

**ECONOMIC GROWTH IN CHINA BEFORE WORLD WAR II**

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### INTRODUCTION

China's economic history between roughly 1890 and 1937, with its record of political instability, civil war, foreign invasion and economic uncertainty, has long been regarded as an interlude of stagnation or decline. Chinese accounts often stress the inability of the prewar economy to escape the constraints of "semi-colonial and semi-feudal" conditions [K'ung, p. 228]. After reviewing the English-language literature, Reynolds [p. 273] concludes that "there is little evidence of significant improvement in living standards; and estimates of national income for the 1930s reveal an economic structure little different from that in earlier centuries."

This paper summarizes a longer study of economic growth in China during the half-century preceding World War II [T. Rawski], which concludes that China's prewar economy achieved results whose size and impact resembled contemporaneous developments in other fast-growing economies, including Japan's. The effects of economic change extended far beyond the cities in which the modern banks and factories clustered. Strong complementarities between old and new forms of enterprise meant that modern-sector growth strengthened long-established sectors of China's

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economy. Modern-sector innovations centered in China's coastal cities brought significant improvement to the economic lives of the nation's enormous populace, so much so that the national average level of per capita real output and consumption rose considerably between World War I and the outbreak of the Pacific War in 1937.

The following pages focus on three aspects of this history: the process of economic growth, the dimensions of economic expansion and the significance of new findings about the performance of China's economy prior to World War II.

### THE PROCESS OF ECONOMIC GROWTH IN PREWAR CHINA

Economic growth in China prior to World War II resulted from a process of commercialization, specialization and division of labor following Adam Smith's *Wealth of Nations*. The impetus to commercialization and division of labor was two-fold. Recent studies have highlighted an ongoing process of market development that Wu Ch'eng-ming traces back to the Ming period (1368-1644). Expansion of domestic commercial networks encouraged regional specialization and increased the share of agricultural and handicraft production destined for local and long-distance trade. The growth of foreign trade under nineteenth-century treaty provisions imposed by strength of foreign arms added new dimensions to this development by creating fresh outlets for Chinese products. More important, the efforts of foreign merchants to secure regular supplies of export goods and to build distribution networks for imported commodities injected new sources of trade credit and introduced new means of transport, communication, finance and commercial organization that added strength and resilience to China's economy, including sectors faced with strong competition from products of foreign businesses located both overseas and in China's treaty ports.

The economic setting in which these dynamic factors interacted was dominated by the operations of a largely private and highly competitive market economy. Despite the intense concern of Chinese officials with the direction of economic change and the occasional intervention of foreign governments, the minute scale of Chinese government revenue and expenditure, which remained well below ten percent of aggregate output even after vigorous efforts to increase taxes, meant that the direction and pace of economic change rested primarily on the fortunes of the private sector. Most Chinese businesses operated under conditions that approximate in every respect

the economist's ideal of atomistic competition. Large numbers of buyers and sellers thronged most markets. Unfettered personal mobility, enhanced by the spread of rail, steamship and telegraph lines, ensured wide circulation of market information. With barriers to the movement of labor and capital from one line of business to another notably rare, furious competition between small and large enterprises, old and new technologies, and domestic and foreign businesses was commonplace. Indeed the high degree of competitiveness may itself have slowed the pace of economic advance [E.S. Rawski].

New forms of enterprise and new productive technologies spread rapidly, but inherited forms of production and organization proved to be hardy competitors. The limited opportunities to take advantage of scale economies, partly a reflection of high transport costs, and the low level of per capita income, which created a ready market for inferior goods, helped to shelter inherited enterprise from the rigors of competition with well-financed and well-connected rivals equipped with new technologies. At the same time, the success of new ventures in shipping, banking, telegraphy and manufacturing often strengthened "old-fashioned" or "traditional" enterprise. Freight carriage by sailboats or "junks" increased, partly because junk shipping was needed to collect and distribute goods moved by rail or motor vessel. New commercial banks and older *ch'ien-chuang* or "native banks" developed close relationships that included a variety of mutually supportive agency and central banking functions. Handicraft producers benefited from the availability of machine-spun cotton yarn, hand tools and other manufactures. The result was a development process that featured extensive complementarity between new and old technologies and forms of enterprise and bore little resemblance to the "creative destruction" postulated by Joseph Schumpeter, who expected new industries to progress only by destroying their predecessors. The evolution of finance illustrates the process of economic growth in prewar China.

### **Money, Banking and Finance**

Money and credit occupy important positions whenever production and exchange outgrow the confines of specialization for local barter. Producers demand payment for their raw materials upon delivery, but consumers will not advance funds until finished goods appear in retail outlets. Exchange is impossible without a means

of finance during the interval between delivery of materials and eventual sale of finished goods, possibly at many far-flung locations. The longer the period of transit and the more complex the series of processing operations separating original supplier and final purchaser, the greater the requirement for financing, both in terms of duration and amount.

Ch'ing (1644-1911) financial arrangements provided sufficient credit and transfer facilities to support a large volume of domestic trade, but the system remained severely flawed. The main difficulty was the absence of a convenient and inexpensive medium of exchange. Local wholesale transactions were settled smoothly and cheaply by transferring bank credits from buyer to seller. But with different units of *tael* account prevailing in different commercial centers, and sometimes even in different trades within a single city, settlement of wholesale transactions required either the transfer and assay of silver ingots or what amounted to a foreign exchange transaction between different bookkeeping currencies. Another serious problem was the lack of security in a banking system that was only as strong as its weakest member. Bankruptcy of an owner or major customer of a single bank could trigger a series of business failures.

Chinese sources attest to the centrality of credit in prewar commerce and to its limited availability. In the cotton cloth trade, the need for credit was described as brief, but crucial; without credit, merchants could not expand their operations [Shanghai Savings Bank, p. 127]. Efforts to increase exports of sesame seeds foundered on the high cost of finance [Maritime Customs 2: 648-650]. Limited interregional mobility of funds artificially reduced rates of return earned by lenders and investors, presumably slowing both the rate of economic growth and the accumulation of savings.

Under these circumstances, rapid expansion of the money supply, substitution banknotes and deposits for metal currency as the chief means of payment, development of commercial banks with interregional branch networks and the emergence of mutual support among financial institutions could promote economic growth, integration and stability by reducing transaction costs and lowering the risk of participating in markets rather than producing for household consumption. This is exactly what happened in China during the early decades of the present century.

The number of financial institutions rose swiftly. Domestic commercial banks,

first established in the late nineteenth century, operated nearly 1695 branches at 526 locations in 1936 [Yearbook, pp. 601-741]. *Ch'ien-chuang* or native banks were not eclipsed by the rise of new financial intermediaries: paid-up capital of Shanghai's native banks rose tenfold between 1912 and 1936 [SCCSL, pp. 188, 262]. Foreign institutions continued to function in major coastal cities, but their scale of operations was eclipsed by Chinese institutions. Even in the finance of foreign trade, events of 1932, when Sino-Japanese hostilities at Shanghai halted trade until the native banks resumed payment in silver, showed the crucial role of domestic financial agents.

The willingness of growing numbers of Chinese to hold bank notes and deposits supported a steep expansion of China's money stock, which rose at about five percent annually between 1910 and 1936 [T. Rawski, Appendix C]. The share of metal currency in the total of currency and demand deposits dropped from more than 65 to less than 16 percent during the same period, with notes and deposits of banks occupying five-sixths or more of the money stock in 1936. The extent of this monetary revolution emerges from the financial history of remote Communist base areas, where guerrilla regimes found themselves obliged to deal with notes issued by individual merchants and industrialists, local merchant groups, commercial banks, and the Nanking government, all of which circulated even in remote rural locations, [Yü, p. 41]. Although government reforms contributed to the expansion and stabilization of the financial system between 1928 and 1936, the main impetus to change came from the largely unregulated private banking sector.

Financial intermediaries contributed to the growing integration of China's prewar economy. Bankers transferred funds from low- to high-cost markets. Individual entrepreneurs, *ch'ien-chuang* and commercial banks began to finance promising ventures in distant regions, as when the Tientsin-based Kincheng Bank lent funds to Min-sheng, a transport and industrial conglomerate based in Chungking, or when the Hua-chang Antimony Refining Company found "holders of idle funds throughout the land eagerly lent their fluid resources to the company for short terms" [Kincheng, pp. 252, 438; McDonald, p. 74]. The consequences of integration affected small as well as large enterprise. Trade at Pao-ti county, Hopei, shifted from a cash basis to settlement by means of drafts on accounts at nearby Tientsin. Similar changes, which reduced transaction costs and increased liquidity, occurred in localities adjacent

to commercial centers and trade routes throughout China.

Perhaps the banks' most significant contribution to economic integration was their involvement with the rural economy. In addition to their long-standing support of trade in agricultural commodities, the financial community now formed direct links with the farm sector, creating specialized banking institutions designed to serve agriculture, supporting rural marketing cooperatives, establishing networks of storage facilities for farm produce, and even making small loans to individual farmers.

The intensification of financial and economic integration across broad reaches of China's landscape can be appreciated by examining the negative consequences resulting from unexpected disruption of financial flows, as occurred in the aftermath of Japan's January 1932 attack on the Chinese section of Shanghai [Bank of China, pp. 22-23]:

The system of financing the interior was thus brought to a standstill, and credit was entirely shaken. . . . With credit facilities no longer available, and no local storage accommodation, the farmers were forced to sell their crops for what they would fetch and regardless of price. The credit conditions which were the immediate outcome of the Shanghai crisis thus directly affected the agricultural situation, producing a serious fall in agricultural prices.

More than ever before, markets for industrial and handicraft products, funds and even agricultural inputs and outputs can be described as national in scope. Together with the development of transport and communication networks, it was the growth and spread of new financial institutions and monetary arrangements that propelled China's economy in the direction of national integration during the first four decades of the twentieth century.

Although it is difficult to document the impact of monetization with precision, it appears that in China, as elsewhere, expansion of the money economy stimulated the development of production and trade both by lowering interest charges and transaction costs and by relaxing long-standing constraints on the supply of capital. The role of commercial and native banks in the financing of modern sector ventures is well-known. Railways, mines, factories, power plants and even agricultural ventures such as land reclamation, dairy production and cotton cooperatives relied extensively



on bank loans to finance their operations. By the late 1920s, banks, mines, major factories and other large-scale enterprises could tap national capital markets to obtain funds. Major banks, operating far-flung branch networks, attracted deposits from many regions and recycled them to areas of greatest demand. Even medium-sized enterprises such as the Szechwan-based Min-sheng Company, which employed 3900 workers in 1936 or Shanghai's Ta-lung Machinery Works, with 1300 workers in 1933, enjoyed ready access to funds from commercial banks as well as *ch'ien-chuang*.

Increased supplies of money and credit arising from the expansion of private banking played a key role in the growth of commercial cropping. Commercialization of agriculture requires increased cash payments to growers as well as extra financing for an extended period between the harvest of crops and delivery of finished products to the ultimate consumer. Substitution of banknotes, drafts and bills of exchange for the costly and risky alternative of delivering large quantities of silver to the countryside at harvest time sharply reduced the expense of moving farm produce to distant markets and presented agricultural communities with new opportunities to improve their incomes. Han-seng Chen vividly describes the consequences of injecting cash into the village economies of Shantung, Honan and Anhwei [p. 7]. Myers [p. 244] gives a broader picture of how native banks contributed to the commercialization of farming in north China. In the south, accounts of the silk trade show that the banking system supported the expansion of both primary production and processing activities in a similar fashion. [Eng, pp. 361-65; Faure, p. 10].

China's experience during the world depression of the 1930s suggests that the development of financial institutions during the preceding decades enhanced the capacity of China's economy to resist a staggering sequence of economic reverses. Comparison with the United States shows the surprising resilience of China's economy. Unlike the United States, China experienced no large or protracted decline in real output. Available business cycle indicators such as railway traffic, investment volume and urban wages decline precipitously in the U.S. but not in China. Continued expansion of China's money stock staved off deep and prolonged deflation, and the associated reductions in output, employment and real income, despite the drain of metallic currency associated with the rising world price of silver. Monetary growth hinged upon the willingness of the Chinese public, developed gradually over the

preceding decades, to hold a growing fraction of their liquid assets in the form of bank money, including paper notes and bank deposits, rather than silver bullion and coin. In 1934 and 1935, when large amounts of silver were shipped abroad, the public absorbed still larger quantities of bank money, allowing the money stock to rise and avoiding the lengthy deflation that affected the industrial nations.

Money and finance occupy a unique position in China's prewar economy. Only this sector experienced a thorough transformation of structure and function down to the village and household level prior to the Pacific War. The monetary system of the 1930s, in which even farmers made regular use of banknotes and borrowed money from sources directly involved in organized financial markets, differed radically from arrangements prevalent in the late nineteenth century, when banks and banknotes touched the economic lives of only a small minority of China's populace.

Swift expansion of the money stock and unprecedented multiplication of financial intermediaries brought important, and largely beneficial changes to the entire economy. There was a significant increase in economic integration among regions, between city and village, and within different segments of the financial community. Financial development contributed to economic growth as increased circulation of funds and reduced costs of financing production and exchange created many profitable opportunities. The widely remarked commercialization of prewar agriculture was highly dependent on new sources of finance. Even in the absence of official stabilization policy, the development of banking and finance enlarged the resilience of China's prewar market economy.

## **DIMENSIONS OF CHINA'S ECONOMIC EXPANSION PRIOR TO WORLD WAR II**

### **Overview**

How rapid was the pace of economic change in prewar China? My approach to this question is based on estimation of changes in the national average level of real (i.e. inflation-adjusted) aggregated and per capita output and expenditure between two periods: 1914/18 and 1931/36. Several aspects of this approach deserve attention. The results measure the change in output levels between two time periods; no attempt is made to study fluctuations in annual growth rates. Since I argue that the period from 1914/18 to 1931/36 was one of substantial growth, it is important to avoid

exaggeration that could arise from measurements linking early years of cyclical depression with final years of cyclical prosperity. My analysis links 1914/18, which is often identified as an interlude of relative prosperity, with 1931/36, which brought economic disruption first from the Japanese attack on Shanghai and occupation of Manchuria, and later, from the impact of the world depression. If anything, this approach measures from “peak to trough,” perhaps understating the underlying trend of growth. My finding that real output and consumption per head increased carries no implication for the distribution of income, an important subject that merits further study.

Whatever one's views about economic fluctuations or the distribution of income and wealth, information about long-term trends in total product provides essential background information for assessing economic performance as well as weighing the impact of economic change on broader social processes. Two scholars, K.C. Yeh and Dwight Perkins [1975], have produced quantitative estimates of trends in China's gross domestic product between World War I and the 1930s. Table 1 summarizes Yeh's findings, which are broadly similar to Perkins' and provide greater sectoral detail. Both authors necessarily employ flimsy data and crude approximations. Although the weak underpinnings of their results admit the possibility of revisions in either direction, both Yeh and Perkins find that national economic growth proceeded at an annual rate somewhat above one percent between 1914/18 and the 1930s, a figure only slightly higher than the crude estimates of population growth available for the prewar years. Allowing for a considerable margin of error in both sets of figures, the implication of these studies is that there was little change in output per person before 1937.

Table 1 also presents new estimates of sectoral output performance, which are aggregated into economy-wide totals using sectoral weights from Yeh's study. Three variants of estimated output growth are offered for each sector, and for the national economy as a whole, in an effort to indicate reasonable margins of error for an exercise in historical reconstruction that is unavoidably imprecise. Growth of per capita output is based on separate population totals of 430 and 500 million for 1914/18 and 1931/36 (Perkins variant [1975, p. 122]) and 500 and 550 million for the same periods (Schran variant [p. 644]).

Focusing on the central or “preferred” estimates shown in Table 1, the new

**Table 1**  
**Revised Estimates for Growth of Chinese GDP, 1914/18 to 1931/36**

	Weights	Yeh Estimate	Estimates Based on Present Study		
			Low Estimate	Preferred Estimate	High Estimate
<b>A. Average Annual Growth Rates, 1914/18 - 1931/36</b>					
Agriculture	0.629	0.8	1.0-1.3*	1.4-1.7*	<u>1.8-2.1*</u>
Industry	0.042	7.7	4.9	<u>8.1</u>	9.5
Handicrafts	0.075	0.7	1.0	<u>1.4</u>	2.0
Construction	0.016	3.5	4.0	<u>4.6</u>	5.5
Transp. & Comm.					
Modern	0.017	4.0	2.8	<u>3.0</u>	3.5
Traditional	0.039	0.3	1.5	<u>1.9</u>	2.5
Trade	0.093	1.1	2.0	<u>2.5</u>	3.0
Finance	0.010	2.9	3.0	<u>5.0</u>	6.0
Government Services	0.031	1.0	<u>2.4</u>	<u>3.4</u>	<u>4.4</u>
Personal Services	0.012	0.8	0.8	1.5	2.0
Residential Rent	0.036	0.9	0.9	1.5	2.0
Gross Domestic Product	1.000	1.1	1.3-1.5	1.8-2.0	2.3-2.5
Population					
1. Perkins variant		0.9	0.9	0.9	0.9
2. Schran variant		0.6	0.6	0.6	0.6
GDP per Capita					
Population 1		0.1	0.6*	1.1*	1.6*
Population 2		0.4	0.7*	1.2*	1.7*

Table 1 (Continued)

	Yeh Estimate	Estimates Based on Present Study		
		Low Estimate	Preferred Estimate	High Estimate
<b>B. Indexes for 1931/36 (1914/18 = 100)</b>				
<b>Gross Domestic</b>				
Product (GDP)	120.1	126.3-130.7	137.5-142.4	149.2-154.5
<b>Population</b>				
1. Perkins variant	117.0	117.0	117.0	117.0
2. Schran variant	111.0	111.0	111.0	111.0
<b>GDP per Capita</b>				
Population 1	102.6	111.7*	121.7*	132.0*
Population 2	108.2	113.8*	123.9*	134.4*

Note: sectoral growth rates with relatively firm empirical foundations are *underlined* in this table.

\* Rate of agricultural growth is assumed to equal rate of population growth plus 0.4 (low estimate), 0.8 percent (preferred estimate) or 1.2 percent (high estimate) per annum. Output performance derived from the lower figure for agricultural growth in each column is related to the Schran population variant; output totals derived from the higher alternative for agricultural growth is combined with the Perkins population variant.

Source: T. Rawski, Table 6.11.

data raise the proposed average growth rate for total output from 1.1 to nearly two percent per year, nearly doubling cumulative output growth during the two interwar decades from 20 to 40 percent. With no change in assumed population growth, these differences translate directly into changes in estimated growth of output per head, which increases sharply from Yeh's figure of 3-8 percent to a much higher figure of 22-24 percent for the "preferred" totals shown in Table 1. These changes, if accepted, fundamentally alter the fabric of China's modern economic history by presenting China as one of the few third-world nations that succeeded in building significant long-term growth of output and income per head into its economy before World War II.

Scrutiny of Table 1 shows that increases in the estimated growth of national product between 1914/18 and 1931/36 come partly from changes to Yeh's figures for the growth of various non-farm sectors (these changes raise the growth rate of total output from 1.1 to 1.4 percent per year), but mainly from the proposed increase in estimated annual agricultural output growth from less than one percent to 1.4 percent or more. Since the revisions to Yeh's (and Perkins') findings will stand or fall on the agricultural estimates, and since the farm sector is both the largest and the least tractable sector for statistical analysis, I will focus on the treatment of agriculture, prefacing the discussion with brief remarks about the figures for various non-farm sectors of the economy.

### **Output Growth in Non-farm Sectors**

Differences between Yeh's results and the present revisions for industry (including mining and utilities), personal services and residential rent do not significantly affect the results, either because sectoral growth rates are nearly identical or because the sectors contribute only a tiny fraction to total output. The new growth rate for handicrafts, which doubles Yeh's figure, is based on a detailed compilation of secondary materials for cotton textile spinning and weaving, the largest single handicraft sector and one that faced strong competition from the products of factories located in China and overseas. Estimates of gross domestic fixed investment in 1914/18 and 1931/36 undergird the figure for construction. The figures for transportation and communication are based the long-term growth rates for various forms of freight haulage. The estimated growth of trade is based on evidence concerning

the rate of expansion for China's domestic and international commerce. Figures for the growth of money stock and bank deposits are used to select a growth rate for financial services. Estimated growth of government services is based on trends in government revenue. These revisions to previous results by Yeh (and Perkins) regarding the performance of various non-agricultural sectors of China's interwar economy are unlikely to excite controversy.

### **Growth of Agricultural Production**

The task of analyzing the growth of prewar farm output poses more serious difficulties. Several scholars have used compendia of agricultural statistics published during the Republican decades to estimate of trends in prewar agricultural production. Their results, based on a variety of procedures, are similar. Studies by Dwight Perkins [1969, p. 30], K.C. Yeh [p. 127] and Hsü Tao-fu [p. 339] all lead to the conclusion that grain production rose by 8-18 percent 1914/18 and the mid-1930s. With population rising by 11-17 percent over the same time span (Table 1), the maximum increase in per capita grain production during this period appears small. Despite the general agreement among these studies careful examination of the underlying output data reveals a morass of inconsistency. Pending further detailed research, no confidence whatever should be attached to this result; these studies cannot persuasively reject the hypothesis that per capita grain output may have increased during the prewar decades.

If poor data make it difficult to measure trends in farm production, how can one investigate the possibility of sustained increases in per capita output? One approach is to look for evidence of significant changes in farm incomes which are closely linked with agricultural productivity. Income originating in agricultural production takes the form of labor income accruing to self-employed owner- and tenant-farmers and to agricultural laborers, rental income received by landlords, interest payments earned by money-lenders and profit received by employers of agricultural workers. Rough calculations indicate that land rents, rural interest payments and farm business profits amounted respectively to 16.4, 5.2 and 4.4 percent of 1933 agricultural output leaving 76 percent as labor income [Lippit 1974, pp. 65-71]. Myers [p. 235] and Feuerwerker [1977, p. 60] find no evidence of significant shifts in that the rate of tenancy between the 1880s and the 1930s; Lippit [1987, p. 89] anticipates that

“nineteenth-century figures” for the functional distribution of agricultural incomes “would not have been very different” from his 1933 results. This apparent stability in the functional distribution of agricultural income means that trends in the labor earnings of farmers should accurately reflect the path of agricultural output. Under these circumstances, wages of farm laborers and of workers in non-agricultural occupations open to unskilled village recruits as well as indicators of farmers’ living standards emerge as potentially important signposts for trends in agricultural output. What follows is a survey of evidence that points to rising incomes and living standards for farmers.

*1. Interview material.*

John L. Buck, an American economist teaching at the University of Nanking, assigned his students to study the local economies of their native areas. The result was a sample of reports covering substantial regions of rural China. One of the questions asked by Buck’s interviewers concerned changes in living standards. Eighty-two percent of respondents in 216 localities reported recent improvements in living standards. If Shensi province, the only region where respondents consistently reported deteriorating standards of living, is omitted, the percentage reporting rising living standards rises to eighty-eight [Buck, pp. 400-401]. Even though Buck’s data may not constitute a representative sample, they show that considerable numbers of Chinese farmers interviewed during the years 1929-33, a period often described as one of agrarian crisis, viewed the recent past as a period of rising living standards. This evidence certainly supports the hypothesis of rising farm output, income and productivity offered in this paper.

*2. Rising consumption of cotton cloth.*

Buck’s investigators recorded not only the direction of change in living standards, but also the reasons for these movements. “Improved clothing” was the most frequent explanation for rising living standards [Buck, p. 400]. If the majority of communities throughout China, and not just in Buck’s reporting areas, experienced rising living standards during the prewar decades, and if improved clothing was the most prominent indicator of this change, it should be possible to verify this trend with reference to production and consumption of cotton cloth, the main item of clothing. Indeed,



**Table 2**  
**Per Capita Output of Textiles and Consumption of Cotton Cloth, 1871-1936**

Period	Population (millions)	Indicators of Per Capita Output and Consumption			
		Value Added (1933 yuan) Cotton Yarn and Cloth			Consumption of Cloth (square yards)
		Total	Factory	Handicraft	
1871/80	350	0.30	0	0.30	5.7
1901/10	435*	0.25	0.03	0.22	5.8
1923/27	476	0.57	0.20	0.37	9.0
1934/36	500	0.63	0.35	0.28	8.9

\* indicates midpoint of range.

Sources: T. Rawski, chap. 2. Population estimates are from Feuerwerker (1970), p. 370; the figure for 1923/27 is calculated from the estimate for 1934/36 by assuming annual population growth of 0.5 percent. Cloth supply and value added are from Table 2.10. Data on value-added and cloth consumption are compiled from materials presented in Chao, Feuerwerker (1970), Hsiao, Kraus, and Liu and Yeh. Value-added and cloth supply figures for 1923/27 are averages of separate figures for 1923/24 and 1925/27. Totals may not check due to rounding error.

data compiled in Table 2 show that China's domestic production of factory and handicraft cotton textiles more than doubled between 1901-1910 and 1934/36 and that per capita consumption of cotton cloth during the 1920s and 1930s was approximately 50 percent higher than during 1871/80 or 1901/10.

Studies of consumption patterns in many countries show that the income elasticity of demand for clothing, defined as the ratio of percentage change in expenditure on clothing to percentage change in income, is significantly above unity [Houthakker, p. 550]. This means that when incomes rise (or fall), expenditures on clothing typically rise (or fall) by a greater percentage than income. Rising (or falling) income is linked with an increased (or reduced) share of clothing in total expenditures. Unless there is a large reduction in the price of textiles relative to other important consumer goods, which did not occur in prewar China, the application of internationally-based evidence concerning the income elasticity of textile demand suggests that an increase of even ten or twenty percent in per capita cloth consumption would provide strong evidence of rising per capita incomes. If the national average figure for per capita consumption of cotton cloth rose by anything approaching fifty percent between 1901/10 and 1923/25 or 1934/36, as shown in Table 2, the inference of rising living standards in the rural communities that housed the vast majority of China's populace is inescapable.

### *3. Rising agricultural wages.*

Reports indicating that hired farm laborers accounted for about ten percent of the entire rural population confirm Buck's finding that 14.1 percent of farm households earned income from working on other farms, and that 15 percent of farm work was performed by hired workers [Ch'en Cheng-mo, p. 58; Buck, pp. 305, 309]. With a substantial minority of the rural populace directly involved in the rural labor markets as buyers, sellers, or (at different seasons of the farm cycle) both, farm wages should move in tandem with the earnings associated with the labor of the more numerous self-employed operators of family farms or rented plots. Many hired laborers were themselves independent farmers, working on their own or on rented land. Trends in the wages of hired labor, negotiated among millions of farmers and laborers in markets replete with every characteristic of the economist's notion of "perfect competition," should rise and fall together with the fortunes of the

more numerous owner- and tenant-farmers. The overwhelming share of labor earnings (as opposed to income from land rental, money-lending, trade etc.) in the total livelihood of each of these groups permits the use of relatively abundant data on trends in farm wages as a source of information on long-term income growth for self-employed farmers. In choosing among daily, monthly and annual farm wages, I place greatest confidence in annual figures, which are not subject to the large seasonal fluctuations that complicate comparisons involving daily or monthly farm wages.

The largest body of data on trends in farm wages comes from the study by John Buck, which presents annual index numbers of wages in 100 counties over varying time-spans. All of the series end in 1929-33; some begin as early as 1901, others as late as 1926. Most of the series cover the period 1908-13 to 1929-31. Despite various qualifications and obvious deficiencies in specific figures, Buck's data do represent a substantial body of information about trends in money incomes for a significant rural group. For each year between 1901 and 1933, Buck averaged all available county-level wage indexes; the number of localities covered ranged from only 8 in 1901 to 90 in 1926-29. The growth rate of the resulting national wage index for yearly contract workers in agriculture is 4.0 percent per annum, which compares favorably with the growth rates of Buck's series for retail prices paid and received by farmers and with the price of rice in Shanghai, China's largest market for farm products.

The results of a more comprehensive analysis of Buck's farm wage data are summarized in Table 3. The annual changes and long-term growth rates described in this table relate to real (i.e., inflation-adjusted) wages, and refer exclusively to China proper. To convert Buck's index of money wages into real terms, I have used L.L. Chang's indexes of prices received (for 1901-10) and paid (for 1910-33) by farmers in Wuchin county, Kiangsu [Buck, pp. 149-52]. Chang's study appears to contain the only price index materials that both cover the entire period involved and relate to rural rather than urban price conditions. I prefer the index of prices paid by farmers, which reflects the purchasing power of rural incomes, but this series does not begin until 1910. Although price trends in Wuchin undoubtedly differed from those that farm workers encountered elsewhere in China, Brandt's [1985] finding of strong interregional links between prices of major food and fiber crops suggests that the magnitude of error introduced by the use of a single price series

**Table 3**  
**Analysis of Buck Data on Agricultural Wages, 1901-1933**

**A. Provincial Breakdown**

Province	Number of Counties			Provincial Average of County			
	Total	With Rising Real Wages			Real Wage Growth Rates		
		1901- 1933	1914- 1933	1925- 1933	1901- 1933	1914- 1933	1925- 1933
Kansu	5	3	4	2	-0.4%	0.0%	0.9%
Ninghsia	1	1	1	0	1.8	1.8	-1.2
Shansi	10	7	7	4	0.0	1.2	0.4
Shensi	8	6	6	6	1.0	1.5	3.9
Suiyuan*	1	0	0	1	-1.6	-1.6	0.9
Tsinghai	2	0	0	0	-3.6	-4.2	-0.6
Honan	8	4	6	7	0.4	2.0	3.2
Hopei	6	6	6	6	2.2	4.0	6.2
Shantung	13	6	7	10	0.7	0.8	4.9
Anhwei	4	3	3	2	1.8	2.7	2.2
Chekiang	11	7	7	8	0.2	0.6	1.9
Hupeh	4	0	0	1	-4.3	-4.0	-2.8
Kiangsi	5	4	3	2	0.8	1.1	1.3
Kiangsu	3	2	2	1	1.2	1.0	-1.8
Hunan	2	1	1	1	0.1	1.2	0.0
Szechwan	2	0	0	1	-3.0	-4.8	5.1
Fukien	1	1	1	1	3.3	6.2	12.5
Kwangsi	4	1	1	0	-1.2	1.7	-2.9
Kwangtung	2	2	2	1	1.0	1.2	1.0
Kweichow	5	3	4	5	1.5	2.7	3.7
Yunnan	3	3	3	3	5.0	5.8	4.6
<b>TOTALS</b>	<b>100</b>	<b>60</b>	<b>64</b>	<b>62</b>	<b>0.5</b>	<b>1.2</b>	<b>2.1</b>

Table 3 (Continued)

B. Statistical Distribution of County-Level Annual Growth Rates for Real Wages

	1901-1933	1914-1933	1925-1933
<b>Negative Growth</b>			
Below -4.0%	10	8	7
-3.1 to -4.0%	3	3	3
-2.1 to -3.0	3	2	6
-1.1 to -2.0	4	8	10
0.0 to -1.0	20	15	12
<b>Positive Growth</b>			
0.1 to 1.0%	20	13	10
1.1 to 2.0%	19	16	6
2.1 to 3.0%	8	9	7
3.1 to 4.0%	7	9	9
Above 4.0%	6	17	30
Median Rate of growth	0.4	1.2	1.6

Notes: Growth rates for deflated real wages are calculated for each county using the county wage index and the indexes from Wuchin county, Kiangsu for prices received (1901-09) and paid (1910-33) by farmers; all these data are given in Buck [1982, pp. 149-52]. The column marked 1901-33 includes all years for which wage data are available; some of the series begin after 1901 and /or terminate before 1933. The column marked 1914-33 excludes all data from 1901-13, and the column marked 1925-33 excludes all data from 1901-24. I have attempted no correction for data based on non-standard currencies or for entries showing improbably large annual changes.

to deflate wage indexes from different regions is likely to be small.

The analysis of Buck's farm wage data is based on calculation of separate long-term growth rates for real wages in one hundred counties; results appear in Table 3. Even though the county-level growth rates cover different time periods and include some extreme values that suggest defective observations, their distribution clearly supports the hypothesis of rising wages, productivity and living standards in prewar China. Over the period 1901-33, sixty of one hundred growth rates are positive, only 40 are zero or negative. The average of 100 county growth rates is 0.5 percent per annum during 1901-33; the median, perhaps more significant due to the presence of extreme values, is 0.4 percent, indicating that half the counties surveyed experienced real wage growth above this annual rate. The preponderance of rising wages is evident if one omits counties in which wages changed at an average yearly rate of less than 0.5 percent in either direction; of the counties in which real wages changed more rapidly, 48, or nearly two-thirds, increased. The data also reveal a distinct acceleration of wage growth. Separate tabulations for 1914-33 and 1925-33 show the median annual growth rate for real farm wages rising from 0.4 percent for 1901-33 to 1.2 percent for 1914-33 and 1.6 percent for 1925-33.

These materials offer evidence of widespread and substantial, although by no means uniform, increases in real incomes for rural wage laborers and, by extension, for self-employed owner and tenant farmers in a large number of widely dispersed areas stretching across China proper. Scattered data for other areas in China proper, including Shansi, Ting county (Hopei) and parts of Kiangsu and Chekiang, offer further evidence of rising farm wages.

#### *4. Rising wages in nonfarm occupations filled by village migrants.*

Wage trends in non-farm occupations that employed large numbers of villagers can provide indirect evidence of changes in rural income levels. The logic of this approach is simple. Profit-seeking employers have no incentive to pay more than the minimum wage required to attract unskilled workers, especially if their products enter competitive markets that offer little opportunity to "pass along" higher wage costs in the form of increased product prices. In prewar China, the number of available recruits for unskilled occupations was essentially limitless. The large scale of internal migration demonstrates that employers could attract labor into new regions or

occupations by offering wages above those available to potential migrants in their home districts.

In the absence of government intervention or effective trade union pressure, there was no economic reason for non-farm employers to raise the wages of unskilled workers unless rising village incomes threatened to dry up the flow of new recruits from the countryside. As long as non-agricultural employment amounted to only a small fraction of the potential labor pool, operators of factories and mines could expand their unskilled workforce without substantially increasing the gap between non-farm wages and agricultural incomes in the surrounding countryside. Under these conditions, entry-level wages for unskilled workers outside the farm sector need not rise unless higher productivity in farming leads to a general increase in incomes and living standards in regions that supply raw labor to factories, workshops or mines. In the case of prewar China, research by Thomas Wiens [pp. 169-81] verifies that the “national industrial wage structure” of the 1930s “was related to the regional structure of agricultural wages,” and that farm wages were “market determined” and not controlled by subsistence requirements, living costs or local custom. Further information on the relation between agricultural incomes and non-farm wages emerges from wage trends in cotton spinning and coal mining, two industries that employed large numbers of village migrants.

Cotton textiles was China’s largest prewar industry. Textile markets were fiercely competitive. Precarious finances gave manufacturers the utmost incentive to exercise stringent control over all costs, including wages. Shanghai’s textile mills, which dominated the industry, employed large numbers of young women, many of whom were recruited from rural areas by labor contractors. The low skill levels of entering workers and their close ties with the rural economy of the surrounding countryside make textile wages a good test of possible interactions between urban wage rates and rural income levels.

Time series data on monthly wages of female workers in Shanghai textile plants offer a convenient opportunity to study these issues. Nominal payments are converted into real wages using the Shanghai wholesale rice price, a technique applied in several recent studies by Chinese economic historians. In the absence of broad indexes of price movements or living costs spanning the entire period of analysis, this approach offers a reasonable method of deflating nominal wages for a low income economy

in which staple foodgrains occupy a large share of household budgets. The wage data come primarily from archival research by Huang Han-min [1984, 1985], who adjusted the wage totals to include bonuses, fines and supplements to basic compensation. These data show that real wages paid to Shanghai cotton textile workers increased during the two decades prior to the outbreak of the Pacific War. Average monthly real wages in 1932-36 are 39-85 percent above the figure for 1915 and 35-80 percent above the wage levels reported for 1920. Real wages appear to have risen sharply between 1927 and 1932. Regression analysis shows that monthly real wages rose at annual rates of 1.4-3.0 percent between 1915 and 1936 depending on the treatment of years for which alternative figures are available.

The upward trend in real wages for cotton textile workers was not confined to Shanghai. Information for 1920 on wages paid to female workers in cotton spinning plants shows that Shanghai workers received somewhat higher compensation than mill hands elsewhere in Kiangsu or in other provinces. Data for 1930 show no increase in this gap between wages in Shanghai and other textile centers. With living costs in major industrial centers following similar trends, I conclude that real wage increase in Shanghai's textile mills were matched or perhaps surpassed elsewhere.

Huang Han-min attributes prewar wage behavior to a number of factors, especially the pressure exerted by the Shanghai labor movement and shifts in business conditions. But the chronology of wage behavior is inconsistent with the view that union pressures forced wages up, for the largest increases came after the Kuomintang's suppression of the Shanghai labor movement in 1927. High wages persisted into the 1930s when the adverse consequences of the world depression and of natural disasters and military disturbances in China placed factory workers "on the defensive against mass dismissals, factory closures, wage reductions, and reduced working hours" [Osterhammel, p.277].

Why should profit-seeking businessmen have paid higher real wages to a workforce that was largely female, transient, unskilled and unorganized unless market conditions compelled employers to offer higher pay in order to secure an adequate flow of prospective employees from the villages surrounding major textile centers? And why should prospective textile workers have required rising real wage payments to attract them into urban occupations unless alternative income opportunities in their home communities had improved markedly during the decades following the collapse of



the Ch'ing dynasty in 1911? In the case of Kiangsu, birthplace of the majority of Shanghai textile workers, information on wages paid to farm laborers provides ample evidence of a general rise in rural wage levels during the 1920s and 1930s [Ch'en Ta, pp. 356-64; Handbook, pp. 36-37].

Coal mining offers an opportunity to investigate the hypothesis of rising rural incomes from a different perspective. In contrast to cotton textiles, in which a primarily female labor force worked in urban locations concentrated in the Yangtze delta area, coal mines employed male workers in rural locations, including many in the northern provinces of Hopei, Shantung and Shansi. The rural character of the unskilled work force in mining is readily apparent from contemporary accounts. The present analysis focuses the K'ai-luan complex in Hopei province.

Historians at Nan-k'ai University have recently published time series data for K'ai-luan wages based on detailed archival research [Nan-k'ai, p. 126]. The Nan-k'ai authors compile separate wage series for different groups of workers and try to reduce a complex wage system that included bonuses and payments in kind to equivalent cash payments. I focus on the underground laborers who are specifically described as "unskilled"; their ties to the farm economy should be closer than those of more skilled operatives. Real wages are obtained by deflating money wages by the price of flour, the principal foodstuff consumed by miners and their families.

The data show a decline in real wages between 1887 and 1920, but this outcome depends on an unspecified conversion from copper cash to silver and on flimsy estimates of flour prices for 1887 and 1905. The figures beginning in 1920 are solidly based on archival materials and can be checked against published sources of wage and price data. They show an unmistakable rise in real wages that accelerates after 1927. Real wages rise steadily from 1927 to a 1935 peak. Although worker incomes declined in real terms after 1935, real wages remained distinctly above the levels reported for the 1920s. The purchasing power of monthly wages in any year between 1929 and 1945 surpassed the comparable figure for any year between 1920 and 1927 by a minimum of 17 percent. The average of real wages in 1935/36 surpassed the average for 1924/27 by 68-88 percent, depending on which figure is used for 1936. Regression analysis of real wage growth confirms the impression of substantial wage increase, with the annual growth rate of real wages amounting to 4.3-5.4 percent between 1920 and 1936.

Why did real wages rise? The Nan-k'ai authors cite two reasons: union pressure and market forces. Union pressure certainly existed. Strikes occurred in 1920 and 1922 and another was threatened in 1929 [Yen and Ting, p. 41]. Labor unrest was reported between 1934 and 1936 [Osterhammel, p. 278]. Yet union efforts seem to have slackened just as real wages began to rise. The Nan-k'ai authors make no mention of union pressure for higher wages after 1924 [Yen and Ting, pp. 41-42].

Daily and monthly wages paid to K'ai-luan's unskilled workers during 1924-27 fell well short of the average or median earnings that Buck reports for Hopei farm workers during 1929-33. Buck's sample is a small one, but its results closely resemble data produced by a larger study [Wages, p. 100]. If Buck's data are representative of rural wage conditions in the regions from which K'ai-luan drew its unskilled workers, the upward trend in rural wages seemingly necessitated substantial increases in entry-level mining wages to induce even landless laborers to leave their villages and take up the dangerous occupation of mining. Even with large wage increases, the daily wage of 0.48 yuan paid to K'ai-luan's general laborers between 1931 and 1935 barely matched the average farm wage reported by Buck's Hopei informants; in nearby Ch'ang-li, the cost of daily farm labor during the growing season was given as 0.50 yuan [Nankai p. 126; Buck 1982, p. 328]. Although union pressures may have contributed to raising the earnings of workers at K'ai-luan, this analysis of trends in Hopei farm wages points to an upward trend in rural labor productivity, reflected in rising farm wages, as the underlying cause. Higher wages at K'ai-luan, were required to keep pace with rising farm wages in nearby rural communities.

##### *5. How Fast Did Agricultural Output Grow?*

My study has produced evidence of increasing per capita output, income and living standards in large areas of rural China prior to the outbreak of the Pacific War in 1937. These results lead me to conclude that earlier studies by Perkins and Yeh, which show real farm output rising at 0.8 to 1.0 percent per annum, significantly underestimate the growth of agricultural output during the period 1914/18 to 1931/36. The maximum growth of per capita farm output allowed by the Perkins/Yeh estimates is 0.3 percent per year. This figure, which cumulates to an increase of only 5.4 percent between 1914/18 and 1936, is not consistent with findings arising from Buck's study of agricultural wages, from trends in cloth consumption, or from the

behavior of non-farm wages, each of which stands on a firmer empirical base than the Perkins' or Yeh's estimates of trends in farm output.

If previous estimates of agricultural output growth for the years 1914/18 to 1931/36 are too low, how fast did agricultural production expand? With a variety of quantitative evidence that is consistent with the hypothesis of rising prewar real income and output per person in China's farm sector and inconsistent with the alternative views, I begin with the presumption that agricultural production clearly outpaced population growth.

Is it possible to use information on wage trends to generate plausible estimates of agricultural output growth? Agricultural output is the product of agricultural employment and output per farm worker; its growth rate is the sum of the growth rates of the agricultural work force and of farm labor productivity. Since the share of farm workers in the national labor force remained stable until well into the post-1949 era, this ratio can hardly have declined during the early decades of the present century. With a constant proportion of farm workers in the national labor force, the growth rate of agricultural employment must be the same as the growth rate of the entire labor force. Ignoring possible changes in the age structure of the population, this means that the rate of population growth and the growth rate of agricultural employment must be identical.

Can wage data be used to measure trends in output per farm worker? Under competitive market conditions, trends in real farm wages can be expected to reflect changes in marginal farm labor productivity unless there are significant changes in farmer-employers' terms of trade with other sectors of the economy. If the ratio of crop prices to prices received by farmers to prices paid by farmers increases, farm wages may outgrow marginal productivity. In the Chinese case, available evidence shows that farmer-employers' terms of trade declined slightly between 1901-10 or 1914/18 and 1931/36 [Buck, pp. 149-50; Brandt 1987a, Table 4.13]. For this reason, there is no reason to expect real wages to outgrow marginal labor productivity in the farm sector.

Whether marginal and average labor productivity move together depends on the nature of agricultural production technology. Previous empirical work by Dittrich and Myers [p. 891], Wiens [pp. 212-15] and Brandt [1987b, p. 726] assumes that the Cobb-Douglas production function, a mathematical relationship between inputs and

outputs that economists have successfully applied to in a wide range of statistical analyses, adequately describes agricultural technology in prewar China. The Cobb-Douglas relationship implies identical time trends for marginal and average labor productivity. To conclude that rising real wages in farming signify an identical upward trend in the average productivity of farm labor thus requires an assumption, but this very assumption undergirds all prior studies of production relationships in prewar Chinese farming.

I take the prewar rate of population growth plus 0.4 percent, the median of long-term growth rates for real farm wages during 1901-33 (Table 3), as a minimum estimate of the annual growth rate of farm output between 1914/18 and 1931/36. With population growing at estimated annual rates of 0.6 or 0.9 percent (Table 1), the minimum estimated rate of agricultural output growth becomes 1.0-1.3 percent, a modest increase over the annual rates of 0.8-1.0 proposed by Perkins and Yeh.

The range of 1.0-1.3 percent, while not implausible, probably understates the growth of agricultural production between 1914/18 and 1931/36. This seems particularly likely in light of the much higher growth rates of transport and trade. Even though commercialization no doubt raised the growth rate of off-farm crop sales above the rate of farm output growth, it is difficult to imagine that the volume of traditional freight traffic could have risen at double the growth rate of farm output. Yet this is the improbable implication of a one percent growth rate for farm output and the 1.9 percent growth rate for traditional transport activity shown in Table 1. Could freight carriage have risen by two-thirds nationally and by one-half in the sailboat sector [T. Rawski, chap. 4] if farm output had risen by only 19-25 percent between 1914/18 and 1936? This is another unlikely implication of these minimum estimates of farm output growth.

With output of cotton and other non-food crops running well ahead of the agricultural total, these minimum growth rates leave only thin margins for a rising per capita supply of food. While the finding that available data and estimates point to a 50 percent increase in per capita consumption of cotton textiles (Table 3) depends on questionable estimates of cotton harvests, even a 20 percent increase in per capita textile consumption would indicate that the minimum figures for agricultural growth, which show farm output per head rising by only seven percent between 1914/18 and 1931/36, with food output growing even slower, are improbably low.

These considerations lead me to consider a higher growth rate for farm output. The logic of market integration, coupled with impressive evidence of flexibility and responsiveness to changes in the price of many commodities and services in China's prewar economy, suggest the sum of estimated population growth and 1.2 percent, the median growth rate of county-level farm wages for 1914-33, as a sensible estimate for Chinese agricultural output growth between 1914/18 and 1931/36. But this rate could be too high. If the communities included in Buck's study, with their generally favorable location with respect to transport routes and marketing opportunities, enjoyed unusual opportunities to raise productivity (and hence, wages), and if market imperfections, geographic barriers and political forces combined to limit the impact of productivity and wage increases that would normally arise in a competitive market system, then the 1.2 percent figure could exaggerate the growth of farm labor productivity. Although there is no shortage of examples illustrating the potential of market power, physical barriers, social rigidities or political action to attenuate the transmission of relative price changes between markets [e.g. Pomeranz], there is abundant evidence that restrictions on the free play of market forces remained episodic rather than endemic features of China's prewar economy. Nevertheless, to ignore possible obstacles to the ripple effects of wage changes risks serious overstatement of agricultural output growth. Furthermore, the assumption of Cobb-Douglas production technology may be incorrect [Archibald and Brandt].

I therefore adopt the sum of population growth and 1.2 percent, the median annual growth rate of farm wages for 1914-33 (Table 3) as a maximal estimate of prewar agricultural growth. I take the sum of population growth and 0.8 percent, the latter being equidistant from the possibly excessive 1.2 percent figure and the seemingly inadequate 0.4 percent figure discussed above, as the preferred estimate of annual growth in Chinese agricultural output between 1914/18 and 1931/36.

Under this approach, the central or preferred annual growth rate for farm output ranges from 1.4 to 1.7 percent per year (depending on the rate of population growth), implying that total farm output rose by 28-34 percent between 1914/18 and 1931/36 (as opposed to 15 percent with Yeh's 0.8 percent growth rate or 19-25 percent under my minimum growth rate assumptions) and that per capita farm production increased by 15-16 percent (rather than seven percent under the minimum growth assumptions), results that seem more consistent with available information about

transport, trade and consumption than the minimum figures discussed earlier.

6. *Trends in Aggregate and Per Capita Output: A Revised View*

The results summarized in Table 1 represent a major revision of previous efforts to establish the quantitative dimensions of China's prewar economic performance. These findings show that, despite political and economic instability, natural catastrophes, civil strife and foreign aggression, China's prewar economy achieved substantial growth of total and per capita output during the decades between the outbreak of World War I and the Japanese invasion of China proper. Dwight Perkins' estimated growth rate of 1.4 percent per year, the highest figure derived from previous studies, represents a lower boundary for a range of possible aggregate growth rates that includes figures as high as 2.5 percent per year. The preferred figures indicate annual output growth of 1.8-2.0 percent between 1914/18 and 1931/36, with total output rising during this interval by 38-42 percent, substantially above the 20-26 percent range derived from earlier research (Table 1).

These findings represent a striking reversal of earlier findings concerning trends in per capita output. As noted above, Yeh and Perkins find that output per head rose by less than ten percent during the interwar decades. My results indicate much higher growth of per capita product. The minimum figures show a rise of 12-14 percent between 1914/18 and 1931/36, while the preferred measure indicates that real output per person increased by 22-24 percent during the same period. The preferred measures indicate that China's annual rate of per capita output growth surpassed one percent during the interwar decades, a rate that approached comparable Japanese figures for the period 1897-1931. With substantial increases in per capita output cumulating over two and, given the long-term behavior of agricultural wages, probably three or even four decades, these findings lead to the conclusion that China's economy, displaying both real per capita growth and modest structural change, embarked upon a substantial process of economic expansion during the decades prior to World War II.

## CONCLUSION

Sustained expansion of output per head became a regular feature of Chinese economic life in the early decades of the present century. This fact, with its

momentous economic and social implications, represents the principal finding of my study. The quantitative results of this study map the approximate dimensions of economic growth in prewar China. Between 1914/18 and 1931/36, total output, as measured by gross domestic product, rose by two-fifths, implying an increase of 20-25 percent in inflation-adjusted output per head. With a rising share of output devoted to investment and government spending, average private consumption spending per person rose more slowly, increasing by approximately one-tenth. Investment activity expanded rapidly, with fixed capital formation surpassing ten percent of total output during the years 1931/36 [T. Rawski, chap. 5]. Rapid investment was financed primarily from domestic savings, which occupied an increasing share of total income during the prewar decades. Prewar economic growth, while falling short of contemporaneous Japanese achievements, produced sufficiently large advances so that the economic decline brought about by war and hyperinflation failed to reduce per capita output significantly below the level of 1914/18.

Recent discussion of East Asian's remarkable economic gains has focused primarily on the postwar experience of Japan and the smaller "new industrial countries." The discovery that, with the exception of the war period 1937-49, China's economy has now experienced seven decades of rising aggregate and per capita output stretching back to 1914, if not earlier, points to the necessity of integrating China into the discussion of East Asian economic achievements, and extending the analysis backward in time. In view of the geopolitical diversity of the East Asian region, one may speculate that Chinese cultural traditions which permeate the historic background of each of the East Asian economies may hold essential clues to the sources of their extraordinary economic progress.

China's prewar economic advance stopped well short of its potential. There is evidence of neglected economic opportunity in the low utilization of railways, in the stunted growth or collapse of viable businesses constrained by lack of credit and in the truncation of productivity-enhancing specialization resulting from the disruption of interregional trade by domestic and international military struggles. Communist victory in China's protracted civil wars led to the creation of the People's Republic in 1949. The return of domestic peace and political integration for the first time in forty years produced a growth spurt in the 1950s that largely reflected the unfulfilled potential of China's prewar economy. As in Japan, a new political system



and a new leadership group directed the economy along new paths that soon outstripped the prewar pace of economic change. And in China, as in Japan, the structure and operation of the postwar economy retains central features that endure across the political divide separating the 1930s from the 1950s and beyond.

#### REFERENCES

- Archibald, Sandra O. and Loren Brandt, "A Flexible Model of Factor Biased Technological Change: An application to Japanese Agriculture" (unpublished, 1987).
- Bank of China, *Report of the General Manager to the Annual Meeting of Shareholders April 8, 1933* (Shanghai, 1933).
- Brandt, Loren (1985), "Chinese Agriculture and the International Economy, 1870s-1930s: A Reassessment," *Explorations in Economic History* 22 (1985): 168-193.
- (1987a), *Commercialization and Agricultural Development: Central and Eastern China, 1870s-1930s* (Cambridge, forthcoming).
- (1987b), "Farm Household Behavior, Factor Markets, and the Distributive Consequences of Commercialization in Early Twentieth-Century China," *Journal of Economic History* 47.3 (1987).
- Buck, John L., *Land Utilization in China - Statistics*. Reprint ed. (N.Y., 1982).
- Chao, Kang, *The Development of Cotton Textile Production in China* (Cambridge MA, 1977).
- Chen, Han-seng, *Industrial Capital and Chinese Peasants* (Shanghai, 1939).
- Ch'en Cheng-mo 陳正謨, *Ko sheng nung kung ku yung hsi kuan chi hsü kung chuang k'uang* 各省農工僱傭習慣及需供狀況 (Hiring Practices for Farm Labor and its Demand and Supply in Various Provinces; Nanking, 1935).
- Ch'en Ta 陳達, *Chung-kuo lao kung wen t'i* 中國勞工問題 (China's Labor Problems; Shanghai, 1929).
- Dittrich, Scott R. and Ramon H. Myers, "Resource Allocation in Traditional Agriculture: Republican China, 1937-1940," *Journal of Political Economy* 79.4 (1971): 887-896.
- Eng, Robert Y., "Chinese Entrepreneurs, the Government and the Foreign Sector: The Canton and Shanghai Silk-Reeling Enterprises, 1861-1932," *Modern Asian Studies* 18.3 (1984): 353-370.
- Faure, David, "The Plight of the Farmers: A Study of the Rural Economy of Kiangnan and the Pearl River Delta, 1870-1937," *Modern China* 11.1 (1985): 3-38.
- Feuerwerker, Albert (1970), "Handicraft and Manufactured Cotton Textiles in China, 1871-1910." *Journal of Economic History* 30.2: 338-378.
- (1977), *Economic Trends in the Republic of China, 1912-1949* (Ann Arbor).
- Handbook, *China Industrial Handbooks, Kiangsu* (Shanghai, 1933).
- Houthakker, H.S., "An International Comparison of Household Expenditure Patterns,



- Commemorating the Centenary of Engel's Law," *Econometrica* 25.4 (1957): 532-551.
- Hsiao, Liang-lin, *China's Foreign Trade Statistics, 1864-1949* (Cambridge, 1974).
- Hsü Tao-fu 許道夫, *Chung-kuo chin tai nung yeh sheng ch'an chi mao yi t'ung chi tzu liao* 中國近代農業生產及貿易統計資料 (Statistical Materials on Agricultural Production and Trade in Modern China; Shanghai, 1983).
- Huang Han-min 黃漢民 (1984), 解放前上海工人工資水平的一個剖例 "Analysis of Pre-Liberation Wage Levels for Shanghai Workers" *Shang-hai ching chi k'o hsüeh* 上海經濟科學 no. 3 (1984): 51-57.
- \_\_\_\_\_ (1985), 1927-1936 年上海工人名義工資收入歷史變動簡析 "Brief Analysis of Annual Fluctuations in Nominal Wage Income of Shanghai Workers, 1927-1936." *Shang-hai ching chi k'o hsüeh* 上海經濟科學 no. 4 (1985): 42-47, 29.
- Kincheng, Chin-ch'eng yin hang shih liao* 金城銀行史料 (Historical Materials on the Kincheng Bank; Shanghai, 1983).
- Kraus, Richard A., *Cotton and Cotton Goods in China, 1918-1936: The Impact of Modernization on the Traditional Sector* (N.Y., 1982).
- K'ung Ching-wei 孔經緯, *Chung-kuo chin pai nien ching chi shih kang* 中國近百年經濟史綱 (Outline of The Past 100 Years of China's Economic History; Chi-lin, 1980).
- Lippit, Victor D. (1974), *Land Reform and Economic Development in China: A Study of Institutional Change and Development Finance* (White Plains).
- \_\_\_\_\_ (1987), *The Economic Development of China* (Armonk, 1987).
- Liu, Ta-chung and Kung-chia Yeh, *The Economy of the Chinese Mainland: National Income and Economic Development, 1933-1959* (Princeton, 1965).
- Maritime Customs, *Returns of Trade and Trade Reports 1914* (Shanghai, 1915).
- McDonald, Angus Jr., *The Urban Origins of Rural Revolution: Elites and the Masses in Hunan Province, China, 1911-1927* (Berkeley, 1978).
- Myers, Ramon H., *The Chinese Peasant Economy: Agricultural Development in Hopei and Shantung, 1890-1949* (Cambridge, 1970).
- Nankai, *Chiu Chung-kuo K'ai-luan mei k'uang ti kung tzu chih tu ho pao kung chih tu* 舊中國開灤煤礦的工資制度和包工制度 (Wage and Contract Labor Systems at the K'ai-luan Coal Mine to 1949; Tientsin, 1983).
- Osterhammel, Jürgen, "Imperialism in Transition: British Business and the Chinese Authorities, 1931-37," *China Quarterly* 98 (1984): 260-286.
- Perkins, Dwight H. (1969), *Agricultural Development in China, 1368-1968* (Chicago).
- \_\_\_\_\_ (1975), "Growth and Changing Structure of China's Twentieth-Century Economy," in *China's Modern Economy in Historical Perspective*, ed. Dwight H. Perkins. Stanford: Stanford University Press, 1975, pp. 115-165.
- Pomeranz, Kenneth, "Local Interest Story: Political Conflict and Regional Patterns in the Shandong Capital Market, 1900-1937" (unpublished, 1988).
- Rawski, Evelyn S., "Competitive Markets as an Obstacle to Economic Development" (paper included in this volume).

- Rawski, Thomas G., *Economic Growth in Prewar China* (Berkeley, 1989).
- Reynolds, Lloyd G., *Economic Growth in the Third World, 1850-1980* (New Haven, 1985).
- Shanghai Savings Bank 上海商業儲蓄銀行, *Pu? Shang-hai chih mien pu yü mien pu yeh* 布? 上海之棉布與棉布業 (Cloth? Shanghai's Cotton Cloth and Cotton Cloth Industry; Shanghai, 1932).
- Schran, Peter, "China's Demographic Evolution 1850-1953 Reconsidered." *China Quarterly* 75 (1978): 638-46.
- SCCSL, *Shang-hai ch'ien chuang shih liao* 上海錢莊史料 (Historical Materials on Shanghai's Native Banks; Shanghai, 1960).
- Wages, 各省農工資統計 "Wages of Farm Labor in Different Provinces." *T'ung chi yüeh pao* 統計月報 13 (1933): 99-106.
- Wiens, Thomas B., *The Microeconomics of Peasant Economy in China, 1912-1940* (N.Y., 1982).
- Wu Ch'eng-ming 吳承明, *Chung-kuo tzu pen chu yi yü kuo nei shih ch'ang* 中國資本主義與國內市場 (Chinese Capitalism and the Domestic Market; Peking, 1985).
- Yearbook 1937, *Ch'üan kuo yin hang nien chien 1937* 全國銀行年鑑 1937 (China Bank Yearbook, 1937; Shanghai, 1937).
- Yeh, K.C., "China's National income, 1931-36," in *Modern Chinese Economic History*, ed. Chi-ming Hou and Tzong-shian Yu (Taipei, 1979), pp. 95-128.
- Yen Kuang-hua 閻光華 and Ting Ch'ang-ch'ing 丁長清, 舊開灤煤礦工人工資水平 "The Level of Workers' Wages at the Old K'ai-luan Coal Mines," *Nan-k'ai ch'ing-chi yen-chiu-so chi k'an* 南開經濟研究所季刊 2 (1982): 36-46, 18.
- Yü T'ao 于滔, 土地革命時期根據地貨幣流通 "Currency Circulation in Base Areas During the Period of the Land Revolution," *Chung-kuo ch'ien pi* 中國錢幣 1 (1983): 41-43.

## GLOSSARY

*ch'ien-chuang* 錢莊