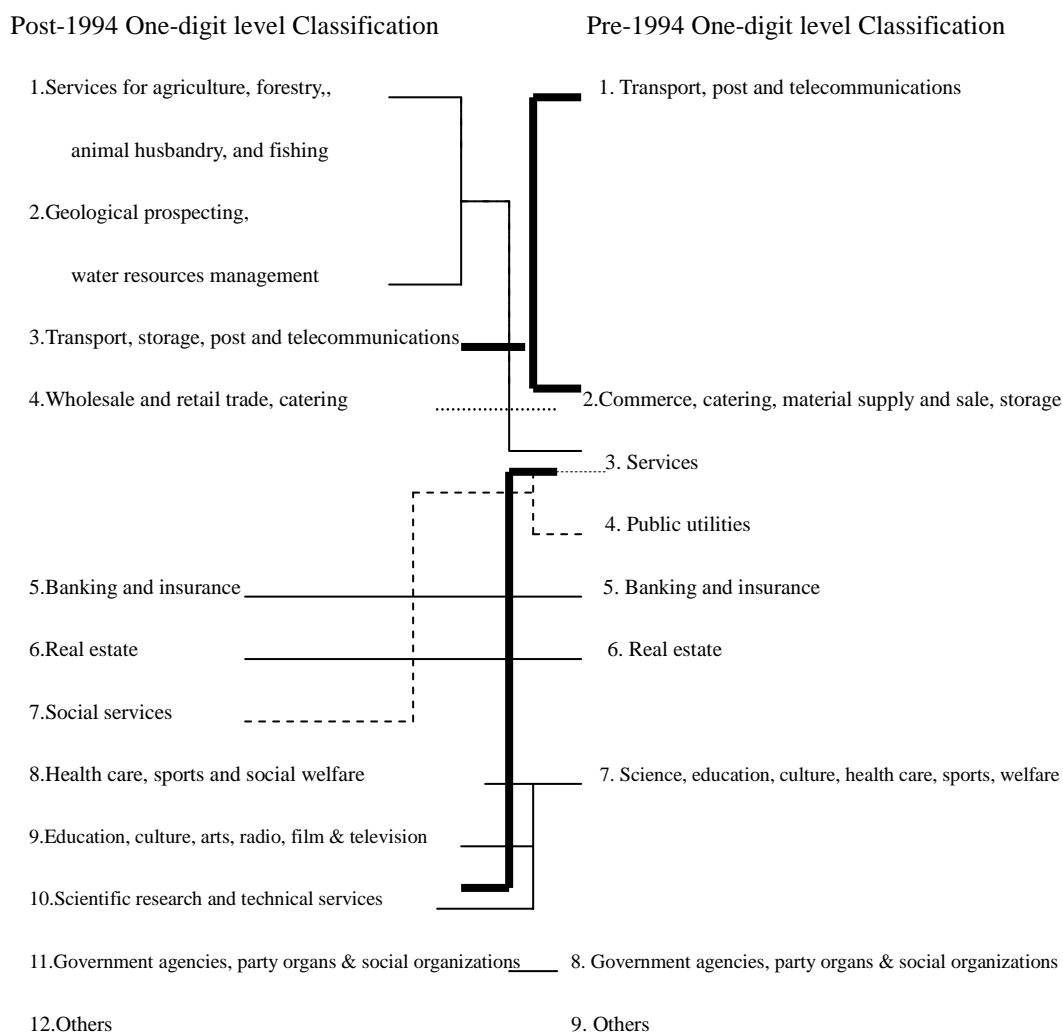
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<sup>9</sup> This classification standard was jointly ratified and issued by the State Planning Commission, the State Economic and Trade Commission, the National Bureau of Statistics and the State Administration of Standards

industrial classification include 12 one-digit categories, and 18 two-digit categories. The 12 one-digit categories refer to 1) services for agriculture, forestry, animal husbandry, and fishing, 2) geological prospecting and water resources management, 3) transport, storage, post & telecommunications, 4) wholesale and retail trade, catering, 5) banking and insurance, 6) real estate, 7) social services, 8) health care, sports and social welfare, 9) education, culture, arts, radio, film and television, 10) scientific research and technological services, 11) governmental agencies, party organs and social organizations, and 12) other. This classification is still in effect now. The mapping table between the one-digit level classification before and after 1994 is as follows:

**Table1:**

Mapping Table between One-digit Level Classification of Services Industries for  
Production Measurement Before/After 1994



The table shows the main differences of the one-digit level classification of services industries for production measurement before and after 1994 are in the following aspects:

Firstly, category of services for agriculture, forestry, husbandry and fishing, and category of geological prospecting and water conservancy management are listed

independently in the post-1994 classifications, while they were included in category of services in the pre-1994 classification.

Secondly, storage services are grouped with transport, post & telecommunications into one category in the post-1994 classification while they were combined with commerce, catering, and material supply & sale as one category in the pre-1994 classification. However, such difference is only nominal. In practice, storage activities associated with transportation are merged into transport, post & telecommunications, while the storage activities related to commerce, catering, material supply and sale (wholesale and retail trade, and catering) are blended into commerce, catering, material supply and sale due to the limitation of data sources.

Thirdly, a category of social services is set up in the post-1994 classification, which covers category of public utility, and households services, and consulting services under category of *services* in the pre-1994 classification.

Fourthly, categories of medical and health care, sports & social welfare; education, culture, arts, radio, film & television; and scientific research and comprehensive technical services are separated in the post-1994 classification, while the former two combined with scientific research under the third are grouped into category of science, education, culture, health care sports and welfare in the pre-1994 classification. And the rest component of the third, comprehensive technical services, is included in category of services in the pre-1994 classification.

Fifthly, there are some differences in nomenclatures before and after 1994. For instance, the post-1994 category of wholesale & retail trade and catering is previously named commerce, catering, material supply and sale. In addition, there are some new activities added into the post-1994 classification, whereas such new activities were not reflected at all before 1994. For example, in the post-1994 classification, real estate brokerage and agency are added into real estate, and the administration of

natural protection zone, and market management services etc are included in social services.

As for banking & insurance, government agencies, party organs and social organizations, and others, the definitions are basically matched in classification before and after 1994.

With the approval of the State Council, the first economic census will be conducted in 2004. Consequently, the Industrial Classification of National Economy issued in 2002 will be applied in GDP measurement after the census. The classification of services industries will by then be the 14 one-digit level categories<sup>10</sup> in the above 2002 standard. In accordance with the newly established classification of the thrice industry by NBS, services for agriculture, forestry, animal husbandry, and fishing, which is treated as a sub-level category in the category of agriculture, forestry, animal husbandry, and fishing, is no longer included in the one-digit level production measurement.

## **2. Basic Calculation Methods for Services Industries**

As indicated above, the measurement of services industries can be achieved either from the production side or from the expenditure side. The basic calculation methods used in China from both side are presented below.

### **2.1 Production side estimation**

Production side estimation for services industries consists of estimation at both current prices and constant prices. Estimation at current prices uses prices in the accounting period. Estimation at constant prices adopts base year prices. At present, 2000 is the base year for China. The two basic estimation methods for services industries are briefly explained below.

#### **2.1.1 Estimation at Current Prices**

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<sup>10</sup> see “1.1 scope of service industries”

<sup>12</sup> For the meaning of the four items, please refer to China’ GDP Accounting by Xu Xianchun, *China Economic quarterly*, Issue 1, Volume 2, October 2002, CCER, Peking University.

Production-side estimation for services industries can be done using either production or income approaches. At present, the income approach is mainly used in China. The formula for the income approach is as follows:

$$\begin{aligned} &\text{Value added of services industries at income approach} \\ &= \text{compensation of employees} \\ &+ \text{taxes on production, net} \\ &+ \text{depreciation of fixed assets} \\ &+ \text{operating surplus} \end{aligned}$$

Services production units can be divided into enterprises and profit-making institutions, and administration units and non-profit-making institutions in accordance with their purposes to provide services. For administration units and non-profit-making institutions, the operating surplus in the formula is zero.

Production-side estimation of services industries is the estimation of the four components in the above formula<sup>12</sup> for each service industry. Table 2 summarizes the calculation methods of value added of services industries at current prices.

Table 2:

## The calculation methods of value added of services industries at Current Prices

Industries	Value Added Items	Calculation Methods	Remarks	Data Sources
1. Services for agriculture, forestry, animal husbandry, and fishing	Compensation of employees	Wages and salaries + welfare income + income in kind + other income + farmers' income from secondary activities	<p>Wages and salaries = total wages and salaries of employees + remunerations of casual laborers</p> <p>welfare income = total wages and salaries of employees <math>\times</math> 14%</p> <p>Income in kind = monthly average income in kind per capita <math>\times</math> 12 <math>\times</math> number of annual average employees of the industry</p> <p>Other income = total wages and salaries of employees <math>\times</math> ratio of other income to total wages and salaries of employees</p> <p>Farmers' income</p>	<p>Total wages and salaries of employees, remunerations of casual laborers, number of annual average employees of the industry: NBS Annual Statistical Report of Labor</p> <p>Monthly average income in kind per capita : NBS Urban Household Survey</p> <p>ratio of other income to total wages and salaries of employees: NBS latest input output survey</p> <p>the ratio of farmers' income from secondary activities over compensation of employees of the</p>

			from secondary activities = compensation of employees of the industry (excluding farmers' income from secondary activities) × the ratio of farmers' income from secondary activities over compensation of employees of the industry (excluding farmers' income from secondary activities)	industry (excluding farmers' income from secondary activities): NBS Latest input output survey :
	Taxes on production, net	Net production taxes on agriculture, forestry, animal husbandry, and fishing × ratio of net taxes on services for agriculture, forestry, animal husbandry, and fishing over net taxes on agriculture, forestry, animal husbandry and fishing	Ratio of net taxes on services for agriculture, forestry, animal husbandry, and fishing over net taxes on agriculture, forestry, animal husbandry and fishing:	Latest input and output survey.
	Depreciation of fixed assets	Depreciation of fixed assets of previous year (subtract the depreciation of the fixed assets that	Depreciation of fixed assets newly increased in current year = fixed assets newly increased	Fixed assets newly increased in current year: NBS Annual Statistical Report of Investment of

		were retired in current year) + depreciation of fixed assets newly increased in current year	in current year x depreciation rate (4%)	Fixed Assets
	Operating Surplus	Operating surplus of agriculture, forestry, animal husbandry and fishing x ratio of operating surplus of services for agriculture, forestry, animal husbandry and fishing to operating surplus of agriculture, forestry, animal husbandry, and fishing	The ratio of operating surplus of services for agriculture, forestry, animal husbandry and fishing to operating surplus for agriculture, forestry, animal husbandry, and fishing: Latest input output survey.	
2.Geologic prospecting, water conservancy management	Compensation of employees	Wages and salaries + welfare income + income in kind + other income	Wages and salaries = total wages and salaries of employees + remunerations of casual laborers  welfare income = total wages and salaries of employees × 14%  Income in kind = monthly average income in kind per capita × 12 × number of annual average employees of the industry	Total wages and salaries of employees, remunerations of casual laborers, number of annual average employees of the industry s: NBS Annual Statistical Report of Labor  Monthly average income in kind per capita: NBS Urban Household Survey  ratio of other income to total wages and salaries

			Other income = total wages and salaries of employees × ratio of other income to total wages and salaries of employees	of employees of the industry: NBS latest input output survey
	Taxes on production, net	(Compensation of employees + Depreciation of fixed assets) x [net taxes on production ÷ (Compensation of employees + Depreciation of fixed assets)]	Net taxes on production ÷ (Compensation of employees + Depreciation of fixed assets): Latest input output survey	
	Depreciation of fixed assets	Depreciation of fixed assets of previous year (subtract the depreciation of the fixed assets that were retired in current year) + depreciation of fixed assets newly increased in current year	Depreciation of fixed assets newly increased in current year = fixed assets newly increased in current year x depreciation rate (4%)	Fixed assets newly increased in current year: NBS Annual Statistical Report of Investment of Fixed Assets
	Operating Surplus	(Compensation of employees + Depreciation of fixed assets) x [Operating Surplus ÷ (Compensation of employees + Depreciation of fixed assets)]	Operating Surplus ÷ (Compensation of employees + Depreciation of fixed assets): Latest input output survey	

3.transport, storage, and post & telecommunications				
(1)Directly Calculated Part <sup>14</sup>	Compensation of employees	Total wages and salaries of employees + expenses for the welfare of employees + expenses on labor insurance + expenses on insurance for “waiting for employment” + housing fund + labor union expenses(60%) + expenses for business travel and meeting payable to employees	Expenses for business travel and meeting payable to employees refer to the amount of the expenses that are paid to the employees. It is derived from latest input output survey.	Final financial statements provided by the Ministry of Railway, the Ministry of Communications, the National Administration for Civil Aviation, Post Office, and China National Petroleum and Natural Gas Corporation
	Taxes on production, net	Taxes on turnovers and surtaxes + stamp tax + taxes on land uses + taxes on real estate + taxes on vehicle uses + drainage charges		Same as above
	Depreciation of fixed assets	Depreciation of fixed assets drawn in current year		Same as above
	Operating surplus	Operating profits + railway construction fund + civil aviation		Same as above

<sup>14</sup> Directly calculated part includes state rail shipment, the highway transportation by enterprises under the Ministry of Communications, the highway transportation by local enterprises in the system of the Ministry of Communications, the waterway transportation by enterprises directly controlled by the Ministry of Communications, the waterway transportation by local enterprises in the system of the Ministry of Communications, the port handling services by local enterprises in the system of the Ministry of Communications, state civil aviation transportation, local civil aviation transportation, state pipeline transportation and state post & telecommunication

		infrastructure construction fund +labor union expenses (40%) +bad debt losses		
(2)Indirectly derived part <sup>15</sup>	Value added of local railway transport	Gross output of local railway transport × value added ratio of national railway transport		
	Value added of highway maintenance	Compensation of employees + depreciation of fixed assets	Compensation of employees = total wages and salaries of employees + expenses for the welfare of employees + total expenses paid for health care  Depreciation of fixed asset = depreciation of fixed assets drawn in current year	Final financial statement for highway maintenance expenses
	Value added of highway and waterway transport carried out by enterprises outside the system of the Ministry of Communications	Gross output of highway and waterway transport carried out by enterprises outside the system of the Ministry of Communications × rate of value added of highway and waterway transport by local	Gross output of highway and waterway transport carried out by enterprises outside the system of the Ministry of Communications = converted turnover of highway and	Annual Statistical Report of Transport, Post, and telecommunication

<sup>15</sup> Indirectly derived part includes local rail shipment, highway maintenance, highway and waterway transportation outside the system of the Ministry of Communications, and local post & telecommunication.

		enterprises in the system of Ministry of Communications	<p>waterway transport carried out by enterprises outside the system of the Ministry of Communications</p> <p><math>\times</math> the ratio (gross output of highway and waterway transport by local enterprises in the system of the Ministry of Communications</p> <p><math>\div</math> converted turnover of highway and waterway transport by local enterprises in the system of the Ministry of Communications)</p> <p>Converted turnover = freight turnover + (passenger turnover <math>\div</math> 10)</p>	
	Value added of local post & telecommunication	<p>Compensation of employees = operating cost of local post &amp; telecommunication enterprises <math>\times</math> (compensation of employees of national post &amp; telecommunication enterprises <math>\div</math> operating costs of</p>		Same as above

		national post & telecommunication enterprises)		
		Depreciation of fixed assets = operating cost of local post & telecommunication enterprises × (depreciation of fixed assets of national post & telecommunication enterprises ÷ operating costs of national post & telecommunication enterprises)		Same as above
		Taxes on production, net = taxes on turnovers and surtaxes		Same as above
		Operating surplus = operating revenue of local post & telecommunication enterprises – operating cost - taxes on turnovers and surtaxes		Same as above
4. Wholesale and retail trade, and catering				
(1) Directly calculated part <sup>16</sup>	Compensation of employees	Total wages and salaries payable	Other remuneration	NBS financial statements for

<sup>16</sup> Refer to the wholesale and retail trade and catering enterprises above the cut-off point, including the wholesale enterprises hiring a minimum of 20 employees at year end and registering an annual sales of at least RMB 20

		+ welfare expenses payable + expenses on labor insurance and expenses on insurance for “waiting for employment” in general administrative expenses + other remuneration payable to employees in general administrative expenses	payable to employees in general administrative expenses refers to certain amount of traveling expenses, meeting expenses, and labor union expenses payable to employees.  The ratio of the amount payable to employees in general administrative expenses is derived from the latest input output survey.	wholesale and retail enterprises above the cut-off level; NBS financial statements for catering enterprises above the cut-off level
	Taxes on production, net	Taxes on commodity sales and surtaxes + taxes on turnovers and surtaxes + taxes included in general administrative expenses + VAT payable + import duties – subsidiaries – export tax rebate		Same as above
	Depreciation of fixed assets	Depreciation of fixed assets drawn in current year		Same as above
	Operating surplus	Operating profits + subsidiaries + export tax rebate		Same as above

million, the retail enterprises having a minimum of 60 employees at year end and RMB 5 million of annual sales, and the catering enterprises with a minimum of 40 employees at year end and RMB 2 million in sales revenue.

(1)Indirectly derived part <sup>17</sup>	Value added of wholesale and retail industry aside from those above the cutoff level = gross output x value added ratio	Gross output = (Total retail sales of consumer goods of all wholesale and retail industry - retail sales of consumer goods of wholesale and retail enterprises above the cutoff level) x gross margin rate	Value added ratio, gross margin rate are decided by referring to the corresponding indicators of the enterprises above the cutoff level.	NBS Annual Statistical Report of Wholesale, Retail and Catering
	Value added of catering industry aside from those above the cutoff level = gross output x value added ratio	Gross output = total retail sales of commodities of all catering industry – retail sales of commodities of catering enterprises above the cutoff level	Value added ratio is determined by referring to the corresponding indicators of the enterprises above the cutoff level.	NBS Annual Statistical Report of Wholesale, Retail and Catering
5. Banking & insurance				
(1) Banking	Compensation of employees	Wages and salaries of employees + welfare expenses + expenses on labor insurance + expenses on insurance for waiting for employment + other remunerations payable to employees in the operating expenses	Other remunerations payable to employees in the operating expenses include certain amount of business travel expenses, meeting expenses, and foreign affairs payable to employees.  The ratio of the	Annual final financial statements from banks

<sup>17</sup> Refer to the wholesale & retail and catering business except for those above the cut-off level, including the wholesale & retail and catering enterprises below the cut-off scale, the affiliated wholesale & retail and catering units, and the individual wholesale & retail and catering units and bazaars.

			amount payable to employees is derived from the latest input output survey	
	Taxes on production, net	Taxes on turnover and surtaxes + taxes included in the operating expenses	Taxes included in the operating expenses refer to taxes on stamp, taxes on land use, taxes on real estate, and taxes on vehicles	Same as above
	Depreciation of fixed assets	Depreciation of fixed assets drawn in current year		Same as above
	Operating surplus	Operating profits + investment gains + bad debt losses		Same as above
(2) Securities	Compensation of employees	Wages and salaries payable + welfare expenses payable + other remunerations payable to employees in the operating expenses	Other remunerations payable to employees in the operating expenses include certain amount of business travel expenses, meeting expenses, and foreign affairs payable to employees.  The ratio of the amount payable to employees is derived from the latest input output survey	Annual final financial statements from securities firms
	Taxes on production, net	Taxes on turnover and surtaxes + stamp taxes		Annual financial statement from securities firms;

				Monthly Revenue Report from the State Administration of Taxation (December)
	Depreciation of fixed assets	Current year accumulated depreciation – previous year accumulated depreciation		Annual financial statements from securities firms
	Operating surplus	Operating profits + investment gains		Same as above
(3) Insurance	Same as banking			Annual financial statements from insurance firms
(4)Miscellaneous	Value added =operating surplus = interests on saving deposits of households			
6. Real estate	Compensation of employees	Wages and salaries + welfare income + income in kind + other income	Wages and salaries = total wages and salaries of employees + remunerations of casual laborers  welfare income = total wages and salaries of employees × 14%  Income in kind = monthly average income in kind per capita × 12 × number of annual average employees of the industry	Total wages and salaries of employees, remunerations of casual laborers, number of annual average employees of the industry: NBS Annual Statistical Report of Labor  Monthly average income in kind per capita : NBS Urban Household Survey  Ratio of other income to total wages and salaries

			Other income =total wages and salaries of employees × ratio of other income to total wages and salaries of employees	of employees: NBS latest input output survey
	Taxes on production, net	Compensation of employees × ratio of net taxes on production to compensation of employees	The ratio of net taxes on production to compensation of employees is determined from the latest input output survey	
	Depreciation of fixed assets	Depreciation of fixed assets for real estate development and operation, real estate management, and real estate brokerage and agency = Depreciation of fixed assets of previous year (subtract the depreciation of the fixed assets that were retired in current year) + depreciation of fixed assets newly increased in current year;  The imputed depreciation of owner occupied dwellings in urban	Depreciation of fixed assets newly increased in current year = fixed assets newly increased in current year × depreciation rate (4%)  The value of owner occupied dwellings in urban area = [(the area of urban owner occupied dwellings at the beginning of the year + the area of urban owner occupied dwellings at the end of the year) ÷ 2] × construction cost per unit area of individual-built	Fixed assets newly increased in current year: NBS Annual Statistical Report of Fixed Assets Investment  The value of urban dwellings completed, and the area of urban dwellings completed: NBS Annual Statistical Report of Fixed assets Investment  The value of owner occupied dwelling in rural area: NBS Rural Household Survey

		<p>area = the value of owner occupied dwellings in urban area × depreciation rate (4%)</p> <p>The imputed depreciation of owner occupied dwellings in rural area = the value of owner occupied dwellings in rural area × depreciation rate (2%)</p>	<p>houses in urban and industrial &amp; mining areas (Unit price)</p> <p>Unit price = the value of urban dwellings completed ÷ the corresponding completed area</p>	
	Operating surplus	(Compensation of employees + net taxes on production) × ratio of operating surplus to (Compensation of employees + net taxes on production)	The ratio of operating surplus to (Compensation of employees + net taxes on production) is determined according to the latest input output survey	
7.Social services	Compensation of employees	Wages and salaries + welfare income + income in kind + other income + farmers' income from secondary activities + compensation of laborers in urban and rural private enterprises + compensation of self-employed workers	<p>Wages and salaries = total wages and salaries of employees + remunerations of casual laborers</p> <p>Welfare income = total wages and salaries of employees × 14%</p> <p>Income in kind = monthly average income in kind</p>	<p>Total wages and salaries of employees, remunerations of casual laborers, number of annual average employees of the industry: NBS Annual Statistical Report of Labor</p> <p>Monthly average income in kind per capita : NBS</p>

			<p>per capita <math>\times 12</math>  <math>\times</math> number of  annual average  employees of the  industry</p> <p>Other income  =total wages and  salaries of  employees <math>\times</math> ratio  of other income  to total wages  and salaries of  employees</p> <p>Farmers' income  from secondary  activities =  compensation of  employees of the  industry  (excluding  farmers' income  from secondary  activities) <math>\times</math>  ratio of farmers'  income from  secondary  activities to  compensation of  employees of the  industry  (excluding  farmers' income  from secondary  activities) of  previous year</p> <p>Compensation of  laborers in urban  and rural private  enterprises  = operating  income of urban</p>	<p>Urban Household  Survey</p> <p>ratio of other  income to total  wages and salaries  of employees:  NBS latest input  output survey</p> <p>Operating income  of urban and rural  private enterprises,  and of individual  business: State  Administration of  Industry and</p>
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			<p>and rural private enterprises x ratio of compensation of laborers in urban and rural private enterprises</p> <p>to operating income of urban and rural private enterprises</p> <p>Compensation of self-employed workers = operating income of individual business x ratio of compensation of self-employed workers to operating income of individual business</p>	<p>Commerce</p> <p>Ratio of compensation of urban and rural laborers in private enterprises to operating income of urban and rural private enterprises;</p> <p>Ratio of compensation of self-employed workers to operating income of individual business: latest input output survey</p>
	Taxes on production, net	Taxes on production minus subsidies on production	<p>Taxes on production = taxes on turnovers + taxes for municipal maintenance and construction + taxes on real estate + taxes on vehicles + taxes on land use + taxes on stamp + regulatory charges + education surtaxes</p> <p>Subsidies on production =</p>	<p>State Administration of Taxation: national taxation statistics</p>

			price subsidies and loss subsidies	
	Depreciation of fixed assets	Depreciation of fixed assets of previous year (subtract the depreciation of the fixed assets that were retired in current year) + depreciation of newly increased fixed assets in current year	Depreciation of newly increased fixed assets in current year = newly increased fixed assets in current year × depreciation rate (4%)	Newly increased fixed assets in current year: NBS Annual Statistical Report of Investment of Fixed Assets
	Operating surplus	Operating income × ratio of operating surplus to operating income	The ratio of operating surplus to operating income is determined according to the latest input output survey.	
8. Medical and health care, sports and social welfare	Same as social services			
9. Education, culture, arts, radio, film and television	Same as social services			
10. Scientific research and comprehensive technical services	Same as social services			
11. Governmental agencies, party organs and social organizations	Compensation of employees	Wages and salaries + welfare income + income in kind + other income	Wages and salaries = total wages and salaries of employees + remunerations of casual laborers  welfare income = total wages and salaries of employees × 14%	Total wages and salaries of employees, remunerations of casual laborers, number of annual average employees of the industry: NBS Annual Statistical Report of Labor

			<p>Income in kind = monthly average income in kind per capita <math>\times</math> 12 <math>\times</math> number of annual average employees of the industry</p> <p>Other income = total wages and salaries of employees <math>\times</math> ratio of other income to total wages and salaries of employees</p>	<p>Monthly average income in kind per capita: NBS Urban Household Survey</p> <p>ratio of other income to total wages and salaries of employees: NBS latest input output survey</p>
	Taxes on production, net	Compensation of employees $\times$ ratio of net taxes on production to compensation of employees	The ratio of net taxes on production to compensation of employees is determined according to the latest input output survey	
	Depreciation of fixed assets	Depreciation of fixed assets of previous year (subtract the depreciation of the fixed assets that were retired in current year) + depreciation of newly increased fixed assets in current year	Depreciation of newly increased fixed assets in current year = newly increased fixed assets in current year $\times$ depreciation rate (4%)	Newly increased fixed assets in current year: NBS Annual Statistical Report of Investment of Fixed Assets
12.Others	Compensation of employees, net taxes on production and depreciation of fixed assets are the same as those for governmental agencies, party organs and social organizations			
	Operating surplus	(Compensation of	The ratio of	

		<p>employees + net taxes on production) × ratio of operating surplus to (Compensation of employees + net taxes on production)</p>	<p>operating surplus to (Compensation of employees + net taxes on production) is determined according to the latest input output survey</p>	
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### **2.1.2 Estimation at Constant Prices**

Production side estimation of services industries at constant prices can be obtained by using price index deflation method or volume indicator extrapolation method<sup>18</sup>. Table 3 summaries the basic calculation method adopted in China's services estimation at constant prices.

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<sup>18</sup> As for deflation and extrapolation methods, please refer to "China' GDP Accounting "by Xu Xianchun, *China Economic quarterly*, Issue 1, Volume 2, October 2002, CCER, Peking University.

<sup>20</sup> See page 269 of the National Statistic Survey System (2001) by the National Bureau of Statistics

Table 3:

## Value-added Estimation of Services Industries at Constant Prices in China

Industries	Methods	Price or Volume Indices
Services for agriculture, forestry, animal husbandry, and fishing	Single Deflation	The services sub-index of the consumer price index
Geological prospecting and water conservancy management	Single Deflation	The services sub-index of the consumer price index
Transport, storage and post & telecommunications	Single Extrapolation	Index of converted passenger & freight turnovers of transport for transport and storage activities Volume index of turnover of post and telecommunications for post and telecommunication activities
Wholesale and retail trade and catering	Single Deflation	Retail price index
Banking and insurance	Single Deflation	Weighted average of consumer price index and price index of investment of fixed assets. Weights are the proportion of household consumption and gross fixed capital formation in the sum of these two items respectively
Real estate	Single Deflation	Price index of house sales for value added of real estate development activities Consumer price index for value added of real estate management activities Price index of investment of fixed assets for depreciation of newly increased owner-occupied dwellings Depreciation of existed owner occupied dwellings at constant prices: adjusted depreciation of owner occupied dwellings of previous year at constant prices (subtract the depreciation of the owner occupied dwellings that were retired in current year)
Social services	Single Deflation	Net value added: Sub-price index of services in consumer price index (focus on sub-CPI for buses fares, hairdressing, repair and other services) Depreciation of existed fixed assets: adjusted depreciation of fixed assets at constant prices of previous year (subtract the depreciation of the fixed assets that were retired in current year)

		Depreciation of newly increased fixed assets in current year: Current year price index of investment of fixed assets
Medical and health care, sports and social welfare	Single Deflation	<p>Net value added: Sub-price index for services in CPI. (Focus on sub-CPI for medical treatment and health care);</p> <p>Depreciation of existed fixed assets: adjusted depreciation of fixed assets at constant prices of previous year (subtract the depreciation of the fixed assets that were retired in current year)</p> <p>Depreciation of newly increased fixed assets in current year: Current year price index of investment of fixed assets</p>
Education, culture, arts, radio, film and television	Single Deflation	<p>Net value added: Sub-price index for services in CPI. (Focus on sub-CPI for entertainment fees, tuitions, and nursery fees);</p> <p>Depreciation of existed fixed assets: adjusted depreciation of fixed assets at constant prices of previous year (subtract the depreciation of the fixed assets that were retired in current year)</p> <p>Depreciation of newly increased fixed assets in current year: Current year price index of investment of fixed assets</p>
Scientific research and comprehensive technical services	Single Deflation	<p>Net value added: Sub-price index for services in CPI.</p> <p>Depreciation of existed fixed assets: adjusted depreciation of fixed assets at constant prices of previous year (subtract the depreciation of the fixed assets that were retired in current year)</p> <p>Depreciation of newly increased fixed assets in current year: Current year price index of investment of fixed assets</p>
Governmental agencies, party organs and social organizations	Single Deflation	Same as above
Others	Single Deflation	Same as above

## 2.2 Expenditure side estimation

### 2.2.1 Estimation at Current Prices

Expenditure side estimation of services includes final consumption, capital formation, imports and exports of services. Final consumption of services consists of household consumption of services and government consumption of services. The calculation of household consumption of services can be divided into 4 types according to the data sources, which are consumption of cultural life; consumption of housing, water, electricity & gas; consumption of free medical services; and consumption of collective welfare services. Government consumption of services includes expenditure on public services provided by the government that is in the same scope of the counterpart of government consumption. Capital formation of services is the services component of the gross fixed capital formation, covering the increased value of commodity house sales; the fees associated with the transfer of the ownership of the commodity houses; and the expenses of geological exploration for mineral resources. Imports and exports of services refer to imports of services and exports of services respectively. Table 4 summarizes the basic calculation methods of expenditure side estimation of services at current prices adopted in China.

Table 4:

Basic Methods of Expenditure side Estimation of Services at Current Prices in China

Items	Basic Calculation Methods	Main Data Sources
Household consumption of services		
1. Consumption of cultural life	The sum of traffic fares, post & telecommunication charges, medical and health care expenses, tuitions, technical training expenses, cultural and entertainment fees, processing & repair services fees and other services charges	Rural and urban household survey of NBS
2. Consumption of housing, water, electricity and gas	The sum of the expenditure for housing rent, water, electricity and gas + the imputed	Rural and urban household survey and population survey of NBS

	depreciation of owner occupied dwellings in rural and urban areas.	The construction cost per unit square meter of dwellings: the Ministry of Construction
3. Consumption of free medical services	The sum of expenditures for free medical services by state-owned and collective units	Social security statistics: the Ministry of Labor and Social Security
4. Consumption of collective welfare services	The welfare facility expenses of the state-owned and collective units, plus the subsidies for the purpose of collective welfare.	Social security statistics: the Ministry of Labor and Social Security
Government consumption	The current expenditures of budgetary expenditures deducted by transfer expenditures; the current expenditures of extra-budgetary expenditures deducted by transfer expenditures; imputed depreciation of fixed assets of government agencies and non-profit institutions; the output of town and villager commissions deducted by their operating income.	The final financial statements of the Ministry of Finance  The Tertiary Census of the Office of National Tertiary Survey
Services component of the gross fixed capital formation	The increased value of commodity house sales + the fees associated with the transfer of the ownership of the commodity houses + the expenses of geological exploration for mineral resources	The final statements of real estate, the statistics of real estate: the Ministry of Construction  The fiscal expenditure data: the Ministry of Finance
Exports of services	Exports of all services	Balance of payments statistics: the State Administration of Foreign Exchange
Imports of services	Imports of all services	Balance of payments statistics: the State

Note: This table is made from Table 4: “Main Data Sources and Basic Calculation Methods for Current Price GDP Estimation by Expenditure Approach” in “China’ GDP Accounting” by Xu Xianchun, *China Economic quarterly*, Issue 1, Volume 2, October 2002, CCER, Peking University.

### 2.2.2 Estimation at Constant Prices

Expenditure side estimation of services at constant prices is obtained by deflating the components of estimation of services at current prices with appropriate price indices respectively. Table 5 summarizes the basic calculation method of expenditure side estimation of services at constant prices adopted in China.

Table 5: Basic Methods of Expenditure Side Estimation of Services at Constant Prices in China

Items	Basic Methods	Price Indices
Household consumption of services		
1. Consumption of cultural life	Deflation	Services sub-index of consumer price index (CPI)
2. Consumption of housing, water, electricity and gas	Deflation	Housing rent, water, electricity and gas: Sub-index of housing rent, water, electricity and gas of CPI  Depreciation of newly increased owner occupied dwellings: Price index of investment of fixed assets  Depreciation of existing owner occupied dwellings: adjusted the depreciation of owner occupied dwellings at constant prices of previous year (subtract the depreciation of the owner occupied dwellings at constant prices that were retired in current year)
3. Consumption of free medical services	Deflation	Calculated with the total medical consumption at public expenses. The simple arithmetic average of sub-index of articles for medical and health care and the sub-index for medical and healthcare services in CPI is used.
4. Consumption of collective welfare services	Deflation	Services sub-index of CPI
Government	Deflation	Expenditures on goods: retail price index

consumption		<p>Expenditures on services: services sub-index of CPI</p> <p>Expenditures on wages and salaries: CPI</p> <p>Depreciation of newly increased fixed assets: the price index of investment of fixed assets</p> <p>Depreciation of existing fixed assets: adjusted depreciation of fixed assets at constant prices in the previous year (subtract the depreciation of the fixed assets that were retired in current year)</p>
Services component of the gross fixed capital formation (the increased value of commodity house sales; the fees associated with the transfer of the ownership of the commodity houses; and the expenses of geological exploration for mineral resources)	Deflation	The price index of investment of fixed assets
Exports of services	Deflation	Adjusted export price index of goods according to both the domestic relevant price indices of services and the relevant import price indices of services in main importing countries of China.
Imports of services	Deflation	Adjusted export price index of goods according to the relevant export price indices of services in main exporting countries of China

Note: This table is made from Table 5: Basic Calculation Methods and Major Price Indices for Constant Price GDP Estimation by Expenditure Approach” in “China’ GDP Accounting” by Xu Xianchun, *China Economic quarterly*, Issue 1, Volume 2, October 2002, CCER, Peking University.

### **3. Remaining Problems of Measurement of Services**

#### **3.1 Problems Concerning Current Price Estimation**

##### **3.1.1 The Lack of Data Sources**

The shortage of data is reflected in three aspects:

First, the lack of regular statistical survey for corporations and individual business in many services industries, especially for the private enterprises and individual business in the field of new emerging industries such as property management, computer services, renting services, information consulting, accounting services, legal advisory services etc, statistical data is almost unavailable;

Second, the statistics of relevant regulatory ministries is of narrow scope that generally confine to statistics of production units within their administrative system. In addition, the statistics emphasize physical terms rather than monetary terms, which fall short of the requirements of national accounting for services.

Third, some existing ministries' statistics is not fully used due to the inadequate statistical personnel.

##### **3.1.2 The Scope of Data Sources**

The statistical scope problems are mainly related to statistics on total wages and salaries of employees. As one of the main data sources for calculating value added of services, statistics on total wages and salaries of employees does not include village and township level enterprises, private enterprises, and individually owned ventures<sup>20</sup> in its statistical scope, consequently the accuracy of compensation of employees in the value added of services is affected. Meanwhile, statistics on wages and salaries can hardly cover all types of labor income, which leads to a distortion of the structure of value added for service enterprises and profit-making institutions. As for the government agencies and non-profit institution, the influence is not only for the structure of value added, but also for the total as well.

##### **3.1.3 Measurement and Allocation of Financial Intermediation Services**

Financial corporations defray their expenses and have an operating surplus by

receiving rates of return on the funds they lend that are higher than the rates they pay on the funds they borrow rather than charge their customers explicitly and directly. In this situation, SNA (both 1968<sup>21</sup> SNA and 1993 SNA) recommends FISIM (financial intermediation services indirectly measured) to evaluate and distribute the value of financial intermediation services.

In accordance with this method, output of financial intermediaries is equivalent to the difference between the total property income receivable and the total interest payable of financial corporations deducted by property income from their own funds. As for the allocation of financial intermediaries, 1993 SNA provides two alternative ways. One is the method proposed in 1968 SNA, which allocates all FISIM as intermediate consumption of a notional industry and write a negative number of the same absolute value as its value added at the same time. Therefore the output of this notional industry is zero. The other is reference rate approach. First, choose a reference rate that lines between the deposit rate and loan rate. The implicitly-priced services that banks render to depositors/creditors is the difference between the interest that banks would pay depositors if they paid them this pure interest rate less what they actually do pay them; the implicitly-priced services that banks render to borrowers is the difference between the amount of interest that borrowers actually pay on their loans less what they would have paid if they had been charged the pure interest rate.

In principle, China follows the 1993 and 1968 SNA approaches in evaluating the output of financial intermediation services, however without deducting the property income from own funds of financial corporations. As for the allocation of the output of financial intermediation service, China's treatment is specific which is neither same as new recommendation in 1993 SNA nor as old conventions in 1968 SNA. The net

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<sup>21</sup> SNA 是联合国国民经济核算体系 (System of National Accounts) 的英文缩写, 1993 年 SNA 是这一体系的最新版本, 1968 年 SNA 是它的第二版本, 1953 年 SNA 是它的第一版本。

<sup>24</sup> See the Accounting Method for Financial Mediation Services in GDP Accounts by Xu Xianchun, Issue 4, Statistics and Information Forum, 2000

expense of interest payable<sup>24</sup> of each industry is treated as the intermediate consumption of this industry<sup>25</sup>. Consequently, such treatment overestimates the consumption of financial intermediation services by each industry, and inevitably underestimates their value added. In order to offset the amount of value added underestimated, the interest of household deposits is added into the value added of the financial industries. While the value added of industries as a whole is not affected, the structure of the value added across industries do changes.

#### **3.1.4 Real Estate Accounting Issues**

The problems related to real estate accounting in China have been well expounded in several papers over previous years, the main points are hereby briefly summarized as follows<sup>27</sup>.

First, profit-making housing renting activities provided by enterprises aside from the development and operation of real estate and by urban and rural households are not included in the real estate statistics

Second, housing services rendered by enterprises, institutions and administrations to their employees are not included in the real estate statistics.

.Third, dwellings provided by the administrations of real estate in urban area is a kind of subsidized dwelling with low housing rent of welfare nature

Fourth, the value added of owner occupied dwellings in urban and rural area is calculated on the basis of depreciation, exclusive of any other costs, which has been

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<sup>25</sup> 见许宪春：“GDP核算中金融媒介服务的处理方法”，《统计与信息论坛》2002年第4期。

<sup>27</sup> Refer to the Status-quo, Issues and Restructuring Ideas for the Chinese Real Estate by Xu Xianchun and Li Wenzheng, Issue 54, Research Reference Information, and a Study on the Issues of the Chinese GDP Accounts by Xu Xianchun, Issue 2, Economic Study 2000.

<sup>29</sup> The value added herein refers to the total value added in the 1993 SNA, that is, including the value added of fixed capital consumption. See paragraph 6.222 of Chapter 6 in the 1993 SNA.

under estimated.

Finally, the evaluation of the depreciation of the fixed assets is based on historical costs, which also results in the under estimation of real estate services.

All the above mentioned problems have reduced the value added of real estate services in China. At present, the proportion of the value added of real estate over GDP is about 2%, while it should be 5% or more according to some researches.

### **3.1.5 Nanny Service Accounting Issues**

In accordance with the recommendation of 1993 SNA, family services rendered by nanny or babysitters should be included in the production-side and expenditure-side estimation of services. However, this is not applicable in practice in China due to the restriction of data sources.

### **3.1.6 Computer Software Accounting Issues**

The 1993 SNA recommends that software and large database purchased in the market or self-produced by enterprises and used for over one year in the production should be recorded as fixed capital formation. There is no such corresponding provision in China's statistical system. In practice, computer software purchased with hardware as a bundle possibly has been treated as fixed capital formation together with the hardware. By contract, the software independently purchased or designed and developed by enterprises, and the large databases established by enterprises themselves, are not included in the fixed capital formation.

### **3.1.7 Import Duty Issues**

According to the 1993 SNA, the value added of each industry<sup>29</sup> can be calculated at either producer's price or basic price. Neither value added at producer's price nor at

basic price includes import duty. Therefore, import duty<sup>30</sup> should be added into the sum of value added of all industries to achieve GDP estimation by production approach or by income approach. In the principles of national accounts of China, import duty has been recorded in the value added of wholesale and retail trade industry. Such treatment is not appropriate because import duty is not taxes levied on wholesale and retail trade activities.

### **3..1.8 Non-Observed Economy Statistics Issues**

By the definition of the Organization of Economic Cooperation and Development (OECD), the non-observed economy includes such production activities as illicit production, underground production and informal sector production. These production activities are easy to be statistically missed out. According to the OECD estimation, the proportion of the value added omitted accounts for 3% of GDP in Australia, 15% in Italy, and 25% in Russia respectively. So far, no systematic and in-depth study has been made for the non-observed economy, but non-observed economy does exist in some fields in China. For example, some schools charge extra fees from the students without getting permission from the relevant authorities; some doctors and nurses privately accept money from patients; some hotels, ballrooms, and hairdressing shops try to earn illegal money by organizing prostitution, etc.

## **3.2 Problems Concerning Constant Price Estimation**

The value added of services accounts for an important proportion in GDP. Moreover, the evidence of the developed countries suggests that such proportion would continuously grow along with the development of an economy. Therefore, the quality of the value added of services at constant prices not only affects the reliability of growth rate of services itself, but also has a direct impact on the reliability of the GDP growth rate.

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<sup>30</sup> In the 1993 SNA,  $GDP = \text{the sum of value added calculated per producer's price} + \text{import taxes less import subsidies} + \text{non-deductible VAT}$ ;  $GDP = \text{the sum of value added calculated per producer's price} + \text{all the product taxes minus product subsidies}$  (product taxes include import taxes while product subsidies include import subsidies). See paragraph 6.237 of Chapter 6 in the 1993 SNA.

The main problems in value added accounting of services at constant prices are as follows:

First, the lack of price indices for services for production-side accounting. Currently, no producer price indices are compiled for services industries. Most price indices used in the constant price estimation are the relevant sub-indices for services in CPI. However, for some services such as computer services, accounting services, advertising services, the target users are not households, consequently there is no corresponding sub-indices in CPI. Under such circumstances, proxy price indices have to be chosen for the constant price calculation. Therefore the accuracy of the value added of services at constant prices is inevitably affected.

Second, the lack of price indices for trade of services. So far, price indices for trade of services are not compiled in China. Imports and exports of services at constant prices can only be derived by referring to domestic trade price indices of goods as well as the relevant domestic and foreign services price indices. The accuracy of import and export statistics at constant prices is clearly affected.

Third, the calculation method of the value added of banking and insurance at constant prices is problematic. Currently, the price index used for the estimation of banking and insurance at constant prices is a weighted averaged price index of CPI and fixed capital investment. The weights are the proportion of household consumption and the fixed capital formation over the sum of these two items respectively. The rationale for such calculation is: the price level of the banking and insurance industry would change parallelly with the price level of the economy as whole. Because the sum of the household consumption and the fixed capital formation accounts for an absolutely major proportion of GDP, and the CPI and the price index of fixed capital formation

are corresponding to these two components respectively, therefore the weighted averaged price index used seems to be able to reflect the general price movement of the entire economy. This seems to be a reasonable justification. However, the premise that the price level of the banking and insurance industry would change parallelly with the price level of the economy as whole itself is very much in question and needs further arguments.

## **4. Reform Measures to Perfect Services Measurement**

### **4.1 Establishing Periodic Economic Census System**

As mentioned above, China will conduct its first economic census in 2004, mainly following the development and changes in the secondary and tertiary industries. Afterwards, economic census will be made twice every ten years, in years ending with 3 or 8. The establishment of economic census system will provide a better accounting basis for services industries.

### **4.2 Establishing Sample Survey System for Services on a Regular Basis**

In order to solve the problem that some services enterprises and individual operating ventures are not able to provide statistical data on a regular basis, the NBS is preparing for a sample survey for some of the services industries including computer services, rental services, business services and property management services etc. in the second half of this year. Onwards, a sample survey system for services enterprises and individual operating ventures will be established on the basis of the economic census to enable the availability of the data for value added accounting of services on a regular basis.

### **4.3 Improving Departmental Statistical System for Services**

In order to make up for the shortage of data sources for estimating value added of institutions and administrations engaging in education, culture, medical and health care, radio and film activities, the NBS will collaborate with other relevant departments to gradually establish and perfect departmental statistical system of services, especially emphasizing the monetary terms indicators, to provide corresponding data for value added estimation on a regular basis.

The three aspects hereby mentioned can not only resolve the shortage of data sources of value added estimation of services, but also avoid the influence of the narrow

statistical scope of the labor statistics<sup>32</sup>.

#### **4.4 Changing the Treatment of Financial Intermediation Services**

The valuation of output of financial intermediation services and its allocation method should be adjusted in order to reflect the production and the distribution of this industry properly. The main adjustment is to follow 1993 SNA recommendation, namely, to deduct the property income from own funds of the financial corporations from the output of the financial corporations derived by taking difference between the total property income receivable and the total interest payable. As for the allocation of financial services, reference rate approach recommended by 1993 SNA or a similar alternative method will be adopted. The similar alternative method refers to allocating financial intermediation services according to the ratio of the sum of borrowing interest outlay and depositing interest returns of each industry over the sum of lending interest returns and the depositing interest outlay of financial corporations. The part allocated to industries is considered as intermediate consumption, while the part delivered to final use sectors are recorded as final use.

#### **4.5 Improving value added estimation for real estate**

In order to reflect the development of real estate industry accurately, the current method of value added estimation of real estate must be changed, especially for the estimation of value added of urban household dwelling services. There are two alternative ways to estimate the value added of urban household dwelling services, which are marketing rents method and cost method. Marketing rents method involves using the average market rental price per square meter of urban dwellings times build-in area for all the urban dwellings to obtain the rental income based on market rental price, and taking this income as the gross output of urban household housing services to calculate the value added of urban household housing services by a proper value added rate. This is a preferred approach if the housing rental market is well

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<sup>32</sup> The scope of employee compensation statistics does affect the corresponding service value added because of the shortage of the sources of data for service accounts, and the reliance on the employee compensation statistics to compute some service value added.

established. Cost method uses the average construction cost per square meter times the total building area of urban dwellings to obtain the fixed assets value of urban dwellings, then takes an appropriate depreciation rate to calculate the imputed depreciation of fixed assets of urban dwellings, and finally calculates the value added of urban dwellings by taking into account other primary costs of urban household housing services. This is a possible choice when the housing rental market is in a fledging stage.

#### **4.6 Incorporating nanny services into production-side and expenditure-side estimation**

The 1993 SNA recommends incorporating the family services rendered by nanny into production-side and expenditure-side estimation for services. Currently, an explicit item should be added into the household survey, or the corresponding data could be obtained by a typical survey.

#### **4.7 Establishing Computer Software Statistical System**

The 1993 SNA recommends that the software and large-scale database purchased from the market or self-produced within the enterprises should be recorded as fixed capital formation if they are used in the production for more than one year. It should be followed in China's accounting practice in the future. Consequently, corresponding indicators should be added into the relevant statistical system to provide basic data for services estimation from both production and expenditure side under properly chosen methods.

#### **4.8 Adjusting the Treatment to Import Duty**

As explained above, the import duty is not taxes levied on wholesale and retail trade activities, therefore the current treatment should be adjusted. Import duty should be treated independently and added into the sum of value added of all industries to derive GDP according to 1993 SNA recommendation.

#### **4.9 Compiling Producer Price Indices and Trade Price Indices for Services**

In order to perfect services estimation from both production and expenditure side at constant prices, producer price indices (PPI) and trade price indices (TPI) should be studied and compiled in the future.

#### **4.10 Perfecting the Value Added Estimation of Banking and Insurance at Constant Prices**

Estimating the value added of banking and insurance at constant prices scientifically is very difficult due to the particularity of such services, which has been always a controversial issue international. China needs to draw on foreign experience on the calculation method of value added of banking and insurance at constant prices to perfect its own method in practice.

Finally, we will also draw on the fruitful experiences and methods of the OECD countries for non-observed economy accounting to make in-depth research on the non-observed economy in China, and incorporate it into GDP accounting when conditions become mature. By doing so, the scale and structure of the national economic development of China will be reflected more comprehensively and accurately.

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