Asian Historical Statistics: China

(Abstracts)

Introductory Chapter

Ryoshin MINAMI and Fumio MAKINO

Since long-term data series can make the investigation of sources of long-run Chinese economic growth possible, it is the purpose of this volume to compile a series of long-term economic statistics that go back to the era of the Republic of China. Before explaining procedures for obtaining estimates for long-term data, it is necessary to define the geographic area of China covered because estimating GDP is the final goal: the area is coincident with the national territory of the present People's Republic of China (PRC), which excludes Taiwan, Hong Kong S.A.R. (Special Administrative Region), and Macau S.A.R.

Previous studies of estimates are reviewed in the first section of this chapter. The review is divided into two parts, based on the period covered by the data: the period before 1949 and the period after 1949 when PRC was established. The period from 1949 to the present is also divided into three sub-periods, based on the type of national accounts adopted by the government: the first period from 1952 to 1984, characterized by Soviet-type MPS (material product system), the second period from 1985 to 1992 with the coexistence of MPS and SNA (system of national accounts), and the third period from 1993 to the present, where SNA is adopted exclusively.

(1) Previous Studies on National Income Estimate for the Period after 1949

Prior to the Introduction of the Reform and Opening-Up Policy

The National Bureau of Statistics of China started compiling and releasing MPS-based national income estimates in 1954. Since the definition of MPS-based national income is different from that of SNA-based national income in western countries, researchers in western countries tried to meaning unclear Chinese national income to SNA. Studies conducted in western countries in the 1950s and 1960s can be classified as three different types. First, direct estimates of SNA-based GDP by the collection of various statistical data. Second, measurement of GDP by estimating income from the service sector and adding it to MPS-based national income. Third, investigation of the accuracy of statistical data released by the government and improvement on the estimation procedure for national income by assuming that the national income is MPS-based.

After Reform and Opening Up

After reform and opening up were introduced in December 1978, the growth of the service sector increased significantly, and the government began compiling statistical data on the

service sector. Consequently, the national accounts system gradually shifted from MPS, which ignored the service sector, to SNA. Coexistence of MPS and SNA remained until 1992, and the shift to SNA was completed in 1993.

(2) Previous Studies on National Income Estimates for the Period prior to 1949

Chinese economists led by B.W. Wu released outstanding research estimating national income for the period from 1931 to 1936, and the year 1946. This study is regarded as the starting point for all following research on national income estimates for the period prior to 1949. After Wu's study, T.C. Liu published his book on China's GNP estimates for the period from 1931 to 1936. He subsequently conducted a joint research with K.C. Yeh and revised his own previous GDP estimate for 1933.

These estimates have the following common features: (1) The approach for calculating GDP is the product approach, or calculating the market value of goods and services produced. (2) Liu and Yeh revised Wu's GDP estimate for 1933 with statistical data not used by Wu, and extrapolated it to 1936, just before the outbreak of the Second Sino-Japanese War. (3) Because the estimates by both Wu, and Liu and Yeh were carried out in China and the United States, respectively, use of statistical data released in Manchuria and Japan-occupied northern and central China was not always adequate. Contrary to previous studies, this volume makes exclusive use of statistical data and archives held in Japanese libraries and the National Archives of Japan in order to estimate GDP for the period prior to 1949.

(3) Brief Summary of GDP Estimates and Chinese Economic Development

China's population tripled over one hundred years, reaching 1.34 billion in 2010. The population increase was 11.44 ‰ per annum between 1912 and 2010, the same as Japan's 11.29 ‰ between 1872 and 1980.

To evaluate the performance of Chinese economic development in the long run, our estimated per capita GDP is compared with those of three East Asian countries (Japan, South Korea, and Taiwan), India, and the United States in the mid-1930s and 2009. The average Chinese per capita GDP for 1934 to 1936 is the lowest among the six countries and areas; the per capita GDP in India, Korea, Taiwan, Japan, and the United States was 1.6, 1.8, 3.0, 5.0, and 400 times higher than that of China. By 2009, however, China's per capita GDP had already exceeded that of India, and the ratio to per capita GDP of the United States had decreased to 13-fold.

Industrial structure changed remarkably after the early 1950s. Whereas the proportion of gross value added produced by A industry (agriculture, forestry, and fisheries) remained around 55% during the period from the 1930s to early 1950s, it fell drastically from 51% to 24% in the late 1950s (the Great Leap Forward period). After the failure of the Great Leap Forward, the

proportion of A industry increased temporarily to 42% in 1968 and turned to a decline from the 1980s through the 1990s.

External aspects of economic development, which can be measured by trends in the trade dependence index, were at a low 12.5% in 1933 and gradually declined to a minimum level of 5% in 1970, when the Chinese economy was closed or semi-closed to international trade. The level increased to 50% in 2010 following the implementation of the reform and opening-up policy.

Assuming the ratio of money supply to nominal GDP (Marshallian *K*) as a proxy of financial deepening, the ratio declined from 1934 to 1939 in China proper, while it increased in Japan, Korea, Taiwan, and Manchoukuo during the same period. This means that the Second Sino-Japanese War led to financial shallowing in China proper. Marshallian *K* was at a low level from the early 1950s to the late 1970s, when China's economy was a Soviet-type centrally planned economy. Since the reform and opening-up policy, China's economy transformed to a socialist market economy system. Rapid increase in Marshallian *K* from the late 1970s to the early 1990s was a result of the reform and opening-up policy.

(4) Remaining Problems

There are a few remaining issues. First, since the estimates for GDE (Gross Domestic Expenditure) is not as complete as those for GDP, further studies are required to compile expenditure-related data. Second, compilation of estimates of stock data, except some financial assets, has not been undertaken yet. Third, GDP during the decade of the 1940s was not estimated due to lack of statistical data. Fourth, it may prove possible to construct more long-term economic data series for Manchoukuo than those compiled for this volume, as much of the available statistics was not thoroughly used.

Chapter 1　History of the Chinese Territory and Its Statistical System

(1.1) Transition of Territory and the Regional Administrative System

Mineo YAMANAKA and Renping HAO

The territory of modern China, including Outer Mongolia (independent from China in 1921), was formed during the early Qing dynasty (1644–1911), but the concept of territory that is shared by western countries was not something that China was conscious of until the establishment of the Republic of China in 1912.

Throughout the late nineteenth and early twentieth centuries, its territory was often forcibly changed due to a series of defeats in the wars against western countries and Japan. For example, Hong Kong and Macau were conceded to the U.K. and Portugal respectively in the mid-nineteenth century, and the southern part of Liaodong peninsula was leased to Japan (as Kwantung

Leased Territory) after the Russo-Japanese War in 1905. International settlements or colonized areas were established in several Chinese cities.

The most important incident in terms of territorial change was the Japanese establishment of Manchoukuo. Because Manchuria was separated from China proper in 1932 and furthermore the Japanese army occupied north and central China proper, a systematic compilation of statistical data of China as a whole cannot be undertaken from the early-1930s onward to the late-1940s. Consequently statistical data and estimations of prewar China proper and Manchoukuo are compiled separately throughout this volume.

Local administrative divisions were introduced as early as the Qin dynasty (221 B.C. – 206 B.C.). After the fall of the Qin, the Han dynasty (206 B.C. –A.D. 220) founded a regional administrative system consisting of prefectures (*zhou*), commanderies (*jun*), and counties (*xian*). Provinces (*sheng*), the highest level of regional administrative system, were first introduced during the Yuan dynasty (1271–1368) and have been continued to the present day.

Today, China consists of 23 provinces, 4 cities under direct administration of the central government, 5 autonomous regions, and 2 special administrative regions at the highest level of subnational government, followed by provinces, counties, and townships (*xiang*).

(1.2) Government Statistics and Statistical Organizations in Prewar China

Yukihiko KIYOKAWA and Jiang WANG

Although rather limited, government statistics are available for the pre-World War II economy. Caution, however, should be paid to the coverage and reliability of those statistics, as local statistical organizations were too fragile to accurately collect systematic information on economic activities.

Historically from time to time, some *ad hoc* survey data were available, but it was only after the beginning of the twentieth century that consistent statistics became available with the establishment of the government's first specialized organization to collect statistics.

This section studies the nationwide statistical system through an examination of (1) the laws and ordinances to establish statistical offices and (2) the local organizations and their staff sizes. This information is important when evaluating the reliability of published statistics as the reporting system of filling assigned tables was the standard procedure for sending statistical data from local governments to the central government. The main focus of research is the thirty years from 1907 to 1937, a period in which fragmentary information was available.

In 1907, toward the end of the Qing dynasty, the House of Constitutional Government was organized to consolidate laws and ordinances modeled on the administrative system of western countries. Under this house, the first professional statistical bureau, the National Bureau

of Statistics of China, was established, and it controlled local statistical offices as well as each ministry's statistical department organized in subsequent years.

By the 1910s, the central government had already instructed the ministries' departments and the local offices to fill more than 600 statistical tables. The publication of statistics, however, was limited, and this situation continued until the 1930s.

After the collapse of the Qing, the new government, the Republic of China, tried to maintain and develop the Qing statistical system. In 1916, the government proclaimed laws governing the statistical organization under the State Council, but these laws and regulations were not fully enforced because of the political instability of the government itself. Detailed information regarding the regulations and scheduled statistical tables is given in the footnotes to this section.

The statistical system of China had greatly improved from 1927 under the Nationalist government. Among others the law of Directorate of Budget Accounting and Statistics Organization was proclaimed in 1930, and the Statistical Act was enforced in 1932.

After 1933, the Directorate of Budget Accounting and Statistics effectively controlled the content of statistical tables and method of data collection that were provided by statistical sections of local governments as well as of central government ministries. The number of professional staff in those statistical organizations gradually increased up to the mid-1930s. The statistical system of the Republic of China was almost completed by 1936. Supporting evidence is also found in the Statistical Monthly (*Tongji Yuebao*).

To examine the development of the statistical system from a different viewpoint, analysis was made of the coverage and thoroughness of such representative published statistics as population statistics, agricultural statistics, and industrial statistics. The unreliability of data collection is evident in the earlier stages, and it is not until the mid-1930s that the level of statistics reached a standard satisfactory for use.

(1.3) The Statistical System of the People's Republic of China

Hisatoshi HOKEN

This section presents an overview of the historical changes in the statistical system of the People's Republic of China (PRC). First, the changes in the statistical system of the PRC are classified into six different stages to review the relationships between political movements and government statistical policies. Second, the statistical surveys conducted by the National Bureau of Statistics of China and other government ministries are categorized based on the survey methods used to collect data (statistical reporting, census, sample survey, etc.). Finally, the disputes on the accuracy and reliability of official economic statistics in the PRC are examined

with special reference to Thomas Rawski's criticism on the GDP statistics. The study results show that the modern statistical system in the PRC was established toward the end of the 1980s after many twists and turns and that political pressure can certainly influence both the statistical system and the accuracy of statistical data.

Chapter 2 Population and Labor Force

(2.1) Population and Labor Force in China Proper during the Pre-Communist Era

Fumio MAKINO and Huanzhen LUO

Since it was not until 1953 that a modern national population census was carried out in China, there were few reliable population surveys available for estimating nationwide population during the era of Republic of China. Among them, nationwide population surveys carried out by the Republican government in 1912, 1928, and 1936 were especially important. These three population surveys are used as benchmarks to interpolate population during the period between benchmark years and extrapolate after 1936.

These three population surveys, however, have a statistical bias in that some population groups were omitted. The major omitted population groups are women and infants; this omission was caused by a deep-rooted prejudice that females are inferior to males and by the high rate of infant mortality. The missing figures for women and infants in official population surveys are covered by micro-level population surveys conducted in the Republican era and by the hypothetical life table for Chinese rural population that demographers at Princeton University estimated by using materials collected by John L. Buck in the 1930s. For the years between benchmark years, the population is interpolated with the cyclical variation of crop production index (see section 3.1.), assuming Malthusian equilibrium that population growth would be checked by food provision.

A comparison of the resulting estimates of the Chinese population as a whole (China proper and Manchuria) with previous estimates by A. Maddison, E. Onoe, and W. Zhao and S. Xia shows three interesting differences: the population in the 1920s is lower than in other estimates, the population growth rate rose far more rapidly than in other estimates, and the population in the late 1930s was the highest.

The number of workers by industry is first estimated for 1933 (benchmark year) and then is extrapolated from the benchmark year to other years. While the number of workers in the primary industry for 1933 is obtained by multiplying the number of workers per household by the total number of households, those in the non-primary industry are estimated by using fragment information.

Extrapolation of the number of workers to non-benchmark years is obtained by the following:

$L_t = P_t \times f_t$, where L_t is total number of workers, P_t is total population of fifteen years old or over, and f_t is labor force participation rate for year t.

$L_{1t} = r_0 \times C_t$, where L_{1t} stands for the number of workers engaged in the primary industry for year t, r_0 for labor-land ratio for 1933, and C_t for cultivated area for year t.

$L_{2t} = (L_t - L_{1t}) \times \left(L_{20}/(L_{20} + L_{30})\right)$ and $L_{3t} = L_t - L_{1t} - L_{2t}$, where L_2 and L_3 stand for the number of workers in the secondary and tertiary industries, respectively.

(2.2) Population and Labor Force in the People's Republic of China

Ryoshin MINAMI, Fumio MAKINO, Jingjun XUE, and Xinxin MA

Annual statistics related to population and labor force are estimated for 1949–2010 based on the results of five population censuses to obtain more reliable and continuous estimates than the series published in China Statistical Yearbook (*Zhongguo Tongji Nianjian*), published by the National Bureau of Statistics of China (NBSC).

(1) Total population by sex: This is estimated based on the results of population censuses in 1953, 1964, 1982, 1990, 2000, and 2010. That is, for these years census figures are used, and for the other years the total population is estimated by linking with the annual NBSC statistics.

(2) Production age population (population aged fifteen and over) by sex: This is estimated in a similar way to total population. The ratio of this population to total population decreased during the early years but increased steadily during later years, from 1964 to 2010.

(3) Labor force by sex: This is estimated by multiplying the production age population with the ratio of labor force to production age population. This ratio is estimated under the assumption that it tends to change in close relation with industrialization. Estimation is made of a function, $Y = a + bX$, where Y and X are the ratio of labor force to production age population and the rate of industrialization (ratio of non-agriculture in GDP) respectively, by using cross-sectional statistics by province for several years (1982, 1990, 2000, and 2010). A negative estimate of the parameter "b" means that the ratio tends to decrease due to industrialization. By substituting the data of annual rate of industrialization with the estimated function, annual statistics of the ratio of labor force to production age population is estimated. According to this estimation, the ratio (much larger in male than female) shows a decreasing trend for both male and female. This trend is more considerable for the recent years, which seems to be due to the diffusion of higher education.

(4) Employment and unemployment by sex: The number of employed is estimated by deducting the number of unemployed from the total number of labor force. The former is

estimated by multiplying the total number of labor force with the rate of unemployment. The rate is calculated from the population census for the base years 1990, 2000, and 2010. For the other years it is estimated by linking with the estimates of NBSC. The estimated unemployment rate is almost stable before the 1970s, shows a rapid increase in the 1980s and 1990s, and is almost stable at a high level in the 2000s.

(5) Employment by industry groups by sex: The number of employed in ten industry groups is estimated by multiplying the total number of employed with the composition ratio of the industry groups, which is obtained from the population census (1982, 1990, 2000, and 2010). For the other years the number of employed in ten industry groups is estimated by linking with the annual NBSC statistics, which is adjusted for over-time discontinuity and industry classification. According to these estimates, the number of employed in Sector A (Agriculture, forestry and fishery) increased before the 1980s and decreased rapidly in recent years. The increase in the early years is contrasted with the Japanese experience where it was almost constant. The recent decreasing trend is due to rapid industrialization. The increase in employment in Sector M (mining, manufacturing, electric power, construction, and transportation) and Sector S (commerce, services, state organizations, and others) accelerated from the mid-1980s. The interesting finding here is that the increase is much larger in Sector S than Sector M, which is usually seen in developed countries.

Chapter 3　Production Activities in Primary Industry

(3.1) Production Activities in China Proper

Fumio MAKINO

This section is designed to give new insight into agricultural development in China proper in the 1930s and 1940s based on new estimates of output by product and price of agricultural products.

These new estimates have some advantages over previous studies by B.S. Wu *et al.*, T.C. Liu and K.C. Yeh, and D.H. Perkins. First, new estimates use already known information like Crop Reports (*Nongqing Baoga*), compiled by the National Agricultural Research Bureau (*Shiyebu Zhongyang Nongye Shiyansuo*), and Land Utilization in China by John Lossing Buck as well as newly discovered statistical materials, such as crop surveys in the northern provinces conducted by Japanese organizations and nationwide comprehensive price surveys carried out by Communist local governments in the mid-1950s. Second, diet and nutrition surveys carried out by professionals in the 1920s and 1930s are used to examine the reliability of output estimates.

The following are the main findings in this section:

(1) Estimates of agricultural output seem to be the most reliable because food consumption calculated from it is consistent with the results of diet and nutrition surveys conducted at that time.

(2) Agricultural production value and value added for 1933 are lower than their counterparts in previous studies (Wu *et al.*, and Liu and Yeh).

(3) Agricultural production decreased sharply in northern and central China proper in the late 1930s due to the war against Japan, while that in southwestern provinces did not change over time.

(4) There is a tendency toward rising output in Chinese agriculture after 1943, which seems to be the foundation of agricultural development in the early period of Communist China.

(5) China proper recorded the lowest agricultural GDP growth among East Asian countries/regions (Japan proper, Korean peninsula, Taiwan, and Manchoukuo).

(3.2) Production activities in the People's Republic of China

Keiya ETOH

Estimates of the output and production value of the agricultural, forestry, and fishing industries after the founding of the People's Republic of China in 1949 are made by examining official statistical yearbooks. The discussion and investigations in this section are presented in two parts.

(1) Examining accuracy and consistency of official statistical data.

After examining the accuracy and consistency of data of the statistical yearbooks published by the National Bureau of Statistics of China and several administrative departments, the output of agricultural, forestry, and fishing industries was estimated from the early 1950s to the mid-2000s.

(2) Estimating the production value of major agricultural products.

While there are few statistical sources of agricultural prices, agricultural price data compiled by the National Development and Reform Commission (NDRC) are used to estimate the production value of major agricultural products.

In estimating long-term agricultural output and production value, attention should be paid to the comparability between industrial classifications over time, and to price changes from government-controlled prices to market prices at the end of the1990s.

Chapter 4 Production Activities in Mining and Manufacturing

(4.1) Manufacturing Production in China Proper in Prewar China

Fumio MAKINO and Toru KUBO

There are three sets of statistics available for the estimates of GDP for the manufacturing sector in China proper: Statistical Tables of Agriculture and Commerce, STAC (*Nong Shang Tongji Biao*) for the 1910s, Survey Reports of Chinese Industry, SRCI (*Zhongguo Gongye Diaocha Baogao*) for the first half of the 1930s, and two statistical surveys on factories for the late 1930s and the first half of the 1940s. SRCI, conducted and compiled by D.K. Lieu, is the best among them, since it contains data on factories with mechanical power, except for factories owned by foreigners, and those located in provinces forming national borders and in Japanese-occupied Manchuria.

GDP is obtained by subtracting the value of intermediate goods from the value of output, and these values are first estimated for the benchmark year (1933), then interpolated or extrapolated with a time series index.

Values of output and intermediate goods produced by Chinese-owned modern factories located in China proper for the benchmark year are estimated by using SRIC with some revisions, whereas B.S. Wu's estimates, presented in his work on Chinese national income for 1933, for the handicrafts industry, foreign-owned factories, and factories in Manchuria are employed in these estimates. Estimating results of GDP for the manufacturing sector for 1933 show that GDP estimated here is higher than previous estimates by Wu, and Liu and Yeh.

Extrapolating the value of output to non-benchmark years is obtained in the following:

$$Y_{it} = Y_{i0} \times q_{it} \times p_{it}$$

where Y_{it} is the value of output for ith industry for year t,

Y_{i0} is the value of output for ith industry for benchmark year of 1933,

q_{it} is production index for ith industry for year t (1933＝100),

p_{it} is production price index for ith industry for year t (1933＝100).

GDP for ith industry is obtained by multiplying Y_{it} by the ratio of gross value added to output value for 1933. There is an average real GDP of manufacturing industry growth rate of 3.3% per year from 1931 to 1936. This 3.3% average growth rate is between the estimate by Liu and that by Yeh.

(4.2) Mining production in Prewar China

Quan GUAN and Fumio MAKINO

Since more statistical data are available for the mining industry than for the agriculture or manufacturing industry in the Republic of China (ROC), it is possible to make reliable estimates of production and value added of mineral products.

(1) Special Report of the Geological Survey of China (*Zhongguo Kuangye Jiyao*): Immediately after the Revolution of 1911, the ROC government carried out geological surveys covering a substantial portion of mines, of materials including base metals, precious metals, iron, coal, and other valuable minerals for the development of mineral production. The survey results on reserves, output, import and export, and prices of major mineral products were published seven times a year in Special Report of the Geological Survey of China.

(2) Statistical Tables on China's Agriculture and Commerce (*Nong Shang Tongji Biao*): These statistics are the earliest official statistics compiled and provided by the Chinese government for the decade comprising years 1912–1921. While they cover many industries—agriculture, mining, manufacturing—and the commercial sector, their reliability was so poor that only their price list of mineral products was used.

Estimates and/or interpolations of annual series of output of 37 major mining products derived from the geological survey were first made, then the value of output was calculated by multiplying the output of each product by the unit price of the product. Sets of data, although scarce and incomplete, are available for estimating value added. The ratio of value added to value of production for each product adopted by the pioneering work of J.K. Chang is also used here in order to obtain value added.

Based on estimates of output, the Laspeyres indices of the mining production (1933=100) of China proper and Manchoukuo between 1912 and 1944 are estimated by aggregating 26 commodities while only 15 products were selected for the previous index provided by Chang.

（4.3）Industrial Production in the People's Republic of China

Harry Xiaoying WU

The study in this section revisits the debate about the real growth performance of Chinese industry by investigating two effects that may affect the Laspeyres quantity index constructed earlier, i.e., substitution bias, known as the Gerschenkron effect and time-variant value added ratio. Based on a substantially revised and updated time series of major industrial commodities in physical measures, newly constructed indices with three alternative input-output table weights demonstrate a clear Gerschenkron effect, hence lowering the estimate for China's real industrial growth, and the confirmed declining trend in value added ratio has a further downward adjustment effect on the estimated real industrial growth. In addition, a comparison of these results with the official estimates does not reveal any regularity reflecting quality change that may have been undermeasured in the commodity approach.

Chapter 5 Public Finance and Money Supply

(5.1) Public Finances in Prewar China

Renping HAO and Fumio MAKINO

For a modern nation, prewar China was extremely delayed in establishing a financial management system/regulations and preparing financial statistics. For this reason, only a few data pertaining to government finances during the Republic of China era are available, and such data are not fully reliable, thus making investigation and estimation of the nationwide financial status, including local government finances, extremely difficult. This study first narrowed down its investigation to central government finances, for which reference data were relatively abundant. Then a chronological and quantitative approach to central government finances during the Republic of China era was taken by organizing and examining existing statistical data, and by adding some estimations and supplements to such data. Next, for local government finances, an area which has never been studied sufficiently, an examination and estimation were also made with a focus on the first half of the 1930s, as there was data available, and thereby revealing the actual financial situation of the local provincial (city) governments in prewar China.

(1) Central government finances: With regard to the government finances in modern China, although there are issues of reliability and continuity in the data themselves, the budget data including annual government revenue/expenditure during the period from the early Republic of China era until the Japan-China War can be obtained. In the early era of the Republic of China, the Ministry of Finance began creating annual national budgets. In fact, the ministry created budgets for 1913, 1914, 1916, 1919, and 1925 and publicized these data. During the Republican period, the Ministry of Finance released central government budget data every year from 1929 until 1937. These data were recorded in the Financial Yearbook (*Caizheng Nianjia*) and the Annual Account Yearbook (*Suiji Nianjian*), compiled by the government. Because no financial results were recorded during the period of the Beijing government, no data are available. Therefore, the actual annual revenue and expenditure cannot be obtained. For the period of Republic of China, the financial results for the period from 1927 to 1936 can be obtained from official reference materials, such as the Financial Yearbook. The budget and financial results of the central government during the Republic of China era were totaled by organizing and examining these data, while at the same time adding some estimations and supplements.

(2) Provincial (city) government finances: Because government finances in prewar China were virtually positioned under the decentralization system led by government officials and the militarist party, the available data pertaining to local government finances are extremely limited. The provincial government budget data from 1931 to 1937 were confirmed by official

reference documents, such as the Financial Yearbook and the Annual Account Yearbook. The total budget of local government spending during the Republic of China era was reached by gathering the above reference data and adding some estimations and supplements. Although issues of coverage and credibility remain, one can grasp the outline of the financial scale of local governments in the 1930s.

(5.2) Money Supply in Prewar China

Qingyuan SUI

This section focuses on the estimates of money supply based on various fragment statistical materials for the years 1901–1948. However, due to the lack of related data, it is evident that reliable estimates of long-term money supply cannot be accomplished by a single research. So this estimation is limited to the total volume of money supply for mainland China as a whole during the period. Before 1935, the total volume of money supply includes the stock of silver used as means of exchange and the coins and the bank notes issued by domestic and foreign banks. Attention should be paid to the reliability of the estimated results of the period after the currency reform of November 1935 because the central government could not enforce strong regulations over bank note issue by private banks.

Historical publications including academic studies are referred to in this study as are material officially published by governments or private financial institutions in China, Japan, and western countries.

(5.3) Public Finance in the People's Republic of China

Renping HAO and Zhongling QI

Fiscal system is defined here as the basic institution that deals with the fiscal relation between the central and local governments. After the establishment of the People's Republic of China in 1949, the fiscal system went through three stages of development: (1) A fiscal system of "integrating revenue and expenditure": Since the early 1950s, China began to carry out a heavy industry-oriented development strategy, which resulted in a highly centralized and unified planning system, including the fiscal system. (2) A "fiscal responsibility" system: From 1980 to 1993, a fiscal responsibility system was introduced in order to offer incentives for public fiscal reform to both the central government and local governments in 1980, 1985, and 1988. (3) A tax-sharing system: Since 1994, to establish a socialist market economy, a fiscal system characterized by diverging tax revenue sources between central and local government was implemented nationwide.

Finance-related sources and statistical data were arranged from 1952, the year of the initial stage of Chinese postwar economic recovery. As reference material, Finance Yearbook of China (*Zhongguo Caizheng Nianjian*) was used to compile public finance statistics over time, and other available statistical sources and estimating procedure were also used to resolve the issue of discontinuous statistical data.

As for fiscal balance, the budget deficit expanded after 1978, although the budget surplus was maintained in general under the centralized-planning system before that year. The budget deficit began decreasing after hitting a peak in 2002 and turned into the largest budget surplus for the first time in 2007.

Reform of the tax-sharing system introduced in 1994 changed the distribution of tax revenue and spending between central and local governments. This is because government revenue or expenditure had inclined toward local governments by this time.

Classified as a budgetary expenditure by item, “economic construction” and “culture and education” constitute the largest and the second largest shares. in the case of the central government, “national defense” and “capital construction” account for the two largest items under “economic construction”.

Finally, special attention is paid to the extra-budgetary revenue and expenditure that characterizes Chinese fiscal administration. The extra-budgetary revenue of local governments in 2007 grew seven times more than that in the mid-1980s, while its central government counterpart showed no significant changes over the same period.

(5.4) Monetary and Financial Statistics in the People’s Republic of China

Qingyuan SUI

This section estimates and reports the main monetary and financial statistics from 1952 to 2008. Before 1978, the major statistics are mainly related to the balance sheet of the People’s Bank of China (money supply, deposits, loans), and the central bank’s policies (interest rates, exchange rates). After 1978, estimates related to the development of the capital markets are included.

The major tables include the following:(1) money supply, (2) bank deposits and loans, (3) interest rates, (4) exchange rates, and (5) indicators of stock and bond markets.

All the statistics are reported in nominal value, and the price index in section 6.2 should be used to evaluate them in real value.

Chapter 6 Prices

(6.1) Prices in Prewar China

Some statistical materials are available for estimating price indices for urban areas. First, Economic Research Center of Nankai University published a collection of price series for individual goods and cost of living indices for Tianjin city over the period 1913–1952. Second, Shanghai Economic Research Institute, Chinese Academy of Sciences, compiled four different kinds of wholesale and retail prices for individual goods and cost of living indices for Shanghai city from the early 1920s to the late 1940s. Third, three different kinds of wholesale price indices covering the period from 1912 to 1949 can be used for Guangzhou city.

Besides price indices for urban areas, those for the rural areas of Shanxi, Jiangsu, and Jiangxi provinces were surveyed by J.L. Buck and other experts for the period from the late 1890s to early 1930s.

Two different kinds of aggregate urban wholesale price indices (WPI) are constructed. First, WPI from 1913 to 1942 is estimated from Nankai University's price series and those compiled by Shanghai Economic Research Institute. Second, WPI from 1937 to 1944 is estimated from price series for the city of Chongqing, the capital of Nationalist China at the time in addition to the two kinds of price series mentioned above. Rural WPI are constructed by combining three different price series compiled by J.L. Buck, Laybourn and Ge, and Kao.

Aggregate urban consumer price indices (CPI) or retail price indices from 1926 to 1940 are constructed by averaging price indices of the three large cities of Beijing, Tianjin, and Shanghai. Wartime aggregate CPI from 1937 to 1944 are also estimated from CPI for Tianjin, Shanghai, and Chongqing. Rural CPI for the period 1890–1939 are estimated by applying the same statistical materials and procedures as those used for estimating aggregate rural WPI.

Price and volume indices of trade and foreign exchange rates are derived from statistical materials collected by Lianglin Hsiao with some modification.

Factor prices (interest rates and wages) are also estimated in this section. Since reliable statistics of interest rates for modern financial institutions no longer remain, short-term interest rates for the traditional financing organizations (*qian zuang*) are only available from statistical materials published by People's Bank of China. Whole non-agricultural wages for manual workers in Beijing, laborers working in coal mines, and cotton-spinning and flour-milling workers in Shanghai are estimated, and wages for annual contract workers in agriculture are available in statistical materials compiled by Buck.

(6.2) Prices in the People's Republic of China

Tanjun YUAN and Deqiang LIU

In this section, retail price index (RPI), consumer price index (CPI), and producer price index (PPI) of agricultural and industrial products during the communist period were constructed by using available prices of consumer goods and producer goods together with household spending and industrial production value.

First, RPI consisting of 60 items for the period 1952–2000 was estimated using annual production values compiled in China Commercial and External Economic Statistics (*Zhongguo Shangye Waijing Tongji Ziliao*) (1952–1988), Compilation of Monitoring Data for Major Commodities (Services) (*Quanguo Zhuyao Shangpin (Fuwu) Jiage Jiance Shuju Huibian*)(1988–1992), and China Urban Household Expenditure and Prices Yearbook (*Zhongguo Cheng Zhen Shenghuo yu Jiage Nianjian*) (1993 and after). Further, Laspeyres price index (from 1952 to 2000) of major classifications was produced with 1985 as benchmark year, using data from China Commercial and External Economic Statistics, 1952-1988 (*Zhongguo Shangye Waijing Tongji Ziliao*, *1952-1988*) and China Statistical Yearbook (*Zhongguo Tongji Nianjia*). Moreover, using statistical materials of Shanghai and Changsha, service price index for urban and rural residents was estimated to construct CPI. The weights used for aggregating individual CPI were household expenditures presented in income and expenditure surveys for urban household (Chinese Urban Households Income and Expenditure Survey Data 1996: *Zhongguo Wujia Ji Chengzhen Jumin Jiating Shouzhi Diaocha Tongji Nianjian*) and those for rural households (China Statistical Yearbook) in 1995.

Second, the PPIs of farm products and of industrial products were estimated. The former index was based mainly on statistical data in China Statistical Yearbook. For constructing PPI for total industries and for individual industry, prices of heavy industry products in Encyclopedia Price Knowledge (*Jiage Zhishi Daquan*) for 1950–1985, light industry retail price of Changsha, Beijing, Nanjing, and Shanghai in Hunan Prices for Forty Years (*Hunan Wujia 40 Nia*), China Prices for Fifty Years (*Zhongguo Wujia* 50 *Nian*), and Journal of Shanghai Prices (*Shanghai Jiage Zhi*) were used for the period up to 1985. After 1985, price data from surveys of the National Bureau of Statistics of China were used.

Finally, for estimating wages of mining and manufacturing industry, annual data from China Labor and Wage Statistical Materials 1949-1984 (*Zhongguo Laodong Gongzi Tongji Ziliao*), China Labor and Wage Statistical Materials 1978-1987 (*Zhongguo Laodong Gongzi Tongji Ziliao*), and China Labor Statistical Yearbook (*Zhongguo Laodong Tongji Nianjia*) are used. In order to calculate the annual average wages for the whole economy, including state-owned enterprises, urban non-state-owned enterprises, and township and village enterprises, wages from survey results of industrial censuses carried out in 1985 and 1995 were adjusted, and finally average wage series of 30 individual industries from 1952 to 2000 were obtained.

The retail price estimated here can better reflect the reality of China than official price data do. For example, as for general CPI, the estimates in this section have upwardly revised the counterpart of the official statistics after the 1990s and the growth rates of CPI estimated here are much higher during the whole period after 1949 than those of the official statistics.

The fact that price changes calculated with official statistics seem to be stable indicates that they have political bias. But this does not mean that these estimating results deny the reliability in official price statistics, since data and statistical materials used here are limited.

Chapter 7 International Trade

(7.1) International Trade in Prewar China

Hajime KOSE

This section aims to reorganize the trade statistics of China compiled every five years from 1913 to 1948 in accordance with the United Nations Standard International Trade Classification (SITC).

The basic data on Chinese trade was compiled from the trade statistics published by the Statistical Department of the Inspectorate General of Customs, China Maritime Customs (hereinafter CMC). Materials such as reports and statistics published by CMC are notable among Chinese economic statistics in their continuity and exhaustive coverage. This is related to China's historical development in the modern age; China published voluminous reports and statistics in the modernization of its system as a result of negotiations with western countries. Western-style statistics have been published in China since the 1870s and have been improved and published continuously, even during times of political turmoil.

For the reorganization, the commodity classification for foreign trade statistics in *Haiguan Zhongwai Maoyi Tongji Niankan* (Trade of China), published annually since 1913, were used. In principle, values from subsequent issues were adopted. However, values for 1948 from the statistics of the 1948 issue were adopted, and annual values for 1938 and 1943 were the cumulative value of each month in the December issues of *Zhongguo Maoyi Tongji Yuebao* (Monthly Returns of the Trade of China).

Although Hong Kong is an important seaport in Asia, it was late in publishing its trade statistics. Therefore, it is difficult to determine the trade realities of Hong Kong. Although the Statistical Office began publishing a trade almanac in 1918, it discontinued publication between 1924 and the first half of 1931. Trade statistics of Hong Kong were compiled by commodity using country subdivisions (originally, by country with commodity subdivisions), and they help roughly illustrate the trade of Hong Kong. One difficulty in compiling the statistics is that some commodities require careful review because statistics published by Hong Kong do not

sufficiently cover the trade with the southern part of China close to Hong Kong. The same procedures were applied to both the Hong Kong and China trade statistics. However, data for 1913 and 1928 for Hong Kong could not be reorganized because no data were available for these two years despite being benchmark years.

For the trade statistics of Manchuria, cumulative values from the supplementary volume of the December issue of *Manshūkoku Gaikoku Bōeki Tōkei Geppō* (Monthly Returns of the Foreign Trade of Manchoukuo) were adopted. This statistical report provided a table detailing major trade partners of export-import commodities, in addition to export-import amount and value by commodity.

For the trade statistics of China, annual reports published by CMC were used for 1933 (*Yuebao* (Monthly Report) was used for 1938). The two statistics provided statistical values for all commodities by country and port; however, they used a slightly different commodity classification than the main section did.

Commodities trade values for China proper (c) were extracted from total trade value in the trade statistics of Manchoukuo (M) and also the trade values for the Kwantung Leased Territory (m) were extracted from total trade value in the trade statistics of China proper (C). Each value was deducted from the original statistics and the resulting two values were added after adjusting the exchange rates of yuan (China proper) and Manchoukuo yuan. That is, the formula is $(M - c) + (C - m)$. However, caution must be used with counterpart trade values, because both Manchurian and China proper statistics differ greatly in their listed trade values for each other.

(7.2) International Trade and Balance of Payments in the People's Republic of China

Kyoji FUKAO, Ximing YUE, Kozo KIYOTA, and Tanjun YUAN

This section provides an overview of existing statistics of China's international trade for the postwar period and explains the newly compiled trade statistics by commodity. A short explanation of trade statistics by partner and balance of payments statistics is also provided.

The trade statistics were compiled by commodity in the following way. For the periods 1952–1964 and 1981–1987, the trade data compiled by Kyoji Fukao, Kozo Kiyota, and Ximing Yue (hereinafter FKY; "*Chūgoku Shōhinbetsu Bōeki Tōkei no Sakusei* (China's Long-Term International Trade Statistics: By Commodity, 1952–1964 and 1981–2000)") were used. FKY's data are based on the original data of China's customs statistics, which Hitotsubashi University acquired from National Bureau of Statistics of China. The original statistics for 1952–1964 are classified on the basis of China's original industry code at the most disaggregated level. The original data were aggregated into SITC rev. classification (3-digit level), using the concordance

table for China's customs statistics and SITC rev. The original statistics for 1981–1987 are classified according to the SITC rev. (6-digit level). The data are aggregated into SITC rev. classifications at the 3-digit level using the concordance table developed by the Institute of Development Economies, Japan External Trade Organization (IDE).

The Chinese government did not compile customs statistics for 1966–1978. To get around this problem, US Central Intelligence Agency (CIA) estimates for this period were revised and used. CIA estimated China's exports and imports by commodity for 1970 and 1975–1982 using data from China's partner trade (China: International Trade Annual Statistical Supplement).

FKY provides detailed trade data based on China's official customs statistics from 1981, and the reliability and biases of the CIA estimates for 1981–1982 could therefore be checked. FKY data based on the customs statistics was compared with the CIA estimates at the two-digit level for the overlapping period. The comparison showed that the quality of the CIA estimates was very high.

Using the CIA estimates and FKY's data, annual trade statistics for the period 1952–1980 were derived in the following way. As benchmark data on composition of traded commodities, FKY's data for the period 1952–1964 and CIA data for the years 1970 and 1975–1980 were used. By applying linear interpolations among these benchmark data, the composition of traded commodities for the periods 1965–1969 and 1971–1974 were estimated. Adjustments were then made on the trade data by commodity using Foreign Trade Business Statistics (FTBS) as control totals. FTBS was based on reports from Chinese trade companies and compiled by the Ministry of Foreign Trade and Economic Cooperation (now the Ministry of Commerce) and provides data on China's total export and total import values.

For the period 1981–1987, FKY's results were used directly. The data for 1988–2000 are compiled from the Commodity Trade Statistics of the United Nations (UN Comtrade) as a part of a joint project with scholars at IDE.

Data of total commodity exports and imports by trade partner were compiled in the following way. For the period 1950–1983, statistics reported in *Zhong Guo Dui Wai Jing Ji Mao Yi Nian Jian* (Almanac of China's Foreign Economic Relations and Trade 1984). The data for 1984-2000 are compiled from UN Comtrade as a part of the joint project with scholars at IDE.

China's balance of payments statistics was not published before 1982. For the period 1982–2006, China's balance of payments statistics, which was compiled by *Guo Jia Wai Hui Guan Li Ju* (the State Administration of Foreign Exchange, SAFE), were downloaded from SAFE's website.

Chapter 8　National Accounts

（8.1）GDP in Prewar China

Since estimating procedures of gross value added originating in the primary industries and the mining and manufacturing industries are described in other sections, this section presents data sources and methods to estimate gross value added of industries not explained in other sections.

For the estimates of industrial gross value added in China proper, the year 1933 is used as benchmark year in which B.S. Wu's comprehensive estimates of Chinese national income are available. Gross value added estimated for the benchmark year is extended with production index of individual industries back to 1931 and forward to 1940. Annual gross value added estimated by this method is evaluated at constant 1933 prices, therefore gross value added at current prices can be calculated by inflating real gross value added with the price index estimated in section 6.1. Estimating methods of gross value added in construction, supply of electricity, gas, and water, and transportation are as follows.

As gross value added for the year 1933 is based on Wu's estimates, a detailed explanation will be omitted in this abstract and a description of its extension is emphasized instead. For the construction industry, gross value added for 1933 is extended with index of construction acreage and that of unit cost over time in five major cities. Real gross value added for the utility industry (supply of electricity, gas, and water) is extended together with electric power generation because gross value added for the electricity industry accounted for 85% of total utility industry. It is converted into nominal basis with annual changes in coal price, as thermal power comprised a large part of total electric power generation in China proper. Since the Chinese National Railway service shared the largest part of gross value added for the transportation and communications industry as a whole, gross value added for this industry is extended with traffic volume index of the national railway and converted into nominal gross value added by general wholesale price index.

Annual gross value added in governmental and educational services is available by multiplying annual total government expenditures and the ratio of gross value added of these sectors, defined as the sum of wage and salary paid to government officers, employees, soldiers, and teachers and depreciation cost to total government expenditure for 1933, assuming that the ratio is constant over time.

There is no information available to estimate gross value added in wholesale and retail trade, finance and insurance, and professional and personal services over time. Therefore, annual gross value added in these sectors is calculated by multiplying the annual number of workers involved in providing these services and labor productivity, assuming real labor productivity defined as the ratio of gross value added at constant 1933 prices to the number of workers is

constant over time. Gross value added at current prices is converted by applying the average of general wholesale price index and general retail price index.

Total GDP in China proper is the sum of gross value added of individual industries explained above. GDP in China total can be estimated by adding it to GDP in Manchuria evaluated in silver yuan. The GDP in China total estimated for 1933 in this section is 22.9 billion yuan, which is higher than the national income of 20.3 billion yuan estimated by B.S.Wu, and lower than the GDP of 29.7 billion yuan by T.C. Liu and K.C. Yeh or that of 29.5 billion yuan by Yeh; the per capita GDP of 44.3 yuan by this estimate is lower than the previous estimates 59.4 yuan by Liu and Yeh and 47.3 yuan by Wu.

The annual growth rate of real GDP in mainland China for 1932–1940 is -0.3%, while 2.1% for 1932–1936 and -2.7% for 1936–1940. Average growth rate for 1932–1936 is the highest among the three estimates.

(8.2) GDP in the People's Republic of China

Masaaki KUBONIWA

This section presents an alternative estimate of Chinese postwar growth for 1952–2010 in place of official figures and Maddison's estimate, using the Harry Wu's new estimate of industrial GDP and the Chinese-type chain methodology with a production approach.

First, the official real time series of GDP for 1952–2010 are reproduced as the following seven segments of series at constant prices: Segment 1 (1953–1957) series at constant 1952 prices; segment 2 (1958–1970) series at constant 1957 prices; segment 3 (1971–1980) series at constant 1970 prices; segment 4 (1981–1990) series at constant 1980 prices; segment 5 (1991–2000) series at constant 1990 prices; segment 6 (2001–2005) series at constant 2000 prices; segment 7 (2006–2010) series at constant 2005 prices.

It is noteworthy that the time series estimated at prices in single reference years suffer from errors due to (non-) additivity among inter-segment series; that is to say, differences between the sums of parts (sectoral real value added) and the total (macro real GDP). It follows from this that Maddison's reconstruction of the official time series based on sectoral sums at single 1987 reference prices is methodologically misleading. Also, demonstration is made of the Word Bank's treatment of the differences due to (non-) additivity by setting an artificial item of "services etc." as a misleading indicator for the years from the reference year 2000 or 2005.

Second, an estimate of Chinese postwar GDP growth on the production side is presented by using Wu's estimate of industrial GDP growth rates in the framework of the Chinese type of chain methodology. The official sectoral value added of agriculture, industry, construction, and services in current prices of each base year of the above seven segments is employed because the

study on sectoral structure of value added of each base year has been negligible in the literature. Furthermore, Maddison's assumption of measuring the "non-material services" sector for 1979–2003 by its employment is rejected, and a comparative analysis is made with emerging markets including the Czech Republic, Estonia, Russia, India, and Kazakhstan with rapid increases in labor productivity of the "non-material service sector."

In the new estimate, the annual average growth rates of overall GDP for 1953–2008, 1953–1978 and 1979–2008 are 7.2%, 5.6%, and 8.6%, which are smaller than the respective official figures of 8.2%, 6.1%, and 9.9% by 1 point, 0.5 point, and 1.3 points. This is also true for this study's extended estimate of GDP for 1953–2010. A radical shift is found from the upward bias of the official GDP figures for 1953–2000 to their downward bias for the 2000s because in the new estimate the average growth rate of GDP for 2000–2008 is 12.2% larger than the official figure of 10.6% by 1.6 points. This suggests that the shift is well correlated with the rapid development of privatization of Chinese domestic industry by using a non-spurious regression despite the small sample. This suggestion, however, needs further study with an increase in samples, micro data analysis, and detailed institutional observations.

This section also reproduces series of Chinese postwar real GDE, that is to say, real GDP on the expenditure side. Due to the lack of data on official real growth rates of overall real GDE, exports and imports for the whole period and those of capital formation including fixed capital formation from 2004 onwards, the discussion is confined to reproduction of time series within the above segment framework, using the United Nations estimates and other sources. This section suggests that official growth contribution rates of final demand items (consumption, capital formation, and net exports) based on identity of GDP and GDE should be revised by explicitly presenting the official GDE figures. Further research on GDE estimates corresponding to these new GDP estimates remains to be done.

Chapter 9　Economic Activities in Manchuria

(9.1) Population and Labor Force

Mineo YAMANAKA and Fumio MAKINO

The purpose of this section is to estimate the population and labor force of Manchuria (Manchoukuo, South Manchuria Railway Zone (S.M.R.Z.), and Kwantung Leased Territory (K.L.T.)) from 1931 to 1944.

The benchmark population statistics used here were the population census conducted in 1940 in Manchoukuo and those from 1920 to 1940 in K.L.T.

For the interpolating or extrapolating estimates between censuses, two types of official population statistics in Manchoukuo are available. One is Manchoukuo Registered Population

Statistics (*Manshū Teikoku Kokō Tōkei*, MRPS), issued from 1932 to 1937, where population was obtained from family registers that police stations or local governments reported to the central government. The other is Manchoukuo Population Statistics (*Manshū Teikoku Genjū Jinkō Tōkei*, MPS) from 1938 to 1942, in which population was enumerated based on the same concept as MRPS. The differences between MRPS and MPS are the date of survey and survey items. First, MRPS enumerated population as of the end of year and MPS as of October 1. Second, while MRPS surveyed just total population and population by sex, MPS added further items of population by ethnic origin, age, and occupation.

Population censuses were carried out a total of five times in K.L.T. The population between census dates was interpolated by using annual population series obtained from family registers reported in Statistical Yearbook of Kwantung Bureau (*Kantōkyoku Tōkeisho*).

Annual employed persons by industry in Manchoukuo were also estimated from MPS. They were calculated by multiplying the ratio of employed persons in an industry to total population of the benchmark years of 1937 and 1939 to 1941 by total population in non-benchmark years. Almost the same method was applied to estimate annual employed persons by industry in K.L.T.

Due to continuing large-scale immigrant inflow to Manchuria from China proper, the Korean peninsula, and Japan, the average annual growth rate (15%) and sex ratio (120) of population in Manchuria was higher than in Japan or European countries at the time. As immigration also influenced age structure of population, people from twenty to forty years of age accounted for about 50% of the total population.

Agricultural workers amounted to about 70% of total workers in the early 1940s, in spite of rapid heavy industrialization policies adopted by the Manchoukuo and K.L.T. governments.

(9.2) Production Activity in Primary Industry

Zhenan QUAN

The purpose of this section is to estimate gross value added in three sectors, agriculture (cultivation of crops and livestock production), forestry, and fishery, from 1932 to 1944 in Manchuria (comprising Manchoukuo, South Manchuria Railway Zone, and Kwantung Leased Territory). Along with gross value added, agricultural fixed capital stock and wage rates of farm workers are also estimated.

Estimates of agricultural production volume are based mainly on statistical data compiled and published by the South Manchuria Railway Company. They include Agricultural Prospects Reports in Manchuria (*Manshū Nōsanbutsu Shūkakudaka Yosō*), Agricultural Statistics of Manchuria (*Manshū Nōgyō Tōkei*), and Statistics on Agricultural Products in Manchuria

(*Manshū Nōsan Tōkei*), where agricultural output volume, crop acreage, current inputs used, and number of livestock or poultry and their feed intake are available. Especially, since crops compiled in these statistics comprise major agricultural products, such as soybean, wheat, rice, sorghum, and corn, planted in Manchuria, we can estimate almost the total agricultural output volume.

It must be emphasized that agricultural product prices used in these estimates are collected from the "countryside market" throughout Manchoukuo. This is important because previous estimates made by Kang Chao used wholesale prices in "major cities," and consequently his estimates revealed exaggerated agricultural gross value added. The different product prices used between previous estimates and those in this section resulted in gross value added of the agricultural sector lower than those estimated by K. Chao or Tim Wright by 24%.

Along with this new finding, there are some other important facts in the new estimates. First, Manchurian agricultural production in the decade of the 1930s was characterized by high level of commercialization, since only five kinds of crops (soybean, sorghum, corn, millet, and wheat), cultivated for the purpose of sale or export, comprised around 80% of total agricultural production value.

Second, the growth of agriculture production from the early 1930s to the mid-1940s was divided into three sub-periods. After a sharp decline from 1933 to 1934, agriculture production recovered rapidly from 1935 to 1938. After 1939, its growth rate turned into chronic stagnation.

Third, after the Five-Year Plan of Industrial Development of Manchuria launched in 1937, wage rates of workers went up more rapidly in South Manchuria than in North Manchuria. Consequently, North Manchurian agriculture, which was highly depending on immigrant workers, suffered a serious labor shortage.

(9.3) Manufacturing Production

Quan GUAN and Fumio MAKINO

This section aims to give a picture of industrial development in Manchuria before the foundation of the new China through the collection, processing, estimation as well as analysis of statistical literature available today.

The statistical materials used here are mainly from the survey department of the South Manchuria Railway Company (SMRC) and a variety of censuses and statistics conducted by the Manchoukuo puppet government, including published materials such as Industrial Statistics of Manchuria (*Manshū Sangyō Tōkei*), Statistics of Factories of Manchoukuo (*Manshūkoku Kōjō Tōkei*), Factory Roster of Manchuria (*Manshu Kōjō Meibo*) as well as Statistics of Factories of Kwantung Leased Territory (*Kantōshū Kōjō Tōkei*).

In 1933, the Manchoukuo government reached an Agreement of Survey of Factories with the Japanese side (SMRC), and the survey scope was expanded to the whole of Manchoukuo, including Kwantung Leased Territory (K.L.T.). A comprehensive survey, later published as Factory Roster of Manchuria and Statistical Tables of Factories (*Manshu Kōjō Tōkei*), was to be conducted every other year. The main focus of this research concerns the real situation of industrial production in Manchuria through survey results of factories, and hence estimation of the number of factories and workers as well as production were needed. Based on the amount of output and raw materials, fuel and horsepower, the added value can be calculated. As for calculating the number of factories and workers as well as production, Statistics of Factories of Manchoukuo and Statistics of Factories of K. L. T. as well as their respective Factory Roster of Manchuria and Factory Roster of K. L. T. (*Kantōshū Kōjō Meibo*) were used. Estimations were made one by one due to multiple data sources.

For Manchoukuo figures, Statistics of Factories of Manchoukuo for the periods 1934–1936 and 1938–1940 were used. Adjustments were necessary to unify industries and correct mistakes. As data for 1933 were missing, Factory Roster of Manchuria, which records factory names, locations, product names, year of starting business, and number of workers, was relied on instead. Labor productivity for 1934 was established by multiplying the calculated 1933 figure by the number of workers in that year on the basis of price adjustment, and then the output for 1933 was obtained. As for 1935, there were only survey data of factories with fifteen or more persons, so they are not available originally. Supposing that the data of factories with five to fourteen persons in 1936 accord with those of 1935 (in terms of number of factories and workers and well as production), then the blank for this year could be filled; while 1935 estimates can be substituted with the average value of 1934 and 1936, this is not possible because of the lack of statistics grouped by factory size for 1934.

For K.L.T., Statistics of Factories of Kwantung Leased Territory for the period of 1933–1934 and 1938–1940 and Factory Roster of Kwantung Leased Territory for 1935–1936 are used. The labor productivity of 1935 and 1936 was substituted by calculating that of 1934. Dalian Chamber of Commerce and Industry (*Dairen Shōkō Kaigisho*) (1937) and Statistics of Kwantung Ting (*Kantōchō Tōkeisho*) were used as reference materials.

Estimations for the gross value added (GVA) is necessary, in which deducting cost of intermediate inputs (raw materials, fuel, and electricity) from production value is calculated. Among the inputs, the electricity usage cost is much difficult to obtain. In this section, GVA is estimated by multiplying the unit price of electricity with the electricity consumption.

Whereas GVA for the years 1936 and 1938 through 1940 can be directly estimated by using data available in *Statistical Tables of Factories*, the one for other years is calculated by

using the average of GVA to production value ratio in the late 1930s on the assumption that the ratio is stable throughout the 1930s.

After GVA measured in gold yen in S.M.R.Z. and K.L.T. is converted to that in Manchoukuo yuan applying the exchange rates of the two currencies, it is added to GVA in Manchoukuo, and GVA in total Manchuria can then be calculated.

(9.4) Expenditures of Governmental and Educational Sectors

Fumio MAKINO

The establishment of Manchoukuo in March 1932 had a significant effect on the public finance system in Manchuria. Public finance was placed under the supervision of the central government, while *hsien* and cities became financial units, depriving provincial governments of financial authority. The financial institution of the central government was divided into two parts, the Ministry of Finance in charge of taxation and the General Affairs Board with overall responsibility for compilation of the national budget.

Annual expenditure of the central government is reprinted in History of Manchoukuo (*Manshūkoku Shi*), published in 1970, and that of local governments is obtained from annual reports (*Chihō Zaisei Gaiyō*) on local government budgets issued by the Ministry of Civil Affairs. Annual issuance of government bonds is shown in annual statistical reports edited by the Industrial Bank of Japan.

Japan had succeeded to the railway lines south of Changchun and the administrative rights over the South Manchuria Railway Zone (S.M.R.Z.) as a result of Portsmouth Peace Treaty. Since then, all the departments of administration except police were in the hands of the local administration department of the South Manchuria Railway Company under the general supervision of the Kwantung government until Japanese administrative rights over the S.M.R.Z. were transferred to Manchoukuo at the end of November 1937. The company was authorized to make necessary arrangements for civic, engineering, educational, and health works within S.M.R.Z. and to tax residents for the expenses involved in carrying out these works. Revenues and expenses for the administrations are available from Statistical Yearbook of Local Administration (*Chihō Keiei Tōkei Nempō*), published by South Manchuria Railway Company.

Kwantung Leased Territory (K.L.T.) was administered by the Kwantung Bureau under the direct supervision of the Japanese ambassador to Manchoukuo. Local administration of K.L.T. was entrusted the Kwantung government at Dalian. Budget and settlement of accounts of the Kwantung government were reported in Statistical Yearbook of Kwantung Bureau (*Kantōkyoku Tōkeisho*).

Value added arising from public administration, public security, national defense, and education is defined as the sum of wages and salaries paid to officers and employees working for national and local governments, policemen, soldiers, and teachers. It must be noted that Japanese government spending on its soldiers stationed in Manchoukuo was estimated and added to value added of Manchoukuo, since the Japanese army and navy undertook the national defense jointly with Manchoukuo counterparts. Annual wages and salaries paid for providing these services are available from statistical materials mentioned above, annual reports of the Ministry of Education, and Japanese government/military archives.

(9.5) Currency, Prices, and Wages

Fumio MAKINO and Mineo YAMANAKA

Before Manchoukuo was established, there were about fifteen different kinds of official paper currency notes in circulation with hardly any bullion reserve. In June 1932, the Manchoukuo government promulgated a currency law, providing that the unit of currency value shall be the Manchoukuo yuan with a silver content of 23.91 grams of pure silver and authorizing the Central Bank of Manchou exclusively to manufacture and issue Manchoukuo money, prohibiting further circulation of former currencies.

Japanese currency and notes issued by the Bank of Chosen were also in circulation as sole legal tender in the South Manchuria Railway Zone (S.M.R.Z.) and the Kwantung Leased Territory. They were called “gold notes”, since they were the same as the gold yen notes issued by the Bank of Japan. They had increased and widened their circulation, penetrating beyond these special Japanese districts along with the increase in economic and financial activities of the Japanese in Manchuria.

After the world depression of 1929, silver gradually depreciated in terms of gold. However, the silver boosting policy of the United States caused efflux of silver from Manchoukuo and resulted in an appreciation of the Manchoukuo yuan based on a silver standard. The higher appreciation of the Manchoukuo yuan and the fluctuation of its exchange rates against gold currency (Japanese yen and Chosen bank notes) caused difficulty and uneasiness in the economy of newly established Manchoukuo. The Manchoukuo government therefore tried to take the Manchoukuo yuan off a silver standard to stabilize its exchange rate and to link yuan to, and finally established exchange parity with, the Japanese yen in September 1935 (yen-yuan parity).

As different kinds of currencies circulated together in Manchuria, commodity prices were based on different standards. Wholesale and retail prices based on both the Manchoukuo yuan for the three major cities of Hsinking (now Changchun), Mukden (now Shenyang), and Harbin and on the gold yen for Hsinking within S.M.R.Z. were compiled by the Central Bank of

Manchou. The Kwantung Bureau also compiled wholesale and retail prices based on the gold yen for Dalian in 1933–1944. Aggregated wholesale and retail price indices for Manchoukuo as a whole were estimated by averaging the price indices for Hsinking, Mukden, and Harbin.

Two different kinds of wages are available in this section. First, wages paid to traditional workers (carpenters, plasterers, and so on) in Dalian are given. These are the results of investigations made by the Kwantung government. Second, wage rates of Showa Steel Works, railway workshops and collieries of South Manchuria Railway Company, and wharf cargo coolies in Dalian are estimated by using wage payments and the number of workers presented in Statistical Yearbook of South Manchuria Railway Company (*Mantetsu Tōkei Nempō*). It should be noted that these wages do not include wages in kind, such as foodstuffs, housing, or clothing.

(9.6) GDP

Fumio MAKINO

This section deals with estimates of gross domestic product (GDP) by industry not covered in other sections of this volume. Estimation methods can be classified into two broad approaches: those that are based on Manchoukuo National Income Survey (MNIS) carried out by the Manchoukuo government; and those that use statistical materials published by industrial associations or a representative company of an industry.

The Manchoukuo government estimated Net Domestic Product (NDP) for the years 1937, 1939, and 1941 and released the results as MNIS. Annual gross value added was estimated by making some minor revisions of the results presented in MNIS and was extended together with related variables back to 1932 and forward to 1940 for the industries of mining, salt production, and construction, wholesale and retail trade, finance and insurance, real estate, entertainment, and other services, exclusive of government and housekeeping services.

Estimates of gross value added for transportation, communications, and supply of electricity and gas rely on statistical data of cooperation of private firms or those of individual firms. For example, the source of gross value added is Statistical Yearbook of South Manchuria Railway Company (*Mantetsu Tōkei Nempō*) for railway transportation, water transportation, and wharf cargo work, while Statistical Yearbook of Manchuria Telephone and Telegram Company (*Manshū Denshin Denwa Kabushikikaisha Tōkei Nempō*) is used to estimate gross value added of the communications industry except postal services, which were administered by the Ministry of Communications of the central government. Estimates of gross value added for the electricity and gas industries rely heavily on Statistical Abstracts of Electricity and Gas Industries (*Denki Jigyō Yōran oyobi Gasu Jigyō Yōran*), and financial data of Manchuria Electric Company, which controlled a large part of the electricity supply of Manchuria.

Estimated results here show that Manchoukuo GDP at current prices is higher by 20% for 1937 and 17% for 1939 than NDP presented in MNIS. Since two different kinds of currency were in circulation in Manchuria, GDP produced in the South Manchuria Railway Zone and the Kwantung Leased Territory where the gold yen was legal tender was converted into a Manchoukuo yuan basis. For estimating GDP at constant prices, the year 1935 was used as its base year, and the wholesale price index estimated in the previous section is adopted as deflator. Annual growth rate of real GDP in Manchuria as a whole is as high as 9.8% for the period 1932–1940.

Comparing this GDP estimate with the two previous estimates by K.Chao and T.Wright, their estimates revealed exaggerated GDP. As was partially explained in section 9.2, their total Manchurian GDP estimates were higher than new estimate in this section by 30 or 40%.